WATER STRESS

Emerging Challenges of Global Water Scarcity

Edited by
Péter Kacziba and Viktor Glied

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Table of contents

FOREWORD

A little bit more than ten years ago a book on water conflicts was published. We authors thought, we felt that the upcoming decade brings more serious ecological problems and various global challenges than ever before. And unfortunately we were not mistaken. This book was finalised during a rather difficult period. The sudden onset of the COVID-19 crisis has not only made the work of authors and editors more challenging but also transformed our living and working environment, changed the way of casual and academic interactions, and generally, altered the way we think about certainty and reality. The pandemic highlighted the fragility of our academic, social and global system and brought back the uncertainty of previous centuries. The crisis is a forecast and a sign of warning at the same time: our current course of growth and the relative prosperity can only be sustained if we change our habits and finally began to confront the challenges of the 21st century.

The coronavirus emergency also demonstrated what climate change could cause in the medium and long run. Although in this case, the development of an actual crisis situation is more extended, the potential consequences are more significant and even more harmful. Emerging water challenges perfectly demonstrate these possible climate change-related outcomes. Water scarcity is already the source of many intrastate and interstate conflicts, the cause of food shortages and a driving force of migration flows. Existing and emerging water conflicts are slowly but steadily developing as existential threats that affect nearly everyone. Some individuals, communities, regions and states are already facing severe water scarcity. For them, the absence of water is an existential risk. For others, increasing water stress is a factor that limit development and threatens the maintenance of adequate living standards. For them, unbalance between demand and supply is a source of misery that, hinders the satisfaction of welfare needs. Although in different ways, water-abundant countries also need to face the emerging realities and sooner or later have to share their water resources. Water scarcity in other areas is a moral and security challenge for these hydro-hegemons, which they either help to resolve or face the geopolitical and socioeconomic consequences caused by massive influxes of climate refugees.

Causes and solutions of water stress involve various actors from individual to global levels. Studies of this book examine different water prospects of the global (Viktor Glied, Melinda Szappanyos), regional (Norbert Pap, Péter Kacziba, Péter Reményi, Zoltán Vörös), and local levels (László Kákai), while nearly all papers include the description of national-level water behaviours. The studies analyse different fields and topics but, after all, discuss similar dilemmas in many respects. As the reader will soon recognise, the water question reaches far beyond the basic human need category. In the 21st century, water is a crucial element of power that, despite legal rules and regulations, functions as a geopolitical advantage or disadvantage. The power factor of water resources hinders the development of effective international cooperation and transforms water into a commodity that can only be controlled by those who have political, military, and economic advantages. The politicisation of water, a global trend which is apparent in all our studies, intensify water stress and increase the possibility of a climate change crisis, which may have larger effects than the current the COVID-19 emergency.

This rather pessimistic conclusion may still be changed. As a recent headline published by The Economist put it, there is still a "chance to flatten the climate curve". Effective water policy and management, legal reform and regional cooperation, all outlined in our studies, are good examples of changing the course of events and establishing a more sustainable water use and more equitable water share. Hopefully, our book will highlight the necessity of these fundamental changes and help to spread the word that the environmental moment provided by the COVID-19 lockdowns should be seized.

The Editors

Pécs, May 2020

Viktor Glied

EMERGING WATER ISSUES IN THE 21ST CENTURY[1]

1. The water crisis and its background

It almost sounds like a cliché: the 21st century is going to revolve around the fight for freshwater. Plenty of forecasts are available to describe ominous scenarios of the natural water circulation radically changing from 2030 to 2050, and most of the regions in the world crossing the threshold of being able to make up for the water used and polluted by humans. The most concerning issues – which are directly and indirectly responsible for the crisis – are environmental degradation due to overpopulation and water scarcity (lack of water). In 2020, 7.8 billion people live on the globe, and based on calculations supported by the current trends, by 2050 the population is going to reach 10.5 billion.[2] However, the volume of available and accessible freshwater is not going to drastically increase, which means that unless (currently unavailable) revolutionary technological developments take place, the same amount of freshwater will have to be distributed to much more people.

When issues related to freshwater are analysed, it is important to highlight that the assessment is not only concerned about the existence or lack of freshwater, the systematic pollution of waters and the use of cross-border surface (lakes, rivers) and underground waters, but all branches in which the existence of water is of essential importance (Hohmann – Pánovics, 2019: 305). Therefore we shall emphasise food production, industrial production and energy production, as well as all related sectors that use water.

Only 3 percent of the global water resources is freshwater, but most of this is located on the poles, i.e. very hard to access. Surface waters comprise 1.2

[1] This research project was supported by the European Union. EFOP-3.6.3-VEKOP-16-2017-00007 – Young researchers from talented students – Fostering scientific careers in higher education.

[2] Worldometer: https://www.worldometers.info/world-population (Downloaded 10 04 2020).

percent of the total freshwater volume, while underground waters comprise 30.1%. According to estimates, the total volume of water resources on Earth comprise 1386 million km^3, but the distribution is extremely uneven, since there are regions with an abundance of freshwater and there are – to an increasing degree – regions with water scarcity or regions vulnerable from the perspective of freshwater supply (Szappanyos, 2013: 11). Also, we should really be focusing on renewable water resources instead of the existing supply, when we are discussing the security of supply and the volume of future reserves. So, if we consider the relationship between volumes and consumption, we are getting a constant volume that is unevenly distributed among different regions. The constant population growth presumes having 9-10 billion people by 2050 and 11-13 billion by 2100, thus the volume of consumption is also constantly growing, affecting the public utility, industrial and agricultural sectors, as well as energy production. We need water to live, to manufacture products, to water plants and for animal husbandry, water is needed to cool nuclear power plants, for transportation, and a specified volume of water is necessary to operate hydroelectric power plants which produce electricity. Considering the current consumption, the freshwater resources would be enough for almost 20 billion people, but if we also take into account the volume required for food production, this figure cannot exceed 14-16 billion (Szilágyi, 2013: 15).

Mankind currently uses about 50% of the existing freshwater supply, and this rate is expected to increase to 70% in a couple of decades, according to forecasts. The main reason for that is the explosive population growth in North, Central and East Africa, in the Middle East, in Central and South Asia, as well as in countries of the Far East, causing a huge increase of water demand. The population of Earth increases by almost 80 million annually. Since 1950, the population of the world has tripled, and considering all demands, water usage has increased sevenfold. Considering renewable water supply, annually less than 1600 m^3 of potable water is available per person. According to a widely accepted notion, considering vital natural resources this is a volume that is enough to provide for the population, but there are regions where this rate does not reach 700, or in some places even 500 m^3 (Guppy – Anderson, 2017). For the global water crisis to worsen, the reduction of the total volume of precipitation on Earth is not even necessary, it is already enough if the

distribution changes and less gets to drier regions and more to the regions already having abundant waters supplies (including seas and oceans). And this is exactly what is happening, climate change gradually transforms our weather systems in a way that the distribution of precipitation changes from a state of balance toward extremities. For this reason, significant parts of Africa, some regions of Central America, some parts of the Middle East and Asia, as well as Southern Europe faces permanent water scarcity.

The water cycle means the continuous and natural circulation of water throughout the hydrosphere, sustained by the gravity of the Earth. This cycle provides the volume of natural precipitation and water infiltrated into the ground, transpiration and evaporation and then condensation once again. It is worth noting that a significant share of condensation happens above seas and oceans, which would seem to be water "lost" at first, but clearly it is not lost, because it is part of the natural process.

Table 1. Renewed freshwater and type of water scarcity

Renewed freshwater (annually) (m^3 per year per person)	**Type of water scarcity**
< 500	Permanent water scarcity
500-1000	Chronic water scarcity
1000-1700	Temporary water scarcity
> 1700	No water scarcity

Source: The author

The term "global water scarcity" has become a part of our everyday lives. First of all, acclaimed researchers of this topic, like Peter H. Gleick (1993), Vandana Shiva (2016), Lester R. Brown, Paul Erlich (1996), or Sandra Postel (1996) have been giving warnings about the increasingly severe crisis, joining the leaders of global organisations, but the issue of water is still not receiving enough attention in political discourse and in the media. By the early 21st century, voices warning of the negative impacts of climate change and ecological catastrophes have finally broken through the wall of indifference. There is nothing surprising in this statement, since almost everyone already perceives the increasingly severe impacts of climate change. If nothing else, a

shift of seasons or the "unpredictability" of weather must have been noticed by everyone. It is still a question how to integrate the water crisis into a wide-range research that would be able to systematically organise different forms of environmental problems, and develop models for the future.

Studies differentiate between three types of water crisis (Lall et al., 2018). The first one has reviewed the options of accessing pure potable water. This category includes the lack of infrastructure, the management of water supply and the condition of the public water utility system. The second includes different forms of water pollution, including surface and underground waters. The third group evaluates problems caused by water scarcity, by monitoring the consumption of natural resources and energy sources. Obviously, the water crisis types are connected in many ways, they supplement each other and mutually impact one another.

When examining the elements of the crisis, it is clear that most analyses basically attribute the reasons of increasingly rapid water depletion to overpopulation. The World Health Organisation, World Bank, Global Water and the Global Water Challenge all agree with this. It is widely known that both the Millennium Development Goals (MDGs)[3] launched in 2000 and the World Water Forum programme strived to survey how many people are affected by water scarcity all over the world. The MDGs included halving the number of people without safe access to potable water by 2015. Point 7 of the initiative declared that in 1990 2.6 billion people had access to pure water, which would be increased to 4.2 billion by 2015. Many of the mechanisms aiming to reach the goals of the programme were included in supranational and national environmental and development policy objectives. The overall intention was to make tap water available to more people, and secondary/tertiary objectives included efforts against polluted water and the deterioration of public water utility systems, as well as reducing regional vulnerability.

Experts in the field of water crisis also agree that the solution requires the joint existence of three conditions: (1) technological development OR available technologies; (2) political willingness, government action, supported by the contributions of civil society organisations and global/regional organisations; (3) financial background. In many cases, neither of these conditions are

[3] Millennium Development Goals: https://www.un.org/millenniumgoals (Downloaded 17 01 2020).

provided, but sometimes the lack of only one hinders development. In the case of poor countries, weak financial background prevents infrastructural development, and when the necessary investments are implemented from a loan, the repayment of such a loan turns out to be problematic. Also, in many cases, the creditor organisation or country requests guarantees, manifested in opening up markets, liberalising certain sectors (public utilities, telecommunication, IT, infrastructure development, construction works, etc.).

In the long term, water scarcity combined with other economic, social or political issues almost always leads to conflict (Pandey, 2011: 161-165). Acquiring, securing, alienating water resources, taking efforts to do so can lead to international disputes and conflicts, and can also cause violent incidents between countries in hostile relationships. Pollution can also affect the water resources of other countries, while governments in a more favourable water strategy position can reduce the allowed flow or impact the quality thereof. Also, countries with more military potential can use their water policy superiority to threaten, influence and coerce other people, dependent on them. States upstream of a river can also use or pollute a significant part of the water, putting downstream countries in a vulnerable position. This makes cooperation unavoidable in water-related affairs. It is clear that water can both be a source of conflicts and a factor contributing to cooperation (Ligetvári, 2018: 17).

Permanent drought can encourage governments to increase irrigation and take measures to control flooding. If the increase of water out-take from rivers and lakes reaches a degree that already has a negative impact on ecological balance and endangers water supply to countries and regions geographically "downstream" of the surface source, the development of a conflict can be taken for granted. Disputes arising on international level are typically paired with food shortage and rapid demographic growth in regions already full of historic, ethnic or religious conflicts (North Africa, Sub-Saharan Africa, Middle East, Central Asia, Central America). Experience shows that international intervention (if a major power has interest in that) in many cases does not aim to change the reasons of scarcity, but strives for a political arrangement, and in many cases, as mentioned above, provides aid in exchange for the liberalisation of local strategic sectors (energy, public utilities, processing/ manufacturing, construction, telecommunication) (Glied, 2009: 16-17).

The WEF Global Risk Report[4] in 2020 categorised short-term risks impacting the world into two groups. According to the position of the financial sector, the deterioration of economic and commercial outlook is the biggest threat, with internal political instability ranking second, and problems related to the destruction of the environment only ranking third and fourth. To the same questions, 88% of political decision-makers answered that resolving environmental crisis was the most urgent challenge. What is more, 86% also thought that challenges related to water are also among the most critical issues affecting the future of humanity.

We are still full of questions. Many scientists – and also politicians – openly doubt the existence of reasons of climate change attributable to human activity (anthropogenic) or obvious correlations. There are climate-sceptics who – following conviction or "external" pressure – try to deny or belittle environmental destruction and climate change. At the same time, some people forge reports, demolish their authenticity due to inaccuracies, or simply overstate the significance of problems in order to draw attention to challenges, claiming that these otherwise fail to break through the very high stimulus thresholds. And since there are serious economic, social and political conflicts in the background, it is not easy to find a solution (Kacziba, 2017: 117-119).

2. Limited freshwater resources: conflicts and challenges

According to the data of the WHO, in 2018 only 71% of the population of Earth, about 5.3-5.5 billion people had access to a secure source of potable water that is free from contaminants. Almost 7 billion people have a freshwater source (of any quality) near them that is accessible within 30 minutes, however 650-700 million people have no secure access to permanent and pure freshwater, while 140 million people can only consume untreated surface water. These data could also be considered encouraging, but it is important to highlight that approximately two billion people can only access unclean water that

[4] The Global Risks Report 2020. World Economic Forum. Insight Report, 15th Edition. http://www3.weforum.org/docs/WEF_Global_Risk_Report_2020.pdf (Downloaded 13 04 2020).

is more or less polluted with excrement. Consuming polluted water causes illnesses, such as acute diarrhoea, dysentery, typhoid or polio. For this reason, annually about 800,000 people die all over the world and 300 million get ill for shorter or longer periods.[5] About 22% of the healthcare institutions of developing countries do not have tap water, do not have sewage removal and waste collection/treatment. These factors are also responsible for additional illnesses, similarly to the complex problem groups of climate change, the increasing vulnerability of water supplies, overconsumption, wasting and pollution.

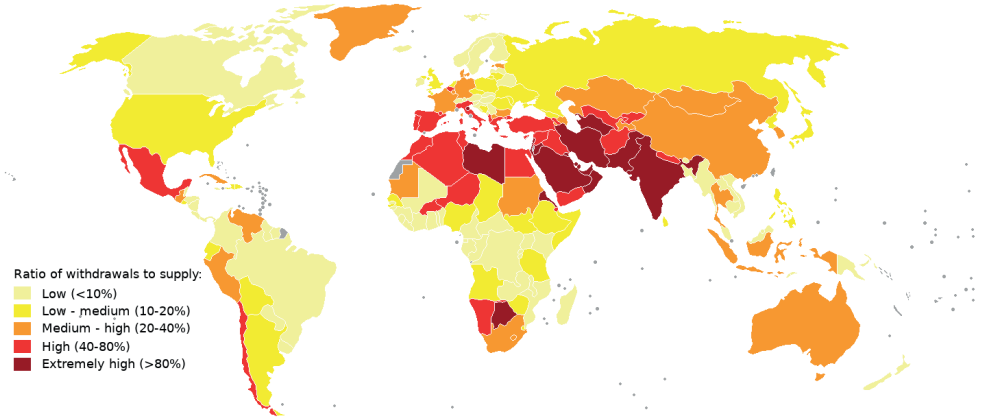
The consumption of polluted water affects tens of millions of people in environmentally deprived regions of Africa and Asia. In addition to hindering or entirely terminating community supply, water scarcity has other consequences as well: agricultural yield reduces due to overirrigation, extreme weather conditions (drought, floods) and natural disasters, because growing areas gradually degrade, and residents cannot get basic nutrients in the adequate quantities. Sooner or later, this is going to encourage hundreds of thousands of people to seek better livelihoods elsewhere. While propensity to adapt is missing in many cases, willingness is not enough either, since when specific environmental conditions exist, the efficiency of measures taken to reduce food shortage is very weak, and agricultural yield cannot be naturally increased above a specific volume.

As Lester R. Brown clearly explains in his book titled Plan B4.0 (2009: 38-44), the depletion of freshwater will have a dramatic impact on agricultural production, primarily in countries that fully deplete their vulnerable underground water supplies. This includes Saudi Arabia and most of the states on the southern side of the Arabian Peninsula, the northern part of China, as well as the Great Plains and Midwest areas of the US. In Hebei Province in China the level of underground water reservoirs is reduced by almost three metres annually, and there are regions which dry out completely, because they use 1000 m^3 of water to produce 1 tonne of grain. If this trend continues, soon 130 million Chinese citizens will have no access to adequate quantities of food and the country will need to import even more. Similar processes are seen in India as well, where 15% of the country's food production and the lives

[5] Drinking water, key facts. https://www.who.int/news-room/fact-sheets/detail/drinking-water (Downloaded 03 02 2020).

of 175 million people depend on underground waters. We should also mention Pakistan, Mexico, Egypt, South Africa, Sudan, Ethiopia and California where the permanent or final shrinkage of water reserves is threatening.

Figure 1. Water stress by country, 2020



Source: https://commons.wikimedia.org/wiki/File:Water_stress_2019_WRI.png (Downloaded 03 04 2019)

Social demands contain the smaller share of global water consumption, while the majority is comprised of the water used by the industry, and especially agriculture. In the latter case it is quite typical that landowners used to traditional agricultural methods, who are unable or unwilling to innovate, overirrigate the land, cause soil salinization, thus reducing already eroding productive land. During the next decades, environmental scarcity is presumably going to result in five types of conflicts:

1. local conflicts which are caused by the deterioration of local resources;
2. ethnic and social conflicts caused by migration;
3. internal wars, uprisings, coups, independence efforts in larger areas;
4. international violent acts for the possession of raw materials;
5. global problems which accentuate the North-South or East-West conflicts, or even the conflicts between civilisations (Homer-Dixon, 2013: 14).

The "usual" trend continued in the 2010s as well: the five major water consuming countries where the daily consumption exceeded 300 litres/per person included the USA, Australia, Italy, Japan and Mexico. In states like Mozambique, Rwanda, Haiti, Ethiopia or Uganda this value is less than 15 litres a day. To be more accurate: this is obviously not only caused by social demand, since the production of 1 kg beef requires more than 14,500 litres, and the manufacturing of a microchip requires (directly or indirectly) 16,000 litres of water. According to the forecasts of the Food and Agriculture Organization of the United Nations (FAO), IPCC and the United Nations Environment Programme (UNEP), with the current trends continuing, Australia, South Africa, the Caribbean and the southwestern regions of South America, as well as parts of the southwestern states of the US, such as California, New Mexico and Texas will have to face more permanent and extreme droughts in the next 50-100 years. The already polluted Chinese rivers and lakes dry out at an increasingly rapid pace, and twenty lakes are simply expected to disappear in the next decades. The 13.3 billion USD fund allocated by the government for protecting the surface waters is only enough to slow down detrimental processes, but unable to have them reversed. Countries in Central Asia face a similar situation due to the overuse of the Amu Darya and the Syr Darya rivers, while Russia and Kazakhstan also face serious issues related to the deterioration of water quality.[6]

Throughout Latin America, water scarcity is a serious problem in many places, especially in Argentina, Chile, Brazil, Colombia, Ecuador and Peru where the disappearance of glaciers and the abundance of hydroelectric power plants cause issues. Also, in many countries of Central America, permanent drought and water scarcity have dramatic impacts on agricultural yield and thus food prices. Guatemala, El Salvador, Costa Rica, Honduras and Panama were all seriously affected by the consequences of the drought in 2008-2009 and another drought since 2015. But no one should think that Europe is absolutely alright either. Since the early 2000s, water situation has been gradually deteriorating in Western and Southern Europe. Catalonia and other regions of Spain were also forced to purchase water from France, similarly to

[6] Wegerich, Kai – Van Rooijen, Daniel – Soliev, Ilkhom – Mukhamedova, Nozilakhon: Water Security in the Syr Darya Basin. *Water* 7(9) 2015, 4657-4684. https://www.researchgate.net/publication/281282042_Water_Security_in_the_Syr_Darya_Basin

Cyprus which had to purchase from Greece, and Israel which purchased from Turkey. In dry years, certain types of water restriction measures are often introduced during the summer and the autumn in Southern Italy, Croatia, Cyprus, Malta and Southern Spain.

In the early 2000s, major urban areas in California, then São Paolo and Perth (Australia) were threatened by dramatic water scarcity, but what we are currently seeing in Cape Town is unprecedented. South Africa has been hit by severe draught since 2015, while the population of the city with four-million residents continues to rise sharply. The total shutdown of central water public utility service was almost implemented in 2018 in Cape Town, because the level of the water reservoirs around the area was so low that the city council had to implement serious restrictions, affecting both industrial and residential consumption. They ordered the closure of public pools, fountains and mist sprays, and then at the end of January they announced that in case the residents fail to adapt to the severe crisis, on 12 April *(Day Zero)* they are closing water pipelines (with the exception of public institutions) and setting up 200 public water distribution points, at which policemen will distribute 25 litres of water to each person. Additionally, they started to drill wells to supply groundwater to the system, and also began the construction of desalination plants to produce potable water from the sea. The authorised daily volume of 87 litres was reduced to 50 in February.[7]

The so-called Day Zero was pushed to June/July following the measures taken, and then postponed to 2019, since the period from May to July has seen more rain than expected, and water reservoirs could again be filled to 35 and then to 50 percent. The city council has adopted different levels of water restriction, providing accurate data to residents about the current volumes, total consumption, and also the allowed water consumption for each person. This value is currently 105 litres of water per day.[8]

[7] *Cape Town Told to Cut Water Use or Face Losing Supply by 12 April,* The Guardian, 24 January 2018, https://www.theguardian.com/world/2018/jan/24/cape-town-to-run-out-of-water-by-12-april-amid-worst-drought-in-a-century (Downloaded 21 03 2020).

[8] *Water Dashboard,* City of Cape Town, https://coct.co/water-dashboard (Downloaded 05 04 2020).

2.1. SUSTAINABLE DEVELOPMENT GOALS AND THE 2018 IPCC REPORT

According to forecasts, by 2030, 42% of the water usage on Earth is going to take place in four countries (China, India, Brazil and South Africa), while almost half of all countries in the world will have to face water scarcity. The reports issued by the IPCC and other organisations steadfastly emphasise – in addition to concrete recommendations on solutions and cross-border cooperation – the importance of adaptation, as well as the improvement of the following systems: (1) water management systems; (2) agriculture and forestry; (3) protection capabilities of coasts, low-level regions; (4) infrastructure development of industries using water; (5) improvement of water cleansing systems (Wouters, 2010: 4-7).

According to calculations of the UN World Health Organization (WHO) annually about 50 billion USD would be needed to slightly improve access to freshwater and water quality. At the United Nations Sustainable Development Summit in September 2015 in New York, leaders of the world committed to creating a new development framework for the period up to 2030, which they called Sustainable Development Goals (SDG). The 17 objective groups approved unanimously by 193 countries set up a new global standard for development. Goal 6 is named *Clean Water and Sanitation* and specifies the following targets:

- By 2030, achieve universal and equitable access to safe and affordable drinking water for all;
- Achieve access to adequate and equitable sanitation and hygiene for all;
- Improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally;
- Substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity;
- Implement integrated water resources management at all levels, including through transboundary cooperation as appropriate;

- By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes.[9]

This goal also highlights the protection of natural ecosystems, stating that the restoration of balance can ensure balance in the other systems. The biggest threat according to the statement is that 40% of the world's grain production can be endangered by water scarcity and the degradation of arable land. These contribute to vulnerability and social injustices. Agriculture uses up 69% of freshwater, while industry is responsible for 19% and human consumption is only 12%. Therefore the member states agreed that first of all the agricultural water use should be made more sustainable. By 2030, the programme is aiming to improve access to water for a total of 3 billion people. But the targets also include the importance of regular and thorough hand-washing, as well as the construction of sewage systems, since almost 1 billion people are not using toilets and defecate openly, and 90% of such people live in rural areas. It must be emphasised that in total, 11% of the world's countries are affected by water stress, but in 22 countries this rate is over 70%. These regions include North Africa, Central Asia, Southeast Asia and some of the areas in Sub-Saharan Africa.[10]

The IPCC report on the effects of climate change (issued in October 2018) paints a more worrying picture than ever before.[11] According to the research summary compiled in more than 2 years, a drastic, 50 percent cut of emissions would keep the rate of mean temperature increase of the globe below 1.5 degrees Celsius between 2030 and 2052. In this case, different social and economic systems would be able to adapt to the changing circumstances. But a temperature rise of 2 degrees or more would have unimaginable consequences. Already observed extreme weather phenomena, devastating floods, permanent drought and record-high temperature waves would become common. Coral reefs, ice caps can disappear completely, and the area of arable

[9] *A fenntartható fejlődési célok* áttekintése *[Overview – Sustainable Development Goals],* Budapest Water Summit, https://www.budapestwatersummit.hu/vilagtalalkozo/attekintes/attekintes-a-fenntarthato-fejlodesi-celokrol-537 (Downloaded 01 01 2019).

[10] Sustainable Development Goal 6. Synthesis Report on Water and Sanitation, 2018. 6 Clean Water and Sanitation. United Nations. New York - Geneva, 2018.

[11] *IPCC Report 2018,* https://report.ipcc.ch/sr15/pdf/sr15_spm_final.pdf (Downloaded 02 01 2020).

land is also expected to drastically decrease. The disappearance of ice from polar regions may be one of the most severe problem nodes. The melting of ice in Greenland only can supply approximately 250 billion tonnes of freshwater to the ocean, which is less dense than salty seawater, and thus it will gradually increase the level of seas and oceans. By 2018, the area of the North Pole covered by ice shrank to 4.46 million km^2, and the summer ice areas were reduced by the total of 40 percent. The loss of ice is not merely a consequence, but also an accelerator of climate change: as ice cover disappears, ocean and atmosphere streams can change, and the operation of the so-called oceanic conveyor belt turns upside-down. The radical reduction of the ice cover is not only observed at the poles, the glaciers of high mountains also move back. It is quite clear that the melting at the poles impacts global processes.[12]

Several independent analysis models confirm that the melting of the Greenland ice will contribute to a global sea level rise of 27 cm by 2100, and ice in the Antarctica stores ten times more water than the Greenland ice, so the increase can reach up to 45-50 cm. This can endanger coastal areas at a lower level, and areas such as small islands in the Pacific Ocean, such as the Marshall Islands, Kiribati and Tuvalu, or the Maldives located in the Indian Ocean. Around these islands, sea level increases by 1.2 cm annually, destroying agricultural produce and gradually covering the infrastructure (Vallero, 2016). Protection could be provided by constructing dams and barriers, but the governments cannot cover such costly investments. So the people living in these areas have no other chance than to flee or acquire land from other countries. The first officially recognised "climate refugee" group moved from Tuvalu to New Zealand in 2005, but the state has seen continuous emigration since then. The Maldives has already negotiated with Sri Lanka and India in 2009 about purchasing small lands, and after 2015 Kiribati took efforts to buy land for its people in the Republic of Fiji (1500 km away), to no avail.[13]

The eastern and southern basin of the Mediterranean Sea is also home to significant coastal areas, such as the Mediterranean zone at Morocco. Due

[12] Bakó Gábor, *Mi történhet, ha eltűnik a sarki jég? [What happens when ice caps melt?]* , National Geographic, 11 December 2017, https://ng.hu/fold/2017/12/11/mi-tortenhet-ha-eltunik-a-sarki-jeg (Downloaded 23 11 2019).

[13] Caramel, Laurence: Besieged by the rising tides of climate change, Kiribati buys land in Fiji https://www.theguardian.com/environment/2014/jul/01/kiribati-climate-change-fiji-vanua-levu

to the rising sea levels, saltwater gradually enters the freshwater drainage basins and the river systems, and in many places it also leaks into underground waters. In the future, climate change is going to be the main contributor of scarcity affecting surface waters in the Middle East and North Africa. Climate change can increase water scarcity and tensions related to water in many ways: the decreasing volume of precipitation and the increasing average temperature both contribute to the increasing water demand of people, animals, plants, the industry and agriculture. According to forecasts, climate change will cause the biggest water shortages in Iraq, Lebanon, Qatar, Saudi Arabia, Jordan, Morocco, Syria and Israel. In Tunisia, Algeria and Libya, social and economic reasons cause the increase in water scarcity.

It is important to highlight that climate protection "catch-up" programmes for developing countries would be essential to the developed world as well. Assistance would not only be necessary for reasons of equity and humanity, but also because of the need to establish and preserve stability and security (Tarrósy, 2010: 14). According to some forecasts, Europe and the Western world can be hit by a wave of millions of climate refugees in the next two decades, which would have unforeseeable economic and social consequences, especially considering how ineffectively the European Union handled the migration crisis in 2014-2015.

2.2. Best practices or mere visions?

But to balance the aforementioned negative tones, let's see some forward-thinking initiatives aiming to protect the rivers and the lakes, and to clean the seas. For the purpose of protecting transnational water bases and resolving arising conflicts, continuously operating committees and organisations set up for cooperation have been present since the late 1980s. According to the database created by the Oregon State University, containing a vast amount of information, there are 263 international water supply bases all over the world, covering 60 percent of the surface freshwater volume, and shared by 148 countries. 33 countries have more than one drainage basin in their territory, but there are states that are not sharing any surface waters with other countries (e.g. Australia). Europe has the most cross-border drainage basins (69), followed by Africa (59), Asia (57) and South America (38) (Wolf et

al., 2003). The rapid changes at the end of the 20th century and the worrying problems related to water forced the states sharing surface waters to create new types of cooperation, which mostly commenced their operations very actively. Different kinds of committees and bodies were set up with the main objective of peacefully resolving water-related issues. These include the joint committees established with regard to the Nile and the Mekong river, which perform extremely important and forward-thinking work, not only for the diplomatic arrangement of water-sharing and water flow issues, but in many other areas as well, from combating water pollution to raising awareness and communicating with the relevant non-governmental organisations.

There are currently 507 known international conflicts related to freshwater, covered by more than 1300 acts of cooperation (treaties, programmes, projects, institutions, joint actions, etc.) and approximately 250 "freshwater" treaties exist. These affect more than a hundred drainage basins and 2.8 billion people. Many of them are so-called bilateral intergovernmental agreements, and one-third is adopted with the participation of three or more states. It must be noted however, than only eleven treaties exist with the participation of all affected parties (stakeholders).[14] The UN takes a significant role in operating many of these cooperations, and it sometimes also mediates in disputed issues. It should also be highlighted that interdependence and reciprocity are increasingly perceivable in water-related issues, and nowadays such countries also show willingness to cooperate which used to reject it or seemed unwilling to do so. A rather good example is China, an upstream country of the Mekong river (Vörös, 2020), which alone dominates water supplies, constructs dams and reservoirs in its own parts, but by now it seems to be willing to listen(!) to the requests and suggestions of downstream countries, and even seems inclined to cooperate in certain issues.

In the early 21st century, we need even tighter international collaboration than before to solve complex issues, argues the UN programme for transnational water cooperation, which collects best practices according to the relevant topics. Participant countries of the project continuously share

[14] Baranyai, Gábor, *Transboundary Water Cooperation in the European Union: a Hydro-Political Gap Assessment,* Water Quality Priority Area of the Danube Region Strategy, 30 June 2015, https://vtk.uni-nke.hu/document/vtk-uni-nke-hu/transboundary-water-cooperation-conf-by-danube-strat.original.pdf (Downloaded 11 05 2019).

knowledge with each other to ensure that good practices can be effectively applied elsewhere. Just to give an example: such best practices include an experimental database created for the Nile Basin, which tries to channel civil society actors into regional cooperation, to ensure that up-to-date data can be disclosed about the social and economic changes affecting water consumption.

Currently the water drainage system of the Ganges-Brahmaputra-Meghna rivers is in one of the most critical states. This area of 5.08 million km^2 is the home to 700 million people, and the enormous drainage base is shared by China, Bhutan, India and Bangladesh. Mutual distrust (and even hostile relations) has been improving since 2013, and hopefully the dialogue initiative related to the Brahmaputra river will enable concluding a series of treaties in the next few years.[15]

It is important to also highlight a project which only partially affects rivers, since its primary aim is to clean the oceans. According to estimates, 1.15-2.41 million tonnes of plastic are disposed of annually into seas and oceans from the rivers, with extra volumes directly thrown into the seas. Since 1950, approximately 5.5 billion tonnes of plastic have been disposed into the seas and oceans (or to coastal areas) (Corbett, 2018). Most of this waste pile cannot sink, and it flows on the surface, merged into one block by the streams, thus creating huge waste islands. The biggest such waste pile is located in the northern Pacific Ocean, between Hawaii and California. Its size can reach 1.6 million km^2, but it is hard to find from the air, because the waste covers a massive area, and it constantly cuts, breaks, and then reassembles. The "island' was first discovered in 1988 and serious research began in 2008 to map the phenomenon and to assess the impacts. The plastic pieces gradually dissolve into tiny particles in the sunlight. These particles enter the food chain and poison marine organisms, and have indirect effect on human health as well.

The most promising project so far to eliminate the waste islands was launched in 2013, when a Dutch inventor, Boyan Slat developed the idea for The Ocean Cleanup. The idea turned into reality in March 2018 when the clean-up operations have begun. The objective of the 80-member team is to use a 600 m long plastic pipeline system to fence and "fish out" the plastic waste. The part of this system floating on the water surface is similar to a boom barrier,

[15] UN data: *Good Practices in Transboundary Water Cooperation,* UN-Water, http://www.ais.unwater.org/ais/TPA_Transboundary/map/#showresults (Downloaded 24 02 2020).

while the part up to three metres deep in the water is a filter which catches plastic waste, but allows marine organisms pass below. According to the original design, the streams will slowly drift the waste toward the net, which can be collected from a ship and transported on shore for recycling purposes. This way, most of the island will be eliminated in ten years.[16] The cleanup programme launched in October 2018 has been suspended in January 2019 due to technical and design reasons.

3. Conclusion

Polluted rivers, water scarcity and lack of freshwater, climate change, overpopulation, vulnerable regions and millions of forced migrants, disappearing lakes, rising floods, deteriorating public utility services, dramatic visions of conflicts and wars. These are the characteristics of the "water issues" of the 21st century. The solution – or at least slowing or maybe halting the negative processes – lies in the possibility of thorough international cooperation which could operate much more efficiently than before. It is a reason to be optimistic that many examples at different levels and depths of actual cooperation exist between the affected parties.

However, meanwhile the Aral Sea in Central Asia (once the sixth largest lake on Earth) and Lake Chad are simply drying out, Lake Urmia in Iran has lost 60% of its original area, and lakes in Southern Australia are also intensively shrinking. They share some circumstances, for example that all lakes are found in generally dry regions. Still, their devastation was caused by human intervention, accelerated by climate change. The waters of the most polluted rivers in the world are not even visible due to the waste floating on the surface, the colours of the Yellow River and the Yangtze in China cannot be seen because of the chemicals spilt into them. Almost five hundred factories are located on the banks of the Citarum River in Indonesia. Annually 300,000 tonnes of wastewater are spilt uncleaned into the Riachuelo River in Buenos Aires, but the situation of the Mississippi is not much better, since its estuary is practically a "dead zone" where no organism can survive. The series of examples could be continued for long, but one thing is sure: if the current

[16] Project website: https://www.theoceancleanup.com (Downloaded 13 04 2020).

trends continue, by 2050 more than 4 billion people will suffer from the lack of freshwater.

One of the most important questions of the 21st century is whether humanity will be able to resolve increasingly severe global environmental and social problems, transform its thinking and behaviour to make the future more sustainable and liveable. Will humanity be able to limit the negative processes of globalisation, reduce global inequalities and change the economic model relying on fossil energy sources and permanent growth? As the problems related to water and the attempts to resolve them clearly show, 20th century reflexes are unable to answer the extremely complex challenges of the 21st century. New ways of thinking, openness, consciousness about water and even deeper cooperation will be required to develop and implement new approaches in Europe and all over the world.

It must be clearly stated, nowadays it is becoming a relevant question whether potable freshwater will run out in the 21st century. What do we see on the news in 2020? Country-sized forest and bush fires, cities choking on smog, dozens of millions of people living among piles of waste, polluted rivers and lakes, enormous waste islands floating on ocean and sea surfaces, animals eating up plastic and dying, species disappearing in a rapidly increasing pace, regions drying up and a new pandemic which solved the decade-long issue of air pollution on a whim, causing dramatic economic and social impacts which we are still unable to fully comprehend. But everyone knows that this is not going to last forever. When the COVID-19 pandemic will be over, everything will start over again. If we are unable to learn from our mistakes, new and more severe problems will have to be faced. Most researchers agree that climate change cannot be stopped, currently adaptation seems to be the only viable measure. In order to resolve serious ecological challenges, the first stage is typically recognising the problem, and finding intention and will to find the solutions. Until this stage is not taken, and prominent politicians such as Donald Trump or Jair Bolsonaro cannot recognise or consciously sweep problems under the rug, a systematic change is almost impossible. Thus, we are practically signing the death sentence for planet Earth and the billions of people living on it.

Are these big words? Of course. Are you shaking your head, dear reader? Please believe, we do not have any idea of how life on Earth will look like in

100 years, either. But we do know how it looked like a hundred years ago and fifty years ago. It is clear that as the population continuously increases, all our existing natural resources are distributed among more and more hungry mouths. It is also clear that according to our current knowledge, the volume of arable land and food that can be produced will not be increased. Agricultural land erodes, dwindles, in many places, instead of food, speciality crops and energy crops are produced in order to maintain other systems and to have results which may contribute to slowing down climate change. We irrigate and produce genetically modified plants to have the required amount of food. Meanwhile, more and more dams are constructed on the rivers to produce electricity, drastically decreasing water flow which has an impact on both agriculture and plants/animals, also hindering the security of supply to communities. A vicious circle which makes the dystopian works of sci-fi writers come true, in which humanity seeks liveable worlds in other universes, after destroying Earth. There is only one Earth, and when we cut down the last tree and killed the last bee, polluted and drank up the last drop of water, we will be able to be proud of our economic and technological achievements. For an extremely short period. And then we are doomed…

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Melinda Szappanyos

DEVELOPMENT OF "WATER LAW" IN THE 21ST CENTURY UNDER THE AEGIS OF THE UN[1]

1. Introduction

Certain fields of international law gain importance, and thus, attention periodically. Surely, international environment, politics, international relations determine when these periods actually do come. But in the last few decades a new factor appeared, which continuously pushes public international law to develop in certain fields: climate change. Though the existence, extent and effects of climate change are highly disputed, the connecting issue of water crisis seems to be generally more accepted as a valid problem: "[A]s we enter the twenty-first century a global water crisis is threatening the security, stability and environmental sustainability of all nations [...]" (UN Water Development Report 2003: XXII). As a consequence, one of the fields coming to the forefront of public international law, getting continuous attention in the last twenty years in particular, is "water law".

From the beginning of the 21st century the Organization of the United Nations (hereinafter UN) designated itself a "collective protector" of certain values,[2] including human dignity, freedom and respect for nature. The UN has been true to this promise in terms of remarkable activity in one particular field: water. After giving an operative definition for water law by making a non-exhaustive list of the most important fields it covers, this paper attempts to collect and briefly analyse some of their public international law related developments under the aegis of the UN. We will focus on newly adopted sources of public international law, mostly limited to international conventions; but also covering some changes in soft law sources, and emerging tendencies in

[1] This research project was supported by the European Union. EFOP-3.6.3-VEKOP-16-2017-00007 – Young researchers from talented students – Fostering scientific careers in higher education.

[2] UN General Assembly: A/RES/55/2 United Nations Millennium Declaration, 18 September 2000. Points 2 and 6.

international monitoring if they represent important changes from the last century. The intention is to give an overview of the developments of the last 20 years and predict the near future. Detailed analysis of all sources of water law would be impossible, thus, in Chapter one the main logic of selection will be explained.

2. "Water Law" and the subject of further analysis

2.1. Operative definition

"Water law" is a widely used, but hardly defined term. It is true for both national legal systems and public international law. Traditionally, water law refers to the collection of legal norms, which regulate one or more aspects of water. Explained by the UN: "Law provides a set of enforceable rules. [...] Water law sets the framework for stake-holders' use of water resources and responds to pressures from demographic, economic and social drivers" (UN Water Development Report 2009: 49). This definition is too general to enable us to identify the actual "uses" of this natural resource. It also does not help that in all legal systems, including international, regional and national level, the norms regulating water are fragmented (Szilágyi, 2018: 44). Of course, this fragmentation seems logical, if we consider how important water as a natural resource is, and how essential it is for every sphere of life, as Kofi Annan states in the foreword of the first World Water Development Report in 2003: "[T]he centrality of freshwater in our lives cannot be overestimated" (UN Water Development Report 2003: XIX).

Still, at least an exemplificative list of main fields of "water law" should be composed for the purpose of this paper, to enable us to select the sources which made a difference in public international law in this century. We invoke the help of the UN. Two program documents shall firstly be mentioned and analysed: the United Nations Millennium Declaration[3] and the 2030 Agenda for Sustainable Development.[4] The UN General Assembly (hereinafter GA)

[3] Ibid.

[4] UN General Assembly: A/RES/70/1 Transforming our world: the 2030 Agenda for Sustainable Development, 21 October 2015.

resolution on the Millennium Development Goals (MDGs) mentions two topics (on target level) closely related to water: Goal 7, target 10 intends to reduce the number of people without access to drinking water and sanitation, while Goal 7, target 9 aims "to stop the unsustainable exploitation of water resources by developing water management strategies."[5] By using a human rights-based approach (Nelson, 2007), the goal of halving the population without access to safe drinking water, together with and the emphasis put on the promotion and protection of human rights, are usually considered as an important step toward the recognition of the human right to water and sanitation (Meier et al., 2013: 120).

The 2030 Agenda for Sustainable Development, including the Sustainable Development Goals (SDGs), prepared as a follow-up and continuation of the MDGs, went further and established more concrete and numerous targets related to water under Goal 6.[6] From the detailed targets of this goal three main fields seem to crystalize as room for international cooperation (also identified as an individual target in Goal 6.a) in the form of law-making and law enforcement: a) recognition, promotion and protection of the human right to water and sanitation (also focusing on equality in the enjoyment of this human right) (Goal 6.1 and 6.2), b) integrated water management (which ensures effective use of water) (Goals 6.5 and 6.4), and c) environmental protection of water resources (Goals 6.6. and 6.3). Using these three fields as a basis for our analyses seems to be a safe bet. However, a crosscheck should be conducted, especially, because since 2000, the adoption of MDGs, the UN became indeed very active in global monitoring of the water situation, which may have altered its focus.

The World Water Assessment Program of the United Nations Educational, Scientific and Cultural Organization (hereinafter WWAP), which is responsible, among others, to prepare an "annual review providing an authoritative picture of the state, use and management of the world's freshwater resources"[7] was founded in 2000, exactly at the beginning of the time period this paper focuses on. It started to produce World Water Development Reports within this time

[5] UN GA: United Nations Millennium Declaration. Ibid. Point 23.
[6] UN GA: Transforming our world: the 2030 Agenda for Sustainable Development.
[7] World Water Assessment Programme (UNESCO WWAP): About UNESCO WWAP. http://www.unesco.org/new/en/natural-sciences/environment/water/wwap/about (Downloaded 22 01 2020).

framework, with the first report published in 2003, and the latest in 2019. Though the reports focus mainly on water policy, instead of legal issues, and according to WWAP "policy and law [...] are fundamentally different"; they also go *"hand in hand"*.[8] Reports all bear titles, which put emphasis on certain aspects of water issues. These titles do give a clue on the focus point of each report we can use in our mission to double check if the main fields of water law are similar to the ones determined by the MDGs and SDGs.[9] Through the analysis of the reports between 2003 and 2012 we find all three fields mentioned and addressed, however, visibly water management gained most of the attention. It is understandable, considering that the main goal of the WWAP is "to equip water managers and key decision-makers with the information, data, tools and skills necessary to enable them to effectively participate in the development of policies",[10] and it "wants to influence leaders in government, civil society and private sector".[11] Consequently, though it does not intend to ignore international cooperation in the water sector, it primarily focuses on national level.[12] The 2014 report represents a "pivotal new direction for the WWDR series": reports became annual and thematic (UN World Water Development Report 2014: viii). After the publication of the 5th report, the themes became more various: more attention was given to human right to water and sanitation (UN World Water Development Report 2019 bears the title "Leaving no one Behind", referring to equality in the protection of this human right), and environmental protection (UN World Water Development Report 2015 bears the title "Water for a sustainable world" and the 2017 report is titled "Wastewater: The Untapped Resources"; both of them address the problems of pollution of water-related ecosystems).

Even though we did identify all three fields this paper intended to examine, we should still make clear that water related issues are indeed closely related. The documents without binding force adopted under the aegis of the UN generally mention all three fields, putting emphasis on one of them. Since the

8 Ibid.

9 As a complementary tool, we can also use the table of contents (though these tend to follow a general scheme) and executive summaries, introductions of these reports.

10 World Water Assessment Programme (UNESCO WWAP): About UNESCO WWAP. http://www.unesco.org/new/en/natural-sciences/environment/water/wwap/about (Downloaded 23 01 2020).

11 Ibid.

12 See also the programme objectives, which are addressed to national level key actors.

setting up of UN Water, water related issues in terms of policy are handled together or at least the activities are coordinated: "[O]ver 30 UN organizations carry out water and sanitation programmes, reflecting the fact that water issues run through all of the UN's main focus areas".[13] Still, the focus of international conventions, the main subject of analysis of this paper, are usually more focused on one aspect of water, therefore we will also follow this distinction in their examination.

2.2. Limitations on the scope of the paper

To summarize and, by giving an operative definition, refine the scope of this paper based on the international documents analysed above: we intend to identify and examine the public international law developments of water law in the last 20 years. Under "water law" we understand the international treaties dealing with water management, environmental protection of water resources, and the human right to water and sanitation.

1) National legislation is not subject of this paper.

2) This paper will mainly focus on one source of public international law: international treaties.[14] International treaties born under the aegis of the UN (especially on integrated water basins) will be considered as main subject of the paper. However, this limitation should be limited in itself: some improvements in these fields, which did not happen in a form of a treaty should also be mentioned; therefore, relevant documents without binding force will be analysed as well.

3) And another limitation: we will only analyse multilateral treaties and leave out the bilateral ones from this examination. This latter limitation has three main reasons. a) The length of the paper is limited, examination of all bilateral treaties on water-related issues would be close to impossible. b) The newest trend (or rather suggestion) in regulating water resources is integrated management, thus experts of different disciplines suggest all riparian States

[13] About United Nations Water: https://www.unwater.org/about-unwater/ (Downloaded 23 01 2020).

[14] The sources of conventions: UN Treaty Collection, https://treaties.un.org/ (Downloaded 23 01 2020); the treaties concluded under the aegis of the UN will be listed, but those worked out by other organizations, conferences and only referred to the Secretary-General of the UN as depository will not be taken into consideration.

to coordinate their actions over international rivers, water basins together (Mizanur – Olli, 2004; Mizanur – Olli, 2005).[15] c) Bilateral agreements are very rare in human rights law and environmental protection of ecosystems, thus bilateral treaty analysis could only extend to water management.

4) We focus on the 21st century, treaties concluded (and not only the ones entered into force) after the year 2000 will be analysed in detail, but may be mentioned if they serve as a basis for further developments.

3. THE LAST 20 YEARS

3.1. Water management

This part of the paper aims to collect international treaties of which the subject matter is cooperation in water management. It does not seem necessary to meticulously define "water management", especially, because international treaties dealing with only one or even a few aspects of water management (e.g. risk management, shared use of water resources) are fairly rare and will be listed here.

As we have already seen, water is in the centre of attention of the UN from the beginning of the 21st century. Though water related issues were discussed in the UN before (see for example the UN Conference on the Human Environment in Stockholm in 1972[16] as one of the earliest actions taken by the UN), the real engagement in water issues started with Agenda 21.[17] The efforts to handle issues related to water intensified further at the beginning of our century,[18] and gained the most international attention via the MDGs and SDGs as comprehensive strategies for development.

[15] However, according to Zawahri (2011) this piece of advice is ignored most of the time and more bilateral than multilateral treaties are concluded.

[16] UN GA: A/CONF.48/14/Rev.1. Report of the United Nations Conference on the Human Environment, Stockholm, 5-16 June 1972. See Recommendations 9, 10, 27, 51 and 53.

[17] UN Department of Economic and Social Affairs, Division for Sustainable Development: United Nations Conference on Environment & Development, Rio de Janeiro, Brazil, 3 to 14 June 1992.

[18] World Summit on Sustainable Development: A/CONF.199/L.1 Draft plan of implementation of the World Summit on Sustainable Development. Johannesburg, South Africa 26 August - 4 September 2002, 26 June 2002.

In terms of water use and management the UN's three biggest, legally binding achievements are undoubtedly the 1992 Convention on the Protection and Use of Transboundary Watercourses and International Lakes,[19] the Protocol on Water and Health attached to it,[20] and the 1997 Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Glied, 2009: 8-9).[21] Though the subject of this paper is examination of the improvement of water law through international treaties, none of these treaties are the product of our century, but serve as a basis for a few developments to be mentioned.

- In 2007, after the Entry into force of the Protocol on Water and Health to the 1992 Convention on the Protection and Use of Transboundary Watercourses and International Lakes, a Working Group on Water and Health was set up as the body "responsible for the overall implementation of the programme of work."[22] Three years later a Compliance Committee was also established.[23] There is also a Task Force on Target Setting and Reporting working under the 2030 Agenda.
- While the above-mentioned bodies cover only the Protocol, since 2012, there is a compliance committee facilitating the implementation of the 1992 Helsinki Convention too (Lammers, 2014).

However, it seems that while some regions did continue to elaborate legal rules for more and more effective water management considering the changing environment, the UN did stop focusing on it. The 1997 Convention established a framework and gave instruction on how to move on with cooperation at

[19] Convention on the Protection and Use of Transboundary Watercourses and International Lakes, Helsinki, 17 March 1992, Entry into force: 6 October 1996. The convention was adopted under the UN Economic Commission for Europe and is open to signatures of its Member states and those states who have consultative status (according to Article 23).

[20] Protocol on Water and Health to the 1992 Convention on the Protection and Use of Transboundary Watercourses and International Lakes, London, 17 June 1999, Entry into force: 4 August 2005.

[21] UN GA: A/RES/51/229 Convention on the Protection and Use of Transboundary Watercourses and International Lakes. 21 May 1997. Entry into force: 17 August 2014.

[22] UNECE: Working Group on Water and Health, http://www.unece.org/env/water/pwh_bodies/wgwh.html (Downloaded 03 01 2020).

[23] UN Economic and Social Council, Economic Commission for Europe: ECE/MP.WH/2/Add.3, EUR/06/5069385/1/Add.3, Report of the meeting of the Parties to the Protocol on Water and Health to the 1992 Convention on the Protection and Use of Transboundary Watercourses and International Lakes on its first meeting, Add. Decision I/2. 3 July 2007.

lower level (either regionally or by bilateral agreements),[24] establishing the procedural obligation for cooperation besides substantive obligations for States (Wouters – Leb, 2015). It seems that the UN, in terms of hard law, simply forgot about water resources in the 21st century by "delegating" power and responsibility to "watercourse States". Even the entry into force of the 1997 Convention took almost two decades, (Rieu-Clarke – Loures, 2009) in spite of the benefits it brought into international water law (Salman, 2007). Some of these watercourse States have done remarkably well, even if the path for effective water management was/is far from smooth: despite its shortcomings, the innovative features and the importance of the European Union's achievements in this field are unquestionable (Kaika, 2010).

Though the UN seemingly ignored hard law making for water management, we should still consider its activity, as mentioned above, on other fields related to water: environmental protection and human rights.

3.2. Environmental protection

Opening the UN Treaty Collection's "Environment" chapter,[25] the 1997 Convention on the Law of the Non-Navigational Uses of International Watercourses appears again as a main treaty adopted under the UN, dealing exclusively with one natural resource, water. However, it seems that the UN's activity was slightly more intensive in environmental protection in the 21st century: several treaties were adopted to protect the environment. Considering water protection by substantive rules, the picture is not quite different than it was after the adoption of the 1997 Convention on the Law of the Non-Navigational Uses of International Watercourses.[26]

But as for obligations of procedural nature: several treaties adopted under the aegis of the UN aim to protect the environment by establishing procedural

[24] UN GA: A/RES/51/229 Convention on the Protection and Use of Transboundary Watercourses and International Lakes. 21 May 1997. Entry into force: 17 August 2014. Arts. 3-4.

[25] UN Treaty Collection: Chapter XXVII

https://treaties.un.org/Pages/Treaties.aspx?id=27&subid=A&clang=_en (Downloaded 20 02 2020).

[26] All three treaties mentioned in water management section are relevant for environmental protection.

rules for their State parties, for example obligation to register, or to provide information:

- Among multilateral treaties open for signature by all Member states of the UN the Stockholm Convention on Persistent Organic Pollutants[27] aims to protect human health by limiting or eliminating certain pollutants.
- Though the Convention on Environmental Impact Assessment in a Transboundary Context[28] is not the achievement of the 21st century, after 2000, a protocol was adopted to complement its rules: the Protocol on Strategic Environmental Assessment to the Convention on Environmental Impact Assessment in a Transboundary Context.[29] According to this treaty, the Parties are obliged to base their plans and programmes, which are prepared for (among others) water management, on a strategic environmental assessment.[30]
- While the Aarhus Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters[31] is open for signature only for the members of the Economic Commission for Europe,[32] the protocol on Pollutant Release and Transfer Registers to the Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters[33] is open for all member states of the UN.[34] The latter's objective is *"to enhance public access to information through the establishment of coherent, integrated, nationwide pollutant release and transfer registers (PRTRs) [...], which could*

[27] Stockholm Convention on Persistent Organic Pollutants, Stockholm, 22 May 2001, Entry into force: 17 May 2004.
[28] Convention on Environmental Impact Assessment in a Transboundary Context, Espoo, 25 February 1991, 10 September 1997.
[29] Protocol on Strategic Environmental Assessment to the Convention on Environmental Impact Assessment in a Transboundary Context, Kiev, 21 May 2003, Entry into force: 11 July 2010.
[30] Protocol on Strategic Environmental Assessment to the Convention on Environmental Impact Assessment in a Transboundary Context, Kiev, 21 May 2003, Entry into force: 11 July 2010. Article 4, Paragraph 2. Annex I, point 12. and Annex II, point 3. further specify the programs require assessment.
[31] Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters, Aarhus, 25 June 1998, Entry into force: 30 October 2001.
[32] Ibid. Art. 17.
[33] Protocol on Pollutant Release and Transfer Registers to the Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters, Kiev, 21 May 2003, Entry into force: 8 October 2009.
[34] Ibid. Article 24.

facilitate public participation in environmental decision-making as well as contribute to the prevention and reduction of pollution of the environment."[35] The protocol aims to protect all natural freshwater resources, and it puts special emphasis on waste-water treatment and management. Here, we also have to mention that even if an analysed international treaty has a regional scope, the examination is necessary, since it was adopted under the aegis of the UN and some of them do have global relevance, see for example the Aarhus Convention (Morgera, 2005).[36]

- Though not yet in force, the Protocol on Civil Liability and Compensation for Damage Caused by the Transboundary Effects of Industrial Accidents on Transboundary Waters to the 1992 Convention on the Protection and Use of Transboundary Watercourses and International Lakes and to the 1992 Convention on the Transboundary Effects of Industrial Accidents[37] will establish even more procedural obligations for the Parties.

3.3. Human Right to Water and Sanitation

Undoubtedly, the biggest evolution did happen in human rights. However, as this analysis will show, this development is rather program-like and not legally binding the most part. Though the original purpose of the paper is to collect international treaties in water law, as mentioned above, the human right to water and sanitation seems to be a remarkable exception. It does not mean that the human right to water is a non-recognized human right. Similarly, it is not true that the promotion and protection of this human right has no source in a legally binding document. However, the development of this particular human right happened "backwards" compared to the majority of human rights. The carrier of the majority of human rights started in national documents and elevated onto international level first with legally non-binding

[35] Ibid. Article 1.

[36] Another example is the 2018 Escazú Agreement which is considered to represent a historical step of this subject matter, though not yet in force. Regional Agreement on Access to Information, Public Participation and Justice in Environmental Matters in Latin America and the Caribbean, Escazú, 4 March 2018, not yet in force.

[37] Protocol on Civil Liability and Compensation for Damage Caused by the Transboundary Effects of Industrial Accidents on Transboundary Waters to the 1992 Convention on the Protection and Use of Transboundary Watercourses and International Lakes and to the 1992 Convention on the Transboundary Effects of Industrial Accidents, Kiev, 21 May 2003, Not yet in force.

documents to become enforceable via international conventions. All human rights of the Universal Declaration of Human Rights[38] can serve as examples.

The human right to water however, as explained later, was already protected by several international conventions, before it became a focus of interest in the UN as a program or a goal to be achieved. As the General Comment No. 15. of the Committee on Economic, Social and Cultural Rights (hereinafter CESCR) explained: *"Article 11, paragraph 1, of the Covenant specifies a number of rights emanating from, and indispensable for, the realization of the right to an adequate standard of living "including adequate food, clothing and housing". The use of the word "including" indicates that this catalogue of rights was not intended to be exhaustive. The right to water clearly falls within the category of guarantees essential for securing an adequate standard of living, particularly since it is one of the most fundamental conditions for survival."*[39] From this explanation it follows that the human right to water exists, entitles, and therefore it should be protected. Following the process of the CESCR, researchers pointed out certain treaties as sources of a State obligation to protect the human right to water (Szappanyos, 2013). However, the majority of these treaties did not explicitly mention the human right to water, thus, the promotion and protection of this human right needed help. The help came from within the UN in several forms, all in the 21st century. We should list the above-mentioned documents announcing MDGs and SDGs. In 2008 the Human Right Council (hereinafter HRC) appointed a Special Rapporteur on the human rights to safe drinking water and sanitation[40] and renewed the mandate continuously since then.[41] Disputably, one of the most important steps in the development of the human right to water and sanitation was the UN GA resolution on the right to water and sanitation in 2010, which explicitly recognized them as human rights.[42]

After this non-binding detour to clarify the international history of the human right to water and sanitation, if we try to follow the original purpose

[38] UN GA: A/RES/217A Universal Declaration on Human Rights, 8 December 1948.
[39] CESCR: E/C.12/2002/11 General Comment No.15: The Right to Water (Arts. 11 and 12 of the Covenant), 20 January 2003.
[40] Human Rights Council: Resolution 7/22. Human rights and access to safe drinking water and sanitation.
[41] UN Office of the High Commissioner of Human Rights. https://www.ohchr.org/EN/Issues/WaterAndSanitation/
SRWater/Pages/SRWaterIndex.aspx (Downloaded 28 01 2020).
[42] UN GA: A/Res/64/292 The human right to water and sanitation, 3 August 2010.

of this paper, we need to collect and analyse conventions, which protect the human right to water implicitly or explicitly and were concluded after 2000. Based on the UN Treaty Collection's human rights section, there is only one convention, containing a list of human rights to be protected, to be mentioned here: the Convention on the Rights of Persons with Disabilities.[43] This convention explicitly obliges States to ensure "access [...] to clean water services."[44] If we compare this rule with the definition of the right to water and sanitation given by the CESCR,[45] it is obvious that the extent of the State obligation in the Convention is more limited than in the General Comment No.15. Still, an undebatable merit is the explicit obligation.

Several treaties were adopted, which do not list human rights to be protected, but enable the more effective enforcement of already existing State obligations. Thus, if the human right to water and sanitation is either explicitly or implicitly included in the conventions, which are complimented by these monitoring tools (in the legal form of optional protocols), its enforcement becomes more efficient. The following optional protocols are attached to conventions implicitly or explicitly protecting the right to water and sanitation:

- Optional Protocol to the Convention on the Rights of Persons with Disabilities:[46] this international treaty establishes a communication procedure for more effective monitoring of the rights protected by the Convention, including the right to water.
- Optional Protocol to the International Covenant on Economic, Social and Cultural Rights:[47] as the Covenant is identified as the primary sources of the human right to water (GC No. 15.) this optional protocol institutionalizing individual communications, inter-State communications and even inquiry procedures, seems to be a big step toward effective enforcement of several rights, including the right to water. However, it is worth mentioning that currently it only has 24 Parties.[48]

[43] UN GA: A/RES/61/106 Convention on the Rights of Persons with Disabilities. 13 December 2006
[44] Ibid. Art. 28, Para. (2), point a).
[45] CESCR: General Comment No.15, point 2.
[46] UN GA: A/RES/61/106 Optional Protocol to the Convention on the Rights of Persons with Disabilities, 13 December 2006. Entry into force: 3 May 2008.
[47] UN GA: A/RES/63/117 Optional Protocol to the International Covenant on Economic, Social and Cultural Rights. 10 December 2008. Entry into force: 5 May 2013.
[48] UN Treaty Collection, Status of Treaties. https://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mtdsg_no=IV-3-a&chapter=4&clang=_en (Downloaded 31 01 2020).

- Optional Protocol to the Convention against Torture and Other Cruel, Inhuman or Degrading Treatment or Punishment:[49] some typical violations of the human right to water are related to circumstances and punishments in prisons and detention centres (Szappanyos, 2013: 85). The Protocol establishes a mandate for a Subcommittee on Prevention for "regular visits [...] to places where people are deprived of their liberty, in order to prevent torture and other cruel, inhuman or degrading treatment or punishment", making monitoring more effective.[50]
- Optional Protocol to the Convention on the Rights of the Child on a communications procedure:[51] as the Convention on the Rights of the Child[52] explicitly recognized the right to water for children in Article 24, the Optional protocols related to it should be examined. Neither Protocols regulating children's right under special circumstances[53] add to Article 24 of the original convention, but the Optional Protocol of 2011 establishing new monitoring tools, communication procedures, and inquiry procedure, does in the sense of more effective enforcement.

4. The next few years: summary, prediction and conclusion

From the collection of documents and their analysis above two observations follow: a) the activity of the UN is quite hectic in regulating issues related to water, b) though the activity manifested in public international hard law is hectic, the UN seemed to consider water issues as a priority for the last 20 years.

[49] UN GA: A/RES/57/199 Optional Protocol to the Convention against Torture and Other Cruel, Inhuman or Degrading Treatment or Punishment. 9 January 2003. Entry into force: 22 June 2006.
[50] Ibid. Article 1.
[51] UN GA: A/RES/66/138 Optional Protocol to the Convention on the Rights of the Child on a communications procedure. 19 December 2011. Entry into force: 14 April 2014.
[52] UN GA: A/RES/44/25 Convention on the Rights of the Child. 20 November 1989. Entry into force: 2 September 1990.
[53] Optional Protocol to the Convention on the Rights of the Child on the involvement of children in armed conflict, New York, 25 May 2000, Entry into force: 12 February 2002. Optional Protocol to the Convention on the Rights of the Child on the sale of children, child prostitution and child pornography, New York, 25 May 2000, Entry into force: 18 January 2002.

4.1. Water management

The UN's remarkable achievement in discussing, promoting effective water management is unquestionable. Same is true for its intensive efforts to provide policy tools for governments for developing their water management policy. Though it seems that water management is in the forefront of UN thinking, still, the responsibility to actually regulate water management is mainly left for States. Since, according to studies, States prefer arranging the use of their freshwater resources in bilateral treaties at the moment (Zawahri, 2011) it is unlikely to change in the near future. In the last two decades, despite its efforts to discuss and promote water issues, the UN did not attempt to replace or improve its international convention on water management. We should add: the late entry into force of the main convention adopted under the UN might have discouraged the organization.

4.2. Environmental protection

The UN's focus on environmental protection is twofold: a) it creates a list of substances which are considered dangerous to human health and tries to limit these in natural resources, including water; and b) it establishes procedural obligations for States to register the use of such substances, provide information on environmental protection, and to base their programs related to natural resources, including water, on profound assessment. Based on the analysis it seems that the UN is more active in the latter, at least what concerns water issues. The conventions, which provide bases for the examined protocols were all adopted at the end of the previous century; after 2000 the obligations were only concretized or slightly extended. Several treaties deposited with the Secretary-General of the UN in the field of environmental protection are not yet in force.

In international environmental law the "proliferation of procedural obligations in treaty and other non-binding instruments" (Okowa, 1997: 276) is obvious from the end of the last century and it is a continuing trend. Despite the imperfection of treaties establishing procedural obligations, "[A] s independent legal duties, procedural obligations are likely to influence the behaviour of even the most reluctant States" (Ibid., 335).

4.3. Human Right to Water and Sanitation

In the 21st century, the UN's dedication to the protection and promotion of the human right to water seems to be exceedingly consistent. This activity manifested in both program-like documents without legal binding force and in international treaties. If we take a closer look to these latter, we may see however the limited change they were able to bring into the recognition of the human right to water and sanitation. In fact, the recognition of the right to water and sanitation did not surpass political declaration level and the list of implicit and/or explicit legally binding sources of this right was not significantly extended (except for the Convention on the Rights of Persons with Disabilities) in the last two decades. The level of protection, the extent of enforcement options however did change significantly. Several optional protocols attached to implicit and explicit sources of the right to water now allow individuals to turn to the respective human rights bodies under the aegis of the UN with complaints on the violation of their human rights.

Based on the summary above, our *prediction:* all fields of water law will continue to evolve, mostly because of the permanent environmental pressure. Also, the UN will keep its focus on water-related issues. The end date of the SDGs is 2030, the UN has already made the commitment to keep water issues in focus at least until then. In terms of establishing or extending legal obligations for States to cooperate in water management, protect water as a natural resource, and protect the human right to water and sanitation however, the trend seems to be different and less successful. Based on the experiences of the last 20 years, it seems that States have only a program-like, political level of common understanding on the importance of water, for example, the general recognition of the right to water and sanitation in legally binding documents is still missing and unlikely to come to life in the near future; cooperation in water management is still the question of political negotiations and not guided by the necessity to secure the preservation of water resources at all cost for all mankind. Still, the means of enforcement are growing, which is indeed not a development to be ignored or underestimated.

As for *conclusion:* climate change and a growing number of other problems related to water resources will undoubtedly not let the UN "forget" about "water law" in the 21st century, and beyond.

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Péter Kacziba

HEGEMONY OR PARTNERSHIP?
TURKEY'S REGIONAL WATER DIPLOMACY AND THE CASE OF CYPRUS[1]

1. INTRODUCTION

The contemporary Eastern Mediterranean is undergoing significant geopolitical paradigm shifts. Dynamics of armed conflicts, demographic expansion, migration, environmental changes, hydrocarbon discoveries and technological developments all pose enormous challenges in the region (Florensa, 2018: 5). In addition to these more apparent tendencies, the region's security nexus is also troubled by the growing pressure of food and water scarcities. As vital elements to human life, shortages of food and water have significant impacts on regional relations and may escalate tensions between countries, societies and domestic communities.

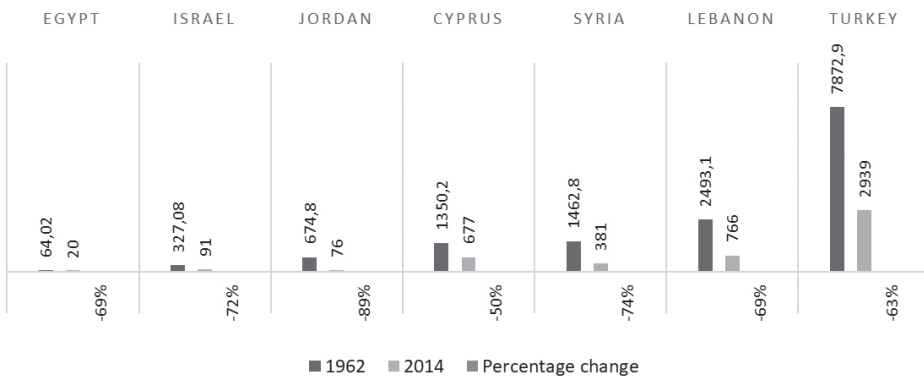
In a region heavily dependent on agricultural import, food supplies and prices of foodstuffs have massive local and regional importance. Access to food drives socioeconomic conditions, influences political attitudes, and impacts electoral support and public morale. In extreme circumstances of food scarcity, the effects may be more devastating and could fuel intrastate tensions or interstate conflicts (Gibárti, 2019: 160-164). According to the OECD, at the end of 2017, over 30 million people in the broader Middle East needed assistance to satisfy their basic food needs (OECD, 2018: 87). Besides armed conflicts and weather-related production shocks, the fragile situation of regional food security was further complicated by decreasing production rates and increasing demands (Glied, 2009). While elsewhere the demand growth began to weaken in the past decade, the broader Middle East is still among those regions where the increasing population drives up the level

[1] This research project was supported by the European Union. EFOP-3.6.3-VEKOP-16-2017-00007 – Young researchers from talented students – Fostering scientific careers in higher education.

of food consumption. At the same time, except for few commodities, the region's agricultural import-dependence is slowly but steadily increasing (OECD, 2018: 59-66). Consequently, medium and long-term food security will be significantly shaped by external actors and will rest on recognizing the necessity of sustainable production.

The development of sustainable food production is based on another vital component of the security nexus: the level of access to water resources. Regional prospects are not ideal in this case either. According to Allan (2002), the Middle East and North Africa became water insecure around 1970, from this period onwards the region faces the persistent challenge to provide sufficient quantity of water for food production and consumption. As a result, except for Turkey, Eastern Mediterranean countries are all subjected to a higher or lower level of water scarcity, and they are also among the countries with the highest level of water stress. Majority of the regional states are far below the 500 m^3 per capita per year threshold for absolute water scarcity, while an average citizen in the region consumes about 1350 m^3 water annually (Keulertz – Allan, 2019: 157).

Figure 1. Renewable internal freshwater resources per capita (cubic meters)

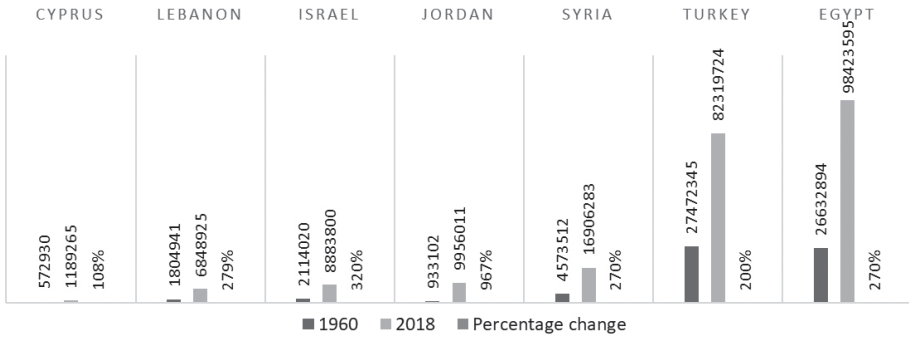


Source: World Bank, https://data.worldbank.org/indicator/ER.H2O.INTR.PC?end=2015&start=2014 (Downloaded 24 02 2020).

The contradiction between available resources and per capita consumption is further complicated by the growing population and the increasing water demand. The total population of the seven Eastern Mediterranean countries

(without Greece, Gaza Strip and the West Bank) grew by an average 345% between 1960 and 2018 which has driven up the level of total water withdrawal by an approximate average of 88% between 1970-2015.[2] The increased level of consumption significantly affected per capita resources which decreased by a regional average of -69% between 1962 and 2014. Estimations show that the decreasing trend will continue in the future. According to Droogers, water supply in the broader region will shrink by 12%, while demand will increase over 50% by 2050 (Droogers, 2012: 3101). Climate-related changes further supplemented these demographic and economic effects. Even though the average annual precipitation level has increased by 10% between the periods of 1961-1990 and 1991-2016, the average annual temperature has climbed up by 4% in the corresponding period. The increase was particularly detectable between the months of May and October: in the past 25-30 years, the average temperature of the broader summer season climbed up by 1°C.[3]

Figure 2. Population growth in the Eastern Mediterranean (1960–2018)



Source: World Bank, https://data.worldbank.org/indicator/SP.POP.TOTL?name_desc=false (Downloaded 24 02 2020).

Although there is a clearly visible negative trend affecting the whole region, water scarcity and water stress influence Eastern Mediterranean actors differently. Limited and slowly decreasing freshwater resources are

[2] World Bank: Annual freshwater withdrawals, total, 1970-2015, https://data.worldbank.org/indicator/ER.H2O.FWTL.K3?end=2015&most_recent_value_desc=false&start=1970&view=chart (Downloaded 22 02 2020).

[3] World Bank: Climate Change Knowledge Portal, https://climateknowledgeportal.worldbank.org/watershed/161/climate-data-historical (Downloaded 24 02 2020).

unevenly distributed in the region favouring mainly those who have larger territory, continental climate zones, major river basins and/or financial means to construct expensive hydrological facilities and technologies. According to Zeitoun and Warner (2006), these so-called hydro-hegemons have dominant roles in transboundary water settings and may shape water policies on the national, basin, regional and global levels (Conker – Hussein, 2020: 105-106). At the other end of water challenges, some states face very different outlooks. These countries suffer from both domestic scarcity and water policies of powerful neighbours, both determine not only the quantity of water but political, economic and social struggles too. Negative trends such as water stress, growing demand, increasing exploitation, and climbing temperature impact these countries more than their powerful counterparts and cause a higher level of socioeconomic difficulties (Engelke et al., 2017: 2). Hence, in addition to geographic and environmental characteristics, asymmetric power relations and economic capabilities also influence the hydrological conditions of the region: countries with more immense geopolitical weight may play a significant role in regional water dynamics, while smaller and weaker states have limited opportunities to maintain domestic supplies, to follow independent water strategies or find external resources.

The regional role of Turkey and Cyprus, and the relations between them, seem to be perfect examples of such asymmetric hydrological constellations. Although it suffers from negative trends such as population growth, increasing demand or climate change, Turkey still enjoys a relatively favourable position and could be labelled as one of the very few countries in the region that still have sufficient water resources. Ankara has exploited these hegemonic opportunities throughout the previous decades: constructed vast hydrological projects, used its deterrence potential in water disputes and proposed comprehensive plans to supply regional water stressed countries. Cyprus, on the other hand, faces severe hydrological conditions such as limited supply options, overexploited aquifers, seawater intrusion, and increasing seasonal consumption by the growing agricultural and tourism sector.

Given the geographical proximity and relative water abundance, Turkey would be an ideal option to ease water stress in Cyprus. Technological, financial and water resources are all available to establish such cooperation, which, of course, would not be able to provide water supply for the whole

island, but could supplement existing capacities with significant import potentials. Nevertheless, opposing views have emerged on the possibilities of water cooperation: although Ankara has signalled that under certain conditions it would be willing to supply water for both communities, Greek Cypriots and Turkish Cypriots have taken contrasting positions on the potential outcomes. This paper seeks to analyse these controversial positions and attempts to outline Turkey's water strategies in Cyprus. It examines what kind of hydrological power potential Turkey has in Cyprus and how hegemonic strategies may exploit pressing water scarcity in the case of Greek Cypriots and Turkish Cypriots. Besides determining characteristics of asymmetric power relations, the study will also explore the dilemmas Cypriots face, and the answers they provide when resisting water scarcity and external influence.

2. DOMESTIC CONDITIONS AND WATER DIPLOMACY IN TURKEY

Turkey's water policy is defined by the country's strategic goals and interests. In the domestic sphere, Ankara attempts to utilise water development projects for reducing social and economic inequalities and increasing internal energy production. These goals require the development of large hydrological projects aiming to exploit natural resources. On one hand, the construction of dams, irrigation networks, canals, pumping stations and hydroelectric plants may help local economies, support agricultural production, diversify energy production and consumption. On the other hand, the projects often endanger the natural environment of river basins, destroy the habitats of indigenous species, while construction sites transform the life and livelihood of locals. Beyond the local impacts, these domestic development projects also have international and regional implications. The effects and consequences of these cases are controversial too. Turkey's increasing ability to become a regional water hub and export freshwater to neighbours can be considered as a positive opportunity that could help to supply a drying region. In contrast, the decrease of transboundary water flow may serve as a source of conflict among regional actors and, thus, require the development of consensual water diplomacy and transboundary hydrological cooperation.

Turkey's domestic and regional hydrological strategies are based on relatively rich water resources. Although Turkey is still far beyond the globally significant water-rich countries, with its 26 hydrological basins and a domestic lake surface of 10,400 km^2, it enjoys a more comfortable position than other countries in the region (Tigrek-Kibaroglu, 2011: 30-31). The privileged position may be demonstrated by several examples. In 2014, for instance, the country's per capita renewable internal freshwater resources have accumulated around 2932.2 m^3 compare to the 91.2 m^3 measured in Israel or the 19.9 m^3 calculated in Egypt.[4] Rivers, lakes and reservoir capacities largely contribute to these resource quantities. The two most important river basins are Euphrates and Tigris, together account for 28.5% of Turkey's national surface flow (Tomanbay, 2000: 100). The country also has 120 natural and 579 artificial lakes while there are 681 dams, and about 10% of them is capable of generating hydroelectricity (Ibid.). Water potential is supplemented by an annual average of 592 mm perception which is lower than the global average of 800 mm but cca. 63% greater than the average quantity of the broader[5] Eastern Mediterranean region.[6]

Although resource capacities and potentials provide an advantageous regional position, rapid demographic boost, growing agricultural and industrial demands as well as negative effects of climate change all press Turkey to increasingly exploit its water resources. For Turkey, the most important water-related challenge is population growth generating higher demand and exploitation. Between 1992-2017, the country's population has increased by 46% which eventually pushed the total water withdrawal up by 86%. Even though the intensity of population growth will slightly decrease, it is expected that Turkey's population will continue to rise in the short-run and reach 90 million around 2027-2030.[7] Beyond the natural birth rate, migration and refugee influxes put additional pressure on water demand and increase domestic supply need by the water withdrawal of at least 3.5 million persons.

[4] World Bank: Renewable Internal Freshwater Resources per Capita, https://data.worldbank.org/indicator/ER.H2O.INTR.PC?end=2014&locations=CY-TR-EG&start=1962+ (Downloaded 24 02 2020).

[5] Including Greece, Turkey, Cyprus, Syria, Lebanon, Israel, Jordan, Egypt and Libya.

[6] FAO: Long-term average annual precipitation in depth (mm/year), 2013-2017, http://www.fao.org/nr/water/aquastat/data/query/results.html (Downloaded 14 03 2020).

[7] STATISTA: Turkey: Total population from 2014 to 2024, https://www.statista.com/statistics/263753/total-population-of-turkey/ (Downloaded 24 03 2020).

In addition to population growth, agriculture and energy production have also significantly increased water consumption and demand. Between 1992 and 2017, the agricultural sector's demand has increased by nearly 119%. The rise of demand had an impact on surface and subsoil resources and has required the construction of more than 9000 irrigation projects between 1950-2012.[8] The related constructions of dams, canals and pumping stations significantly altered natural water systems, but, at the same time, allowed the Turkish farmers to irrigate about 13.5% of Turkey's total agricultural land in 2014.[9]

Increase in population and agricultural production have also generated a higher energy demand which is (and was) a major challenge for a country that lacks significant quantities of energy resources. The growth is perfectly demonstrated by the statistics of per capita electricity consumption that has grown by 2984.3% between 1960 and 2014.[10] Hydroelectricity production, increasing from 1990 ktoe (1990) to 5138 ktoe (2018), became a crucial part of the domestic energy sector, especially in those regions where dams and hydroelectric developments allowed the Turkish state to exploit the natural power of rivers.[11]

All in all, population growth, rising agricultural demand, growing production of hydroelectricity as well as the consumption of additional sectors have negatively influenced available resources: renewable internal freshwater per capita resources of Turkey shrunk by 63% between 1960 and 2018, as indicated in Figure 1.

These examples mentioned above demonstrate the domestic need for water-related development projects and explain the implementation of large-scale programmes such as the Southern Anatolia project. Domestic projects, however, have had regional implications as well. On the one hand, downstream riparians of the Euphrates and the Tigris rivers have long protested against the

[8] Republic Of Turkey, The Ministry of Food Agriculture and Livestock: Agricultural Water Use and Productivity in Turkey, http://www.comcec.org/en/wp-content/uploads/2016/05/Turkey-3.pdf (Downloaded 12 03 2020).

[9] World Bank: Agricultural irrigated land – Turkey, https://data.worldbank.org/indicator/AG.LND.IRIG.AG.ZS?locations=TR&view=chart (Downloaded 10 03 2020).

[10] World Bank: Electric power consumption –Turkey, https://data.worldbank.org/indicator/EG.USE.ELEC.KH.PC?locations=TR&display=graph--%3E (Downloaded 10 03 2020).

[11] IEA: Key energy statistics, 2018, Turkey, https://www.iea.org/countries/turkey#reports (Downloaded 10 03 2020).

Turkish developments and argued that Turkey's hydrological constructions and irrigation projects dramatically decrease water flow to Syria and Iraq. On the other hand, Turkey has begun to see these domestic projects as possibilities to expand its regional influence and used them to gain strategic hydrological position. The Southern Anatolia project is again a classic example to prove this strategic goal. With its 22 dams, 19 hydropower plants and gigantic irrigation networks, the project provided a strategic regional advantage to Turkey. It has decreased Turkey's energy dependence by creating large hydropower capacities; expanded the efficiency of the country's agricultural sector; and, maybe more importantly, provided a massive infrastructure for Ankara to effectively control and influence the water flow of the Euphrates and Tigris basins (Lechner, 2019: 41-42). The probable impacts of potentially possible water cut-offs were perfectly demonstrated in 1990 when Turkey had decided to hold back the flow of the Euphrates and filled up the 817 km^2 large Ataturk dam.

To further expand its strategic positions, Turkey has also developed a proactive water diplomacy which intends to promote Turkish-led water development projects and various ways to export water from Turkey to the Eastern Mediterranean and Middle Eastern countries. The strategy attempts to mimic the foreign policy of successful energy exporter states and tries to utilise domestic water resources as vital tools for creating commercial and political advantages. In case of success, the strategy would help to increase Turkey's regional significance, compensate for enduring energy weaknesses, and expand the Turkish sphere of influences through the development of vital links to water stressed neighbours.

The first large-scale water transfer project of the strategy was introduced in 1986 during the premiership of Turgut Özal. The so-called Peace Pipeline Project has proposed the transferring of approximately 10 million m^3 water per day from Southern Turkey to the Middle East countries and offered to supply regional partners in Syria, Jordan and Saudi Arabia. Although the construction costs were estimated to be relatively high, about $8 billion, the proposed pipeline routes intended to involve major cities with vast urbanization potentials such as Aleppo, Homs, Amman, Medina and Jeddah (Rende, 2007: 172).

Beneficial or not, the proposal was rejected by the potential partners. Arab states, despite the fact that they were already struggling with severe water

shortages, have not seen the Turkish plan as a mutually beneficial commercial partnership. Instead, they considered it as a possible way to increase Turkey's regional influence and generate dependent ties between Ankara and the involved states. High construction costs had also reduced enthusiasm and pushed regional hydrological investments towards desalination technology that has proved to be a relatively cheaper and a more independent solution (Gruen, 2007: 158-159).

Unlike the Peace Pipeline Project, the Manavgat Project, negotiated between 1994 and 2006, would have provided more diversified export opportunities, this time to Israel. The project proposed three different export options: the construction of an underwater pipeline from the Manavgat river to Ashkelon; towing water bags filled with freshwater via ships; and the use of converted oil tankers. After lengthy negotiations, Israel has decided to choose the last option and agreed to import 50 million m^3 water annually via tanker ships. By 2006, Turkey had invested about $147 million in the project and developed many of the necessary infrastructures including pipelines, storage tanks, water treatment facilities and loading terminals (Ibid., 161-162). Despite these investments, the Manavgat plan eventually had to share the fate of the Peace Pipeline Project. In 2006, the Israeli side temporarily terminated the agreement, arguing that transport by tanker ships would no longer be financially feasible due to rising oil prices (Szwedo, 2019: 146-147).

Failure of the Peace Pipeline and Manavgat Projects demonstrates the high level of regional suspicion towards Turkey. Unilateral hydrological decisions, domestic development projects and water-related incidents have all contributed to the evolution of this mistrust. It should be stated, however, that Ankara's regional water policy and behaviour cannot be labelled as aggressive. Undoubtedly, the country has done its utmost to protect its national interests, it has often side-lined the interests of lower riparians and has developed a somewhat controversial water diplomacy. This water diplomacy, however, is proactive rather than aggressive. As mentioned earlier, Turkey's water diplomacy attempts to mimic the strategies of powerful energy exporter states. Nevertheless, Ankara was reluctant to copy the aggressive behaviour of certain energy exporters and did not use its full-scale potentials to force or compel potential regional partners. As the Peace Pipeline Project has demonstrated: Turkey has certainly attempted to utilize its water resources,

but potential partners were able to reject the Turkish lobby and could say no to the controversial proposals.

Rejections and denials by potential regional partners demonstrate the limits of Turkish water diplomacy. Security situations, geopolitical and sectarian fault lines as well as anti-Turkish sentiments all weaken Turkey's ability to lead regional water development projects. Ankara also needs to face cooperative actions and policies of the Arab League which is suspicious towards the Ankara led-development projects in the member states and, at the same time, seeks to undermine potentials of Turkish-Israeli hydrological cooperations (Gruen, 2007: 158). In this environment, the Turkish water diplomacy needs to navigate between opposing interests, regional mistrust and suspicion.

The 'Peace Water Project', connecting Turkey with North Cyprus with a water pipeline, attempts to address and reduce these weaknesses. The project, completed in 2015, wished to prove Turkey's capability to handle sophisticated technological challenges of construction and supply sufficient volume of water for the whole island, including the southern part. The 107 km long pipeline from the Alaköprü Dam in Turkey to the Geçitköy Dam in North Cyprus has developed advanced technologies to cross the 80 km section of the Mediterranean Sea and now it is able to pump about 75 million m^3 water per year (Gungor, 2016: 1). The following sections of the study will further describe details of the project; however, it is already important to emphasize that the 'Peace Water Project' demonstrated the potential positive outcomes as well as the risks of Turkish water diplomacy. First, the project has proved that Turkey is able to construct the infrastructural background of its water trade and could overcome the obstacles created by distance and terrain. Secondly, the project has signalled regional potentials of the Turkish water diplomacy which can gain further importance in the following decades along with growing challenges of regional water scarcity. Thirdly, emerging debates between Turkey and Northern Cyprus over management issues show the possible political risks of water trade projects. In the long run, these political risks could easily become existential threats to those who begin to depend on Turkish water resources. Fourthly, vehement Turkish control over Turkish Cypriot authorities will not reduce but increase regional suspicion towards Ankara-led development projects and (self)torpedo the positive

effects of technological successes. Consequently, the 'Peace Water Project' is an important pilot programme for potential regional water cooperation and may even influence the future of Turkish water diplomacy. Beyond that, however, the project largely impacts Cyprus and all of those geopolitical issues that hinder the island's reunification process. These geopolitical affairs are further complicated by the construction of the pipeline that has generated a vital water supply option for the drying island but, at the same time, increased Turkey's influence and deepened the mistrust between Greek Cypriots and Turkish Cypriots. Thus, before explaining the details and outcomes of the 'Peace Water' pipeline project, the domestic situation in Cyprus should also be summarized.

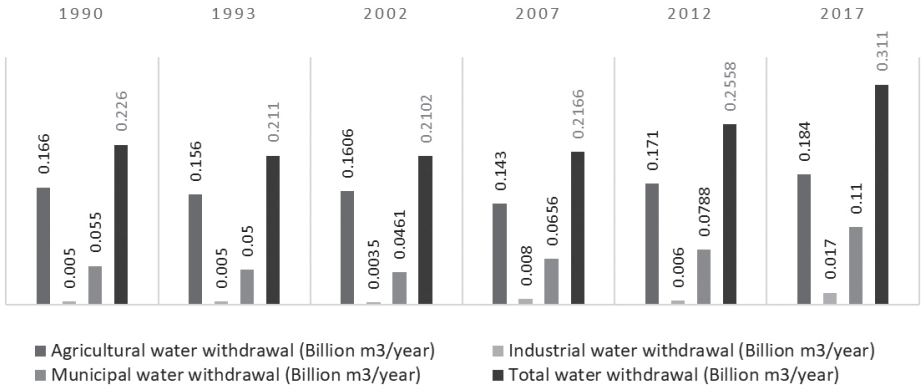
3. WATER SCARCITY AND LIMITED SUPPLY OPTIONS IN CYPRUS

Both hydrological and geopolitical circumstances influence water strategies in Cyprus. Unlike Turkey, Cyprus has experienced severe water shortages in the previous decades and had to face one of the highest water stress level in Europe. Scarcity was caused by limited resource and supply options, high level of exploitation, effects of climate change and lack of island wide cooperation (Sofroniou – Bishop, 2014: 2904-2905). As indicated in Figure 1, per capita renewable internal freshwater resources had declined by 50% between 1962-2014, leaving about 677 m^3 water for each citizen. The low rate is largely the result of unsustainable withdrawal trends: with a water exploitation index around 67% in 2017, Cyprus suffers from the overexploitation of ground- and surface water resources.[12] According to Sofroniou and Bishop, water exploitation grew from 36.3 million m^3 in 1991 to 44.8 million m^3 in 1997, and by 2005, to 73.3 million m^3 (Ibid.). The dramatic rise was caused by several factors including population growth, more extensive agriculture production, higher household consumption and the massive boost in the tourism sector. As Figure 2 outlines, the population of Cyprus increased by 108% between

[12] Eurostat: Water Exploitation Index, https://ec.europa.eu/eurostat/databrowser/view/t2020_rd220/default/table?lang=en (Downloaded 14 03 2020).

1960 and 2018, while the number[13] of immigrants and temporary workers have grown from 3230 in 1980 to 81,875 in 2019.[14] Skyrocketing water demand was also impacted by the tourist sector which, in the Southern part of the island, hosted 348,530 tourists in 1980, 2,470,063 in 2005 and 3,976,777 in 2019.[15] Besides the tourism sector, the regular seasonal summer peak of water withdrawal is also determined by irrigation. As Figure 3 demonstrates, the agriculture sector had by far the largest water demand between 1990 and 2017, and it was responsible for an average of 69% of total water use during the indicated period.

Figure 3. Water withdrawal by sector in the Republic of Cyprus



Source: FAO, http://www.fao.org/nr/water/aquastat/data/query/results.html (Downloaded 24 04 2020).

The negative consequences of overexploitation were further exacerbated by a significant decrease in rainfall, which is calculated to have decreased by an average of 17% during the course of the 20th century (Shoukri – Zachariadis, 2012: 22). Similar consequences of climate change will continue to be a major concern in the future. According to the estimations of the World Bank, the average temperature in Cyprus is assumed to increase by 3-4 °C

[13] The stated numbers only apply to the Southern parts of the country.
[14] CYSTAT: Movement of Travellers, 1980-2019, https://www.mof.gov.cy/mof/cystat/statistics.nsf/services_71main_en/services_71main_en?OpenForm&sub=1&sel=2 (Downloaded 14 03 2020).
[15] Ibid.

by 2050.[16] Heat wave duration will also extend in the near future, generating extremely hot periods for more than four months per year, particularly in the central areas of the island (Mason – Bryant, 2017: 13-14). Nonetheless, coastal areas will not have much better prospects either. Deterioration of freshwater quality through saltwater intrusion is already an acute challenge for many coastal municipalities, but the potential rise of sea level will generate an even more difficult, or nearly impossible, task to protect natural aquifers and groundwater resources.

Although administrations both in Southern and Northern Cyprus have developed various responses to address these contemporary and future hazards, increasing evaporation and reducing supplies maintain fragile water security in the island (Zachariadis, 2010: 780). Official responses and reactions can be divided into two broader and interrelated categories: water-saving measures and efforts to extend supply options. Both categories intend to expand the volume of available water resources and aim to secure that water requirements meet all the residential, agricultural, industrial and environmental demands.

3.1. Water-saving measures

Water-saving measures have included significant efforts from construction of dams, water treatment plants, and pumping stations to protect rivers, rationalize irrigation quantities and change unsustainable habits. The dam infrastructure is particularly well-developed in the government-controlled areas where the number of water reservoirs reached 108 in 2019 with a storage capacity of 331 million m^3.[17] Although ongoing development projects will increase the already impressive storage capacity, the efficiency of reservoirs largely depends on the amount of annual rainfall. Between 1987 and 2019, the average annual volume of water recharge of dams was about 83.8 million m^3. This relatively low ratio was significantly influenced by the extreme figures of four hydrological years: the volume of inflow dropped below 20 million m^3

[16] World Bank: Climate Change Knowledge Portal, Cyprus, https://climateknowledgeportal.worldbank.org/country/cyprus (Downloaded 03 03 2020).

[17] Water the Development Department, Republic of Cyprus, http://www.moa.gov.cy/moa/wdd/wdd.nsf/index_en/index_en?opendocument (Downloaded 14 03 2020).

in 1990-1991, 2007-2008, 2013-2014 and 2015-2016.[18] By adapting to more frequent droughts and drier seasons, Greek Cypriot authorities introduced various water-saving measures aiming to store and save natural supplies as well as limit the unsustainable use of water. Previously mentioned dams increasingly attempt to collect and store water flows of seasonal rivers and streams. Nevertheless, most of the natural output is mainly collected by the 66 aquifers of the island. Water management in the southern part of the island struggles to protect and conserve these aquifers from seawater pollution and irrigation activities. Overexploitation of resources is not only the problem of drier years. Thus, Greek Cypriot authorities have adopted a series of measures to manage and decrease the users' demand. These measures have included more dramatic tools such as restricting and rationing water supplies or increasing the prices and tariffs for industrial and agricultural purposes but have also applied softer means to change behavioural patterns of household consumers and develop effective water-saving habits (Sofroniou – Bishop, 2014: 2917). These efforts have generated limited improvements as the per capita water consumption is still 20-25% higher than basic water needs for human subsistence would require. Thus, water management of the Republic of Cyprus itself attempted to adopt sustainable habits and, besides other rationalizing efforts, has begun to develop tertiary wastewater treatment plants. As a result, recycled water is now used for the irrigation, livestock cultivation and environmental purposes in the areas of Nicosia, Limassol, Larnaca, Paphos and Paralimni.[19]

Water-saving measures in Northern Cyprus had to face similar challenges. According to Mason and Bryant, uncontrolled exploitation, pollution, lack of effective management and environmental changes all contributed to water scarcity, which has also become a pressing issue in the north (Mason – Bryant, 2017: 5-7). In addition, the isolation of 'Turkish Republic of Northern Cyprus' (hereinafter referred to as: TRNC) has also proved to be an important obstacle as the lack of recognition diverted significant financial resources from vital but costly constructions in the water management sector. Although Turkey and more recently the European Union has provided funding for the development of water-saving facilities, the unresolved status of Cyprus conflict continued

[18] Ibid.
[19] Ibid.

to undermine the efficiency of water management. Currently, there are 41 dams in the north, these reservoirs stored about 20% of all water of resources in 2016 (Elkiran et al., 2019: 3). Even though additional reservoirs would be needed, statistics show that protection of natural groundwater resources could produce more comprehensive results as about 90% of all water resources are supplied through aquifers and natural groundwater networks (Mason – Bryant, 2017: 6). According to Elkiran and Ergil, water balance is significantly endangered by the overexploitation and pollution of three main aquifers, out of which the Famagusta/Mağusa basin is not used due to seawater contamination, the Kyrenia/Girne aquifer supplies water only to its nearby region, while the Morphou/Güzelyurt basin is increasingly polluted by saltwater and its surface water recharge is reduced by Greek Cypriot dam construction activities (Elkiran – Ergil, 2005: 2-3).

As in the south, Turkish Cypriot water work authorities have also attempted to address these deteriorating conditions. Water-saving measures have included the construction of water purification plants in the three largest municipalities, the development of a bicommunal wastewater treatment plant in Nicosia, and three other medium-scale treatment facilities to treat sewage water in Kyrenia/Girne, Famagusta/Mağusa and Morphou/Güzelyurt (Elkiran et al., 2019: 3). Although these existing facilities save millions of m^3 of water per year, the water management of the other 25 cities remains problematic. Perhaps an even more difficult task is to regulate the water withdrawal of agriculture which sector accounted for 71% of all water demand in 2010 (Ibid.). As Mason and Bryant demonstrated, the decentralized water management, the politicization of municipal water governance, as well as the different pricing and licensing policies at local level have significantly harmed water-saving measures (Mason – Bryant, 2017: 8-9). Nevertheless, the introduction of various modern irrigation techniques is a positive development and estimated to save about 30 million m^3 of water per year (Elkiran – Ergil, 2005: 5).

3.2. Efforts to extend supply options

In addition to large-scale water-saving measures, both administrations on the island are seeking to supplement existing resources. Geographical features greatly constrain the possibilities in this regard, as Cyprus, being an island,

has only limited options to involve external supply sources. As a result, several conventional and unconventional solutions have been tested in previous decades, trying to keep water balance through freshwater production or import.

One of the most common unconventional options, based on resource characteristics of the island, is the establishment of desalination plants. The Republic of Cyprus is in a more advanced position in setting up desalination plants: according to the Water Development Department, currently five larger facilities operate in the southern part of the island. These plants, established in Dhekelia, Limassol, Vassilikos, Larnaca and Paphos, produce a minimum quantity of 32.8 million m^3 freshwater per year.[20] The statistics of the previous years perfectly indicate the increasing role of desalinated water production: 14% of domestic water supply sources came from desalination plants in 2013 which rate has risen to 41% by 2014 and 45% in 2015 (Neocleous, 2017).

Although the use of these facilities is relatively costly, they provide a secure, weather-independent supply option for both households and agricultural consumption. On the other part of the island, Turkish Cypriots wish to exploit these advantages too. In this case, however, legal and financial obstacles hinder widespread developments of desalinization plants. Recently the European Union has provided funding for the construction of desalinization facilities, but territorial and legal uncertainties as well as lack of solvent demand significantly decrease potential benefits of foreign investors or contractors. Prices also restrain possible investments as desalinated water is estimated to cost about \$1/m^3 compared to the \$0.2/m^3 price of treated water. These characteristics create unfavourable conditions and significantly reduce the role of desalinated water resources: in Northern Cyprus, desalinated water accounted for only 3.8% of the total water supply in 2016 (Elkiran et al., 2019: 3).

Due to the challenges mentioned above, the expensive and infrastructure-based local freshwater production was supplemented by various alternative ideas. Some of these ideas proved useful, at least in the short run, while others were unfeasible, especially in the long run. From the 1950s onwards, the possibility of importing water to the island became an increasingly prominent idea, although it encountered several geographic, political and economic

[20] Ibid.

difficulties. As in the case of contemporary offshore gas trade (Egeresi, 2019), a partnership with Turkey would have proved to be the most efficient water supply option, however, the escalation of the Cyprus conflict in 1960s prevented the finalization of these plans. As a result, from this period onwards, the Greek Cypriots and Turkish Cypriots took different paths: while the former sought to import water from Greece, the latter called for cooperation with Turkey. In the following decades, the agenda of sustainable import options was always brought back by droughts and resulting water shortages when authorities on both sides were pressured to come up with quick and effective solutions.

After 1974, the Turkish Cypriot authorities first began negotiations on water import as part of the Turkish-Israeli Manavgat plan, as the broader aim of the project was to extend the Turkish water export to other arid regions of the Eastern Mediterranean, including Cyprus (Gürer –Ülger, 2007: 176). In 1997, Turkish and Turkish Cypriot authorities signed a protocol for supplying water to Northern Cyprus for a duration of ten years. As the Manavgat project did not yet have the adequate infrastructure at this stage, an alternative solution was envisaged: a Norwegian company named as Nordic Water Supply was contracted to carry freshwater from Turkey to Northern Cyprus by using so-called flexible-barge technology (Rende, 2007: 171). The technology used floating plastic balloons (or towing bags) filled with freshwater to transfer water through the roughly 100 km long sea route between Anamur, Turkey and Kumkoy Coast, Northern Cyprus. Compared to the prices of desalinated water ($\$1/m^3$), the water bag import offered a more efficient supply cost with $\$0.2/m^3$, which is about the same as the price of the treated water (Elkiran – Ergil, 2006: 5).

Nonetheless, the project was abandoned after four years of mixed results as it could never meet the initial estimate of 7 million m^3 annual supply quantity (Elkiran et al., 2019: 3). Although the technology was able to transfer about 4.1 million m^3 of water to Northern Cyprus between 1998 and 2002, it was eventually unable to complete the outlined 10-years long supply plan due to persistent technical deficiencies (Szwedo, 2019: 147). The decision to terminate the project was most likely also influenced by the fact that transport via tanker vessels or pipelines was considered to be more efficient and, in the light of Manavgat project, more important for the Turkish authorities (Bicak – Jenkins, 2000). These preferences will culminate in the framework of the 'Peace Water Project', which we will discuss in the next section.

On the southern side of the island, water import became a pressing issue in 2008 when, after four consecutive years of low rainfall and drought, water shortage reached a critical level, particularly in some of the coastal areas such as Limassol district. Beside introducing drastic water-saving measures and raising water prices, the Greek Cypriot authorities had to find alternative supply options for approximately 16 million m^3 of freshwater (Martin, 2008). After brief negotiations with Lebanon, Greece was selected to supply about 70% of the required quantity. In addition to the traditional alliance between Nicosia and Athens, expertise and experience also played a role in the selection, as Greece had already tested tanker and water bag techniques in response to water shortages on the Greek islands. Given the short timeframe, in this case, transport by tanker vessels proved to be a more appropriate logistical technology, as the six ships involved in the transfer had to travel nearly 1000 km between Eleusis in Greece and Limassol in Cyprus. The supply operation eventually delivered approximately 4.5 million m^3 of water to Cyprus, 2.8 m^3 in 2008 and 1.7 m^3 in 2009. The transferred volume accounted for about 26% of total supply sources in 2008 and 15% in 2009, although it was never able to reach the initially proposed 16 million m^3 quantity (WBL, 2010: 9, 22-23). Consequently, the possibility of importing water, which did not prove to be an efficient source of supply due to high costs and low importable quantities, was removed from the agenda of the Greek Cypriot authorities. Although the possibility of importing irrigation water from Lebanon again arose in the early 2010s, it was soon replaced by policies focusing on local water-saving and production.[21]

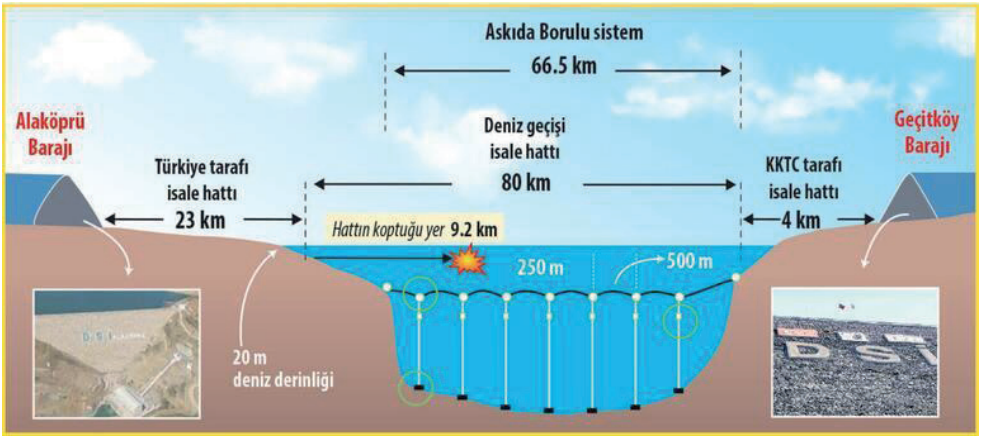
4. THE 'PEACE WATER PROJECT' AND TRILATERAL WATER DYNAMICS

The previous section listed some of those water-saving and supplying measures that have been implemented to ease water scarcity in Cyprus. These efforts have achieved more comprehensive results in the southern part of the country, as they produced more efficient and more independent

[21] Financial Mirror (2013): Cyprus considers importing water from Lebanon, https://www.financialmirror.com/2013/11/07/cyprus-considers-importing-water-from-lebanon/ (Downloaded 15 04 2020).

solutions based on local resources and potentials. However, water scarcity as a potential risk has not been eliminated in this case either: data on climate, consumption and demand confirm further challenges in the mid- and long run. Northern Cyprus will face even greater difficulties. In this case, efforts intending to exploit local water resources and potentials were hindered by legal, financial and, perhaps most importantly, political obstacles. These political obstacles were not only caused by inter-communal disputes or lack of recognition but Turkey's strategic interests and water diplomacy too. Due to its regional water strategy and role in the Cyprus conflict, Ankara was more interested in a Turkish-led supply option than in developing local hydrological infrastructure or constructing sustainable water facilities. This attitude greatly influenced the construction project of 'Peace Water' pipeline which, after its opening in 2015, formed a physical link between Turkey and Cyprus and created a number of potential opportunities and threats.

Figure 4. Schematic diagram of the Peace Water Project



Source: DSI, http://www.dsi.gov.tr/haberler/2020/01/15/asrin-projesi-nde-meydana-gelen-ariza-tekni-k-sebeplerden-kaynaklanmi%C5%9Ftir (Downloaded 24 04 2020).

'The project of the century', as the Turkish labelled the pipeline construction, has a long history beginning somewhere around the 1950s when

the Turkish Cypriots raised the possibility of importing water from Turkey. The Turkish supply option as a potential solution to the North's water scarcity re-emerged several times during the decades after 1974 and, as we have seen before, was partly realized in the late 1990s with the help of flexible-barge technology. However, the Manavgat project intended to find a more durable and efficient solution and, virtually since the 1990s, has been trying to achieve the construction of a water pipeline connecting Southeast Anatolia with Northern Cyprus. While the plan proposed several positive outcomes for Turkey and (Northern) Cyprus, high costs, technical difficulties, potentially high maintenance costs and selling prices as well as political considerations have long delayed the approval of the project. The decision was finally made in 2011, with the Turkish government pledging to build the $450 million investment, an amount that eventually rose to $550 million by 2015 (Gungor, 2016: 3).

Previous concerns about the project seem reasonable given the numbers and scales of the implementation plans. The project proposed the construction of 480 km network of pipelines out of which the 107 km long mainline connected the Alaköprü Dam in Anamur (Turkey) with the Geçitköy Dam near Kyrenia (Cyprus). The most critical phase of the construction was the offshore section, where the pipeline crosses the 80 km sea section at a depth of mostly 250 meters. This section was particularly problematic for several reasons: high undersea pressure, weather risks, seismic activities and potential disturbance of marine traffic have all posed serious challenges to the engineers. The adopted solution crossed the Mediterranean Sea by 160 high-density polyethylene pipelines, each 500 m long with a diameter of 1,600 mm, fixed to the seabed at the end and beginning of each pipe by steel anchors (Figure 4, Ibid., 4). Besides the sea crossing, the construction involved other challenging infrastructure developments including reservoirs, pumping stations, storage tanks and transmission lines.

Given the technical difficulties, it is not surprising that the completion of construction was delayed by one year, and the official opening was held only in October 2015. The 'Peace Water Project' and the constructed infrastructure, inaugurated in the presence of Turkish Cypriot leader Mustafa Akıncı and Recep Tayyip Erdoğan, has planned to provide 75 million m^3 of water per year for the next 30 years (Mason – Bryant, 2017: 15-16). The water supply

attempts to serve both household and agricultural needs: about 37.76 million m^3 treated water per year is allocated for domestic needs and about 37.24 MCM untreated water per year is distributed for irrigation purposes. Besides water supply, hydroelectricity with an installed capacity of 26 MW is also produced by the project (Gungor, 2016: 3). Despite the official inauguration, the construction continued during 2016 and developed further local infrastructure in Northern Cyprus with an additional cost of approximately $350 million (Mason – Bryant, 2017: 18).

The 'Peace Water Project' has been subject of criticisms from the outset, with not only Greek Cypriots but also Turkish Cypriots questioning its necessity, form of construction, commissioning and generally the controversial role Turkey obtains with the pipeline. Ankara has tried to avoid these criticisms from the beginning and adopted the rhetoric of previously proposed water supply projects. First, Turkey has stressed the necessity of the project: in the context of severe water scarcity in the island, it highlighted the vital importance of the pipeline and disregarded domestic supply options. Secondly, Ankara sought to equip the project with normative values. In this rhetoric, the Turkish motherland once again rushed to the aid of Turkish Cypriots, and despite the high costs, it helped them to battle water scarcity by constructing an essential supply system. The name of the project, "Peace Water", is also quite informative and highlights potential Turkish ambitions to extend the water supply to Greek Cypriots. According to the Turkish explanation, this outcome would create vital water cooperation between Greek and Turkish Cypriots and could eventually help to bring peace to the island (Ibid., 18).

Greek Cypriots, however, do not agree with these positive outlooks. For them, since Turkey's 'Peace Operation' in 1974, the term "peace" used by Ankara has an entirely different connotation and refers to hegemony rather than cooperation. Consequently, Nicosia responded with the usual rhetoric and disputed the legality of the project. According to the Greek Cypriot explanation, the pipeline project violates the principles of both international and domestic laws. Referring to the United Nations Convention on the Law of the Sea (UNCLOS) and the internationally recognized maritime boundaries, Nicosia disputes the legality of the project and considers the installation of underwater pipelines as unlawful acts. In the case of domestic law, they claim, on the one hand, the illegitimacy of 'TRNC' and, on the other, the lack of consent

and permission of Greek Cypriot authorities (Savvides, 2016: 2-3). In addition to legal issues, Nicosia also raises technical, security and political concerns. In technical terms, the quality of transferred drinking water is questioned, and it is assumed that the water is polluted during the relatively long transit journey (Hacaoglu, 2013). Concerning security risks, it is feared that the construction of the pipeline has created an additional dependent tie between Turkey and Northern Cyprus, which Ankara may exploit through potential threats of water cuts. Furthermore, allegations have been made about the extent to which transmitters and sensors monitoring the operation and faults of the pipeline are used for intelligence purposes, potentially for monitoring shipping and naval activities in the area (Savvides, 2016: 3). Political concerns are closely linked to the security risks and do not view the 'Peace Water Project' as a potential option for conflict resolution, rather as another Turkish attempt to dominate the island.

The Turkish Cypriot attitude is more complicated and, despite the close relationship, does not clearly reflect Ankara's rhetoric. In this context, the necessity of the project was less challenged, but contradictions were caused by several issues such as control, management, distribution and pricing. Two interrelated factors fundamentally influenced these contradictions. Firstly, Turkey did not consider Turkish Cypriots as equal partners, and secondly, it has amended the already disadvantageous bilateral agreements several times. Parameters of the unequal partnership were observed not only at the political but also at the technical level with delegated Turkish officers of the State Hydraulics Authority (DSI) holding considerably broader authority than regular contractors (Ozdemir, 2019: 19). Unbalanced relations also left their marks on the project-related agreements, which include various controversial clauses. Perhaps the most disputable articles of the agreements proclaim that ownership rights of developed infrastructures, and the land on which they are located, have to be transferred to the Republic of Turkey which, in addition, reserves the right to delegate management responsibilities to a private company (Ibid., 15-26).

These clauses were particularly problematic for Turkish Cypriots for several different reasons. First of all, Turkish ownership of land would complicate legal disputes with Greek Cypriots and could further decrease the chance to find common grounds in the intercommunal negotiations.

Secondly, the infrastructure ownership would allow Turkey to use Northern Cyprus as a water transit area towards other potential regional partners and could eventually lead to prosperous water business, but without involving or compensating Turkish Cypriots (Ibid., 12). The third controversial issue has been confronted around the time of the official opening when the Turkish Cypriot leadership had to realize that not the 'TRNC' rather a private Turkish company will be responsible for management duties. Although some members of the leadership acknowledged inability to manage vast hydrological affairs, authorities opposed the commercialization of the 'Peace Water Project' and criticized the overwhelming Turkish role in the local distribution and pricing (Ibid., 1-2). Fourthly, and lastly, the experience of the whole water supply project has reinforced the sense that Ankara does not treat Turkish Cypriots as equal partners or compatriots, but rather as a colony and colonial subjects (Bryant, 2015: 3).

These diverse responses and contrasting ideas indicate that, instead of bilateral affairs, trilateral water dynamics should be analysed in the case of Turkey and Cyprus. In the shadow of the Cyprus conflict and its internal and regional drivers, Ankara has developed very different relationships with Greek Cypriots and Turkish Cypriots, and while it can apply its hegemonic water strategy over the latter, it is not able to exploit hydrological advantages in the case of the former. Greek Cypriots consider water supply proposals of Turkey as security threats and hegemonic efforts to gain more substantial control over the island. Nicosia is currently in a privileged position and can reject Ankara's hegemony through its membership position in the European Union. At the same time, it also has a solid financial background to replace Turkish supply options with local technological investments. Turkish Cypriots, on the other hand, have no other options but to accept the Turkish water strategies and follow the directives of Ankara. These directives, however, are double-edged swords for Lefkoşa: they are undoubtedly helping to solve water scarcity in the north, but, at the same time, cementing Ankara's positions and forestalling local water production efforts.

5. CONCLUSION

This paper raised the question of whether Turkey's hydrological role in Cyprus can be interpreted as a hegemonic influence or a potential partnership. The analysis reviewed the complexity of this subject and revealed possible answers depending on whose side in the trilateral relations is examined. From the Turkish perspective, water supply proposals may be labelled as potential partnership proposals offered by Ankara in good faith and with the intention of easing water scarcity. From the Greek Cypriot point of view, these Turkish proposals serve no humanitarian purposes, rather seeking to preserve and expand Turkey's power potentials and hegemonic role in Cyprus. Perhaps the most controversial answers are related to Turkish Cypriots. For them, the motherland's supply projects provide essential assistance and allow authorities to deliver basic services. At the same time, Turkey's overwhelming role in providing essential support for Northern Cyprus creates a dependent, patron-client relational model. Even though it provides vital assistance for Turkish Cypriots in various fields, including water supply, the model is not characterized by equality and mainly serves Ankara's hegemonic purposes.

These different answers help to sketch the potentials and limits of Turkey's regional water diplomacy. As in any other commercial partnerships, cooperation and a certain level of trust are fundamental factors in water trade too. Proposals of the Turkish water diplomacy suffer from the lack of these fundamental factors: Ankara's regional foreign policy and hegemonic behaviour produce a significant deficit of trust among regional actors, distrust undermines the development of potential water cooperations and, after all, continuously shatters Ankara's water exporting dreams. In terms of water diplomacy, Turkish-Greek Cypriot relations are characterised by these patterns. Although water scarcity and lack of meaningful supply options would create ideal conditions for the Turkish water export, the Cyprus conflict and Greek Cypriot distrust towards Ankara undermine potential cooperations. Experience of the 'Peace Water Project' further broadens the gap between Nicosia and Ankara and demonstrates a controversial outlook for other regional actors as well. On the one hand, it proves the technical proficiency and feasibility of the Turkish water export proposals and provides an example, maybe even an existing transit route, for future investments. On

the other hand, the project also confirmed the suspicion that Turkey may use water trade for hegemonic purposes and could exploit water links for creating dependencies.

Consequently, results of the study indicate that even asymmetric water settings require relatively fair partnerships: hegemons may construct large infrastructural projects on their own, but they need cooperative partners for establishing sustainable water markets. In the case of Turkey, these fair partnerships would not require the revival of zero problems with the neighbours' policy but would need a better external image and a less conflictual foreign policy that could support long term goals of regional water strategy. Cyprus is a living example of such potentials, while it also demonstrates how conflicts and political debates can override the importance of strategic needs. Nevertheless, Turkey's involvement in the island's water situation is more complex and cannot be merely described by Ankara's strategic interests. Given the rather negative hydrological outlook, Cypriots on both sides of the divide have also vital interests to develop water cooperation with Turkey, which is the closest country with large supply potentials and tested transport infrastructure. These potentials could provide crucial sources in critical situations, and not only for Turkish but for Greek Cypriots too.

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Zoltán Vörös

THE WATER CRISIS OF CHINA AND ITS CONSEQUENCES ON SOUTHEAST ASIA[1]

Water spilled can never be retrieved.
A Chinese aphorism

1. INTRODUCTION

China, still the world's most populated country with around 1.4 billion citizens, keeps heading on a growth course towards becoming the largest economy in the world. Though the recent COVID-19 coronavirus hit the Chinese economy and 2020 is going to be a year of *long time no see* recession, since the global trends are going to be similar, or even worse, because of the fact that China was quite fast in recovering from the lockdown and restarting its economy, the Chinese trends can and will continue in the upcoming years. Of course, we can not see the long-term effects of the lockdown, but in the short-term, it can affect the water crises, especially the international conflicts of China, where water shortages and interruption in global transportation might force them to use more hydroelectricity. Beside the actual situation, the country is facing an environmental degradation for decades now, thousands of studies and papers have already warned of the serious consequences of pollution and overuse of the water resources and the unsustainable economic growth (Glied, 2015: 9). Still the most shocking example of environmental degradation and the outcome of the nihilist focus on economic growth is the case of the Yellow River, commonly known as "the cradle of Chinese civilization"[2]: it frequently runs dry at the lower section. "In 1994, it ran dry for 122 days along a 180-

[1] This research project was supported by the European Union. EFOP-3.6.3-VEKOP-16-2017-00007 – Young researchers from talented students – Fostering scientific careers in higher education.

[2] Yellow River Civilization – China's Cradle and Early Capitals, China Highlights. https://www.chinahighlights.com/yellowriver/civilization.htm (Downloaded 05 14 2020).

mile section in Shandong, not far from where it empties into the Yellow Sea. In 1996 it ran dry for 136 days. In 1997, for 226 days, denying water to 7.4 million acres of farmland and producing a dry riverbed that stretched more than 372 miles."[3]

So far, no reliable and sustainable cure has been found to address the water related environmental problems in China and the proposed solutions – partially – continue to focus on economic growth pushing regions, even outside of the country into the water crisis.

2. CHINA'S WATER CHALLENGES

Mao Zedong, the leader of the Communist Party, who successfully defeated the Kuomintang, established the People's Republic of China in 1949 after the bloody civil war, and started to follow the footsteps of Stalin's path.[4] Under "Chinese communism" Chairman Mao established the party's dominance and his decisions considered neither the needs of hundreds of millions of people nor environmental values. Nihilist procejts neglected the environment, the flora and fauna of the rivers, failed dams and reservoirs further degraded the ecosystems. The China we know today originates from these periods, builds on those past decisions, but puts an incomparable pressure on the environment, deriving from the pursue of economic growth. While China became a regional power and the second biggest economy of the world, there has been no or limited change in the protection of environmental values and Beijing has refused to give up economic development, even as the leaders have slowly recognized that environmental degradation will bring irreversible changes in the not so distant future.

That realization of the threats on the other hand is important, because the legitimacy of the party is originating from a *new social contract* they "*signed"* with the society, especially critical after the Tiananmen Square massacre. This compromise with the Chinese people is about a financial-economic growth,

[3] Yellow River, Facts and Details. http://factsanddetails.com/china/cat15/sub103/item448.html (Downloaded 03 20 2020).

[4] In 1950 the countries signed the Sino-Soviet Treaty of Friendship, Alliance and Mutual Assistance, which defined the relation between the two sides, often ending up in Soviet financial help. (Jordán – Tálas, 2005: 161-162). The cooperation ended in with a breakup in 1960.

where the Chinese Communist Party guarantees the increasing salaries and per capita income in exchange for their less interest in political life – not just creating an apolitical society, but also a pragmatic and pro-active party and state. And that state, or one-party state is interested in pursuing further economic growth, but because of the not so surprising complexities of the economy (considering clean water and stable water flow for instance) they also should keep in mind environmental challenges and consequences of the degradation of ecosystems, which could undermine the economy. For years now, China is facing a test where they have to save the environment, while pursuing economic growth. Let's see, how they can manage the water-related issues under these circumstances.

2.1. Unequal distribution and overusage of water

According to the national, country-level data the amount of internal renewable water resources[5] in China is very high, ranking fifth after Brazil, Russia, Canada and the United States (*Table 1*). At the same time, in the case of China the picture is nuanced by a number of other factors, two of which, *the size and the distribution of the population*, are decisive, not to mention the pollution of factories and the increasing degree of aridity and desertification.

Table 1. Internal renewable water resources (billion cubic meters per year), 2017

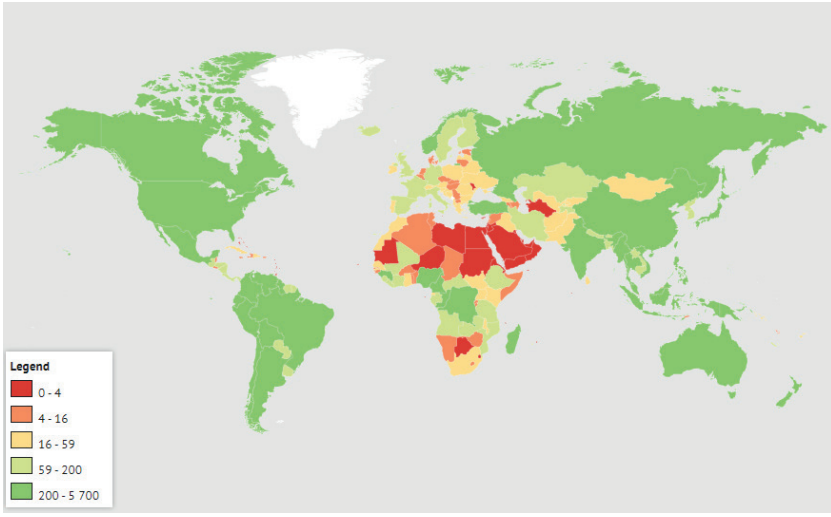
country	**billion cubic meters per year**
Brazil	5661
Russian Federation	4312
Canada	2850
USA	2818
China	2813

Source: Internal renewable water resources, World Atlas. https://knoema.com/atlas/topics/Water/Internal-Renewable-Water-Resources/Internal-renewable-water-resources (Downloaded 20 03 2020).

[5] Internal Renewable Water Resources (IRWR) can be defined as a long-term average annual flow of rivers and recharge of aquifers generated from endogenous precipitation.

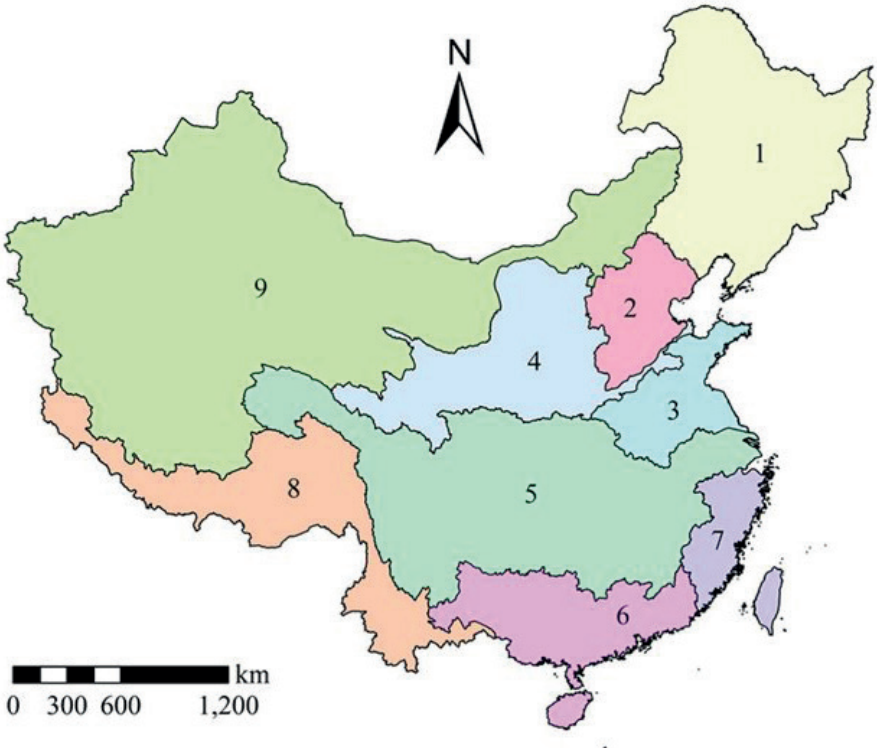
China, with its 1.4 billion inhabitants is the most populous state on Earth, so its annual renewable water supply is only around 2000 m^3 per capita. Compared to the severely water-scarce areas of North Africa and the Middle East, where the per capita volume barely reaches 500 m^3 (*Figure 1*), the country is in a better position, yet water scarcity is a daily problem and an even more serious shortage may develop in the coming years: the spatial distribution of water and population, as well as economic centers, is far from consistent.

Figure 1. Internal renewable water resources



Legend: Red – 0-4 10^9 m^3/year; Orange – 4-16 10^9 m^3/year; Yellow – 16-59 10^9 m^3/year; Light green – 59-200 10^9 m^3/year; Green – 200-5700 10^9 m^3/year
Source: Internal renewable water resources, World Atlas. https://knoema.com/atlas/topics/Water/Internal-Renewable-Water-Resources/Internal-renewable-water-resources (Downloaded 20 03 2020).

Figure 2. The water basins of China



Legend: 1 = Songhua and Liao River Basin; 2 = Hai River Basin;
3 = Huai River Basin;
4 = Yellow River Basin; 5 = Yangtze River Basin; 6 = Pearl River Basin; 7 = Southeast River Basin;
8 = Southwest River Basin; 9 = Northwest River Basin.
Source: Yu, et al., 2018. (edited by the author).

Table 2. Territorial distribution of water resources and population – based on the water basins of China

Water Basins	Total water resources (10^9 m^3)	Total water resources (%)	Population (10^6 inhabitants)	Population (%)	Arable Land (%)***	**GDP (%)*** **
China	*2540****	*100*	*1366****	*100*	*100*	*100*
Songhua and Liao	178	7	121	8.9	n.d.	n.d.
Hai	26	1	152	11.1	n.d.	n.d.
Huai	85	3.3	199	14.6	n.d.	n.d.
Yellow	54	2.1	119	8.7	n.d.	n.d.
Yangtze	1033	40.7	453	33.1	n.d.	n.d.
Pearl	410	16.1	187	13.7	n.d.	n.d.
Southeast	124	4.9	22	5,5	n.d.	n.d.
Southwest	501	19.7	80	1.6	n.d.	n.d.
Northwest	129	5.1	33	2.4	n.d.	n.d.
North*	472	**18.6**	624	**45.7**	**64**	**44**
South**	2068	**81.4**	742	**54.3**	**36**	**56**

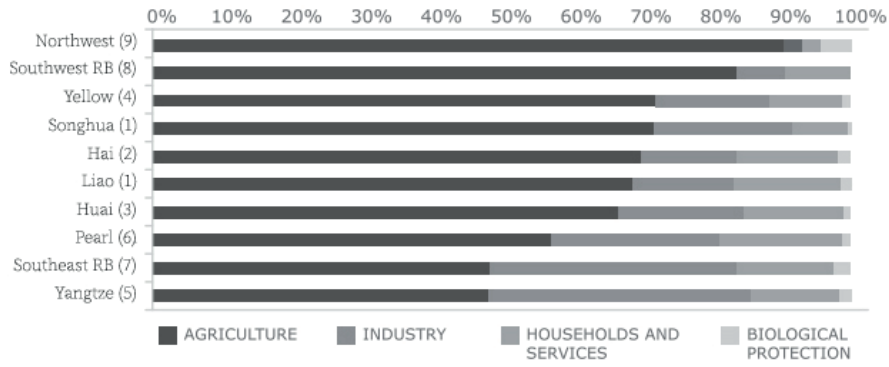
**The water basins of Songhua and Liao, Hai, Huai, Yellow and Northwest rivers*
*** The water basins of Yangtze, Pearl, Southeast and Southwest rivers*
****2010 data from Carmody, 2010*
*****Data and numbers used by Yu, et al., 2018.*
Source: Own edition based on Yu, et al., 2018.

A very significant proportion of the population (45.7%) is located in the north, while the region has limited water resources (18.6%) (*Table 2*). If we consider that "Northern China [...] contains 65% of China's cultivated land and produces roughly half of its grain and nearly all of its wheat and maize [and that – *the author*] this region accounts for more than 45 percent of the nation's GDP" (FAO, 2008: 4), we can see how serious the disproportionality is. This geographical problem is mainly felt in the basins of the Hai, Huai and Yellow rivers[6] hosting more than 35% of the population, while only possessing 6.4% of the water resources. Meanwhile the southern river basins have the majority of the resources, coupled with around 54-55% of the population and the GDP offering a relatively better situation.

[6] See lines 2-4 in *Figure 2*.

Disproportional distribution is just one issue regarding the water resources, the country's water productivity and the overuse of resources further complicated and worsened the situation. Regarding productivity, "Northern and Eastern [Definitely not the North Western ones – the author] regions continue to be the most efficient. GDP/m^3 consumed ranges from 4USD in the sparsely populated North Western provinces to almost 40USD in Beijing" (Carmody, 2010: 23). China's water productivity is low and China still uses three times more water than the world average on goods produced (Carmody, 2010: 25). One sector, which is definitely responsible for the low productivity and the waste is the agriculture (*Figure 3.*). "Water productivity in agriculture, which accounted for 65 percent of total water withdrawals, is the lowest of all sectors [..] Only about 45 percent of water withdrawals for agriculture are actually used by farmers on their crops" (Xie et al., 2008: xx). Besides, many papers highlight the fact, that the water allocation system is also inefficient, mainly because of lack of market consciousness of the country (Ibid.; Carmody, 2010) and the subsidized water prices.[7]

Figure 3. Percentage of water use by sector, data from 2010



Legend: Numbers in brackets are for the location of River Basins on Figure 2.
Source: Carmody, 2010. (edited by the author).

[7] "For example, the price of water for irrigation does not reflect the full cost of water supply, including operation and maintenance costs plus overhaul and replacement costs of water delivery systems. [..] In most irrigation districts, water fees are assessed on the basis of the size of a household's irrigated area, encouraging vast water waste by farmers" (Xie, et al., 2008: 36).

In order to react on the disproportion distribution of water resources, Beijing has developed a number of water diversion projects. Although such projects have a long history as a sign of human response (Yevjevich, 2011: 343), "at the same time, interbasin water transfer is also one of the most controversial water-resources-planning topics. The receiving region benefits from the supply of additional water through such water transfers while the donor region, by virtue of having water removed from it, sustains a reduction to its water availability" (Zhang et al., 2015: 280).

Chinese water problems are further complicated by the climate, monsoons affect the southern part of the country, which causes annual precipitation to fall mainly between April and July threatening with floods and drier seasons with less rainfall in the Northern provinces. "Over the past 100 years, inter-regional differences in precipitation have increased, with rainfall gradually declining in North China at rates of 20-40 mm/decade, and rising in South China at rates of 20-60 mm/decade" (Xie et al., 2008: 11). Besides climate, the water problems of China are further heated by pollution.

2.2. Floods, droughts and water scarcity

China has been plagued by floods for millennia, with the middle and lower reaches of major rivers being among the most affected territories. The geographical and climatic characteristics of the country and their combined effects have caused the largest floods in history to date in China, but recent developments aimed at forecasting and preventing floods. Dams and reservoirs are responsible for keeping the watercoursesunder control even within rainy times and periods and a system of surface monitoring stations, meteorological radars and satellite networks has now been set up that can forecast floods by examining meteorological processes. These measures were essential for Beijing to reach economic growth and strong human intervention could improve the situtation (focusing much more on the environmental and geographical characteristics and conditions, compared to the 1950s when dams and reservoirs were built with Soviet help, completely disregarding such considerations – in order to avoid further accidents like the collapse of

the Banqiao reservoir dam[8]). Floods are still there in the country in many ways (urban floods, thanks to the rapid urbanization and industrialization penetration of human activity into floodplains, flash floods created by heavy rainfall, helped by extensive forest extractions and the floods of the main rivers), buta re more and more under control.

Water scarcity, drought is another side of the highly variable rainfall, climate and water resources in China. Frequent droughts simultaneously with floods often happen just in different parts of the country, further complicating the possible solutions for the water issues. Due to climate change and desertification scarcity poses an even more serious challenge. Drought periods, which have caused enormous damage, may be prolonged in the future and their effects may be more severe, as the number of people affected is huge. "It is estimated that between 15% and 20% of farmland is regularly affected by drought" (Carmody, 2010: 57). One of the causes of the problem is global climate change, not affecting only China, but it may have one of the most serious and earliest consequences here. The Qinghai-Tibetan Plateau depends on "glaciers melt and appear to be diminishing" (Gleick, 2008: 88). This is the plateau, which "provides 25%of the water flowing down the Yangtze River, 49% of the flow of the Yellow River, and 15% of the flow of the Lancang River. […] The Qinghai-Tibetan Plateau used to host 36,000 glaciers covering an area of 50,000 sq km, but their area has shrunk by 30 percent over the past century" (Ibid.). This phenomenon will have an important consequence not just on the water challenges of China, but on the Southeast Asian countries as well, since Lancang, named Mekong after leaving China, is the main river of six downstream countries.

Desertification also contributes to water scarcity and gains from it at the same time, with serious consequences on the arableland area. "Of a total of 3.32 million square kilometers of dryland, 2.64 million square kilometers, or 79%, is affected by desertification. In other words, 27.5% of China's total land area suffers from desertification" (Jiang, 2010: 13). During the desertification process, the soil degrades in dry and semi-arid zones, its productivity decreases

[8] "In 1975, after a period of rapid dam development [in the 1950s – the author], a perfect storm of factors came together to topple Henan Province's Banqiao Dam and kill an estimated 171,000 people." The Forgotten Legacy of the Banqiao Dam Collapse, International Rivers. https://www.internationalrivers.org/resources/the-forgotten-legacy-of-the-banqiao-dam-collapse-7821 (Downloaded 03 26 2020).

due to human activities and/or persistent droughts and floods. According to United Nations (UN), which redefined the concept several times in the 1990s (Helldén, 2003: 95-96), desertification is the degradation of land resulting from human activities, among other factors. (Ibid., 96). Jiang highlights, that though degradation was there in Chinese historical times, during dynasties and kingdoms as well, since the socialist period of China, since the establishent of the People's Republic, the "environmental degradation has accelerated" (2010: 15).

Since the economic growth still was and is a priority in China, instead of sustainable solutions (more controlled land-use in agriculture, controlled and limited forest extraction, limited use of water for the agriculture and industry by excluding leaking pipelines and introducing newer technologies), which would have cost more money and possibly lower numbers in the GDP growth, in many cases the actors, politicians on national, provincial and local level preferred easier and simplier solutions – often further worsening the situation. The nationwide response to water scarcity arrived in the face of a wide range of projects, reservoirs, dams and the already mentioned water diversion projects. In the next head, we are going to look into such projects, their threats and how they can solve water scarcity and drought, but first we have to look into further options and ways of providing the water for the agriculture, industry and population. One of the ideas was to rely on groundwaters: "In the North China Plain [covering the Hai, Huai and the lower sections of the Yellow River Basin – the author], more than 60% of fresh water comes from groundwater" (Feng et al., 2013: 2110). But this method was also without control and was not sustainable, the water extraction further degraded the ecosystem and the soil. The overexploitation of groundwater leads to lowering water tables, exhausted groundwater reservoirs and catasthropic subsidence (Xie et al., 2008: 2), and can "further degrade the quality of deep palaeowaters" (Currell et al., 2012: 4063). Furthermore, using groundwater in an unsustainable way might be even more problematic "because it has a much slower replenishment rate than surface water" (Carmody, 2010: 21), and the depletion of groundwater resources can contribute to further water scarcity through drying up rivers, lakes and wetlands.

According to World Bank studies, thanks to excessive groundwater usage, these water sources are also polluted and as a consequence of overusage

"deep groundwater tables have dropped by up to 90 meters, and shallow groundwater tables by up to 50 meters" (Xie, et al., 2008: 18), causing subsidence – observed in cities of Eastern China.

Case study: Yellow River

The Yellow River is a good example of both water scarcity and the overuse of water resources. The Yellow is considered to be *The River* for the Chinese, where the former inhabitants of the country first cultivated and irrigated the lands, where they first made porcelain and mixed gunpowder. This was also the region where the first imperial dynasties appeared and then disappeared from the stage of history (Larmer, 2008: 109). It is the sixth longest river in the world, second in the country after Yangtze, winding 5,464 km from Qinghai Province all the way to the Bohai Sea – if it gets there. Since the 1990s there have been multiple years when the riverbed dried up and the river did not reach the sea, for 226 days in 1997,[9] and for more than 250 days in 1998 (Zusman, 2000: 1). In October 2000 Xinhua reported that 2000 was the "first time in ten consecutive years that no section of the river has zero flow."[10] Affected by human interventions and climate change, the riverhas been in the center of interest, not just because of its importance within the Chinese culture, but because of such dramatic dry years. Li et al. tried to understand, what or who is responsible for the dramatic decrease in the flow, and though admitted that, especially in the 1990s, drought occurrence played an important role in the reduction, human activities are the main causes of the flow reduction (Li et al., 2018).

2.3. Pollution

Pollution is one of the most alarming issues of Chinese (and global) water problems, threatening the lives of tens of millions of people, not to mention the quality of the environment. Cleaning up toxicized surface and groundwater is extremely difficult and costly– and for decades there were no regulations

[9] Yellow River, Facts and Details. http://factsanddetails.com/china/cat15/sub103/item448.html (Downloaded 03 20 2020).

[10] Yellow River No Dry This Year. Xinhua News Agency. www.china.org.cn/english/2000/Oct/3202.htm (Downloaded 03 26 2020).

against polluting plants and factories in the country. The country started to evaluate water quality in the 1980s and quickly developed standards, while the Ministry of Ecology and Environment annually publishes the State of Ecology & Environment Report with up to date pollution analyses.

China has established a water quality classification system based on the pH and pollutant concentration of water, where Grades I-III still can be used for human drinking water supply, while Grades IV-V can ony be used for industrial or limited agricultural capacities.

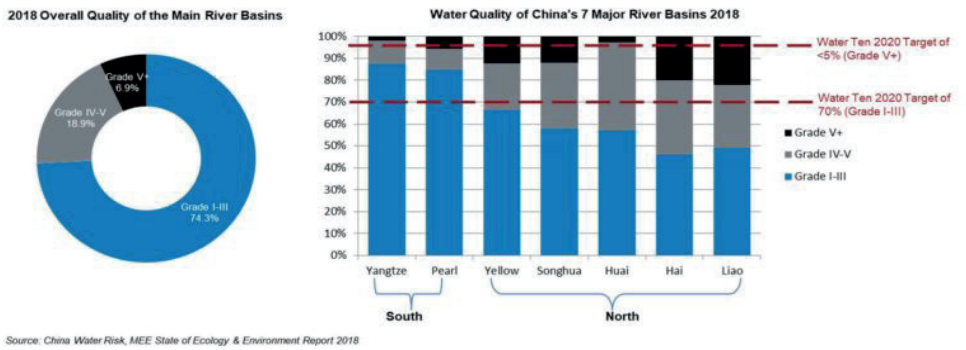
- Grade I – Mainly applicable to the source of water bodies and national nature preserves.
- Grade II – Mainly applicable to class A water source protection area for centralized drinking water supply, sanctuaries for rare species of fish, and spawning grounds for fish and shrimps.
- Grade III – Mainly applicable to class B water source protection area for centralized drinking water supply, sanctuaries for common species of fish, and swimming zones.
- Grade IV – Mainly applicable to water bodies for general industrial water supply and recreational waters in which there is no direct human contact with the water.
- Grade V – Mainly applicable to water bodies for agricultural water supply and for general landscape requirements.
- Grade V+ - Essentially useless (Zhang, 2017; China's Ministry of Environmental Protection).

The latest report was published in the summer of 2019 by the Ministry focusing on 2018 with some good news regarding the pollution. The surface water quality improved at national level, still with regional disparities. As China Water Risk, a private think-tank highlighted in their analysis, "overall surface quality of [China's] Main River Basins meeting Grades I-III rose to 74.3%, meeting the Water Ten target of 70%, but 5 Northern rivers still fail to meet the target."[11] Water Ten plan was issued by China's State Council in 2015

[11] 2018 State Of Ecology & Environment Report Review, China Water Risk. www.chinawaterrisk.org/resources/analysis-reviews/2018-state-of-ecology-environment-report-review (Downloaded 03 27 2020).

under the name 'Water Pollution Prevention and Control Action Plan' and its goal was to coordinate different bodies of the state to reach 10 main measures and altogether 238 specific actions by 2020. Among these, top objectives were to "greatly reduce the percentage of badly polluted water bodies (over 70% of water in 7 key rivers shall reach Grade III or above) and to improve the quality of drinking water (over 93% of urban drinking water sources shall reach Grade III or above)."[12]

Figure 4. Overall quality of the main river basins, China, 2018



Source: China Water Risk[13], 2018 State of Ecology & Environment Report

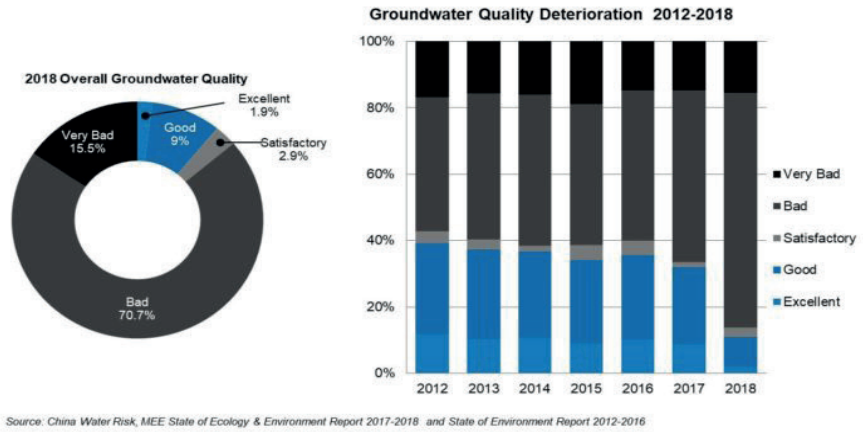
From the figure above (*Figure 4.*) we can see that many out of the 7 main rivers don't meet the 2020 targets yet, though the report highlights that the overall quality of these basins "has gradually improved".[14] We can see that Southern rivers are doing better than the Northern rivers, where only the Yellow has real possibilities to reach the 70% target – but all in all the improvement is already a good news.

On the other side, the quality of groundwater experienced a huge drop (*Figure 5.*), "the proportion of groundwater stations with "good" and "excellent" quality fell drastically from 31.9% to 10.9%; while the proportion

[12] New 'Water Ten Plan' to Safeguard China's Waters, China Water Risk. www.chinawaterrisk.org/notices/new-water-ten-plan-to-safeguard-chinas-waters (Downloaded 03 27 2020).
[13] 2018 State Of Ecology & Environment Report Review, China Water Risk. www.chinawaterrisk.org/resources/analysis-reviews/2018-state-of-ecology-environment-report-review/ (Downloaded 03 27 2020).
[14] Ibid.

of groundwater stations with "bad" and "very bad" quality rose from 66.8% to 86.2%."[15] China Water Risk suspects that the reason is connected to the rise of monitoring stations, "doubling from 5,100 to 10,168",[16] painting a shocking picture of groundwater quality in China.

Figure 5. Overall groundwater quality, China, 2018



Source: China Water Risk[17], 2018 State of Ecology & Environment Report

According to estimations "approximately 25 km^3 of polluted water are held back from consumption, contributing to unmet demand and groundwater depletion" (Xie, 2008), and there are still reports coming out from China that local governments are searching for alternatives rather than financing cleanup or tackling the pollution (Ibid., 122), although the latter would be a much more effective and sustainable way.

[15] Ibid.
[16] Ibid.
[17] Ibid.

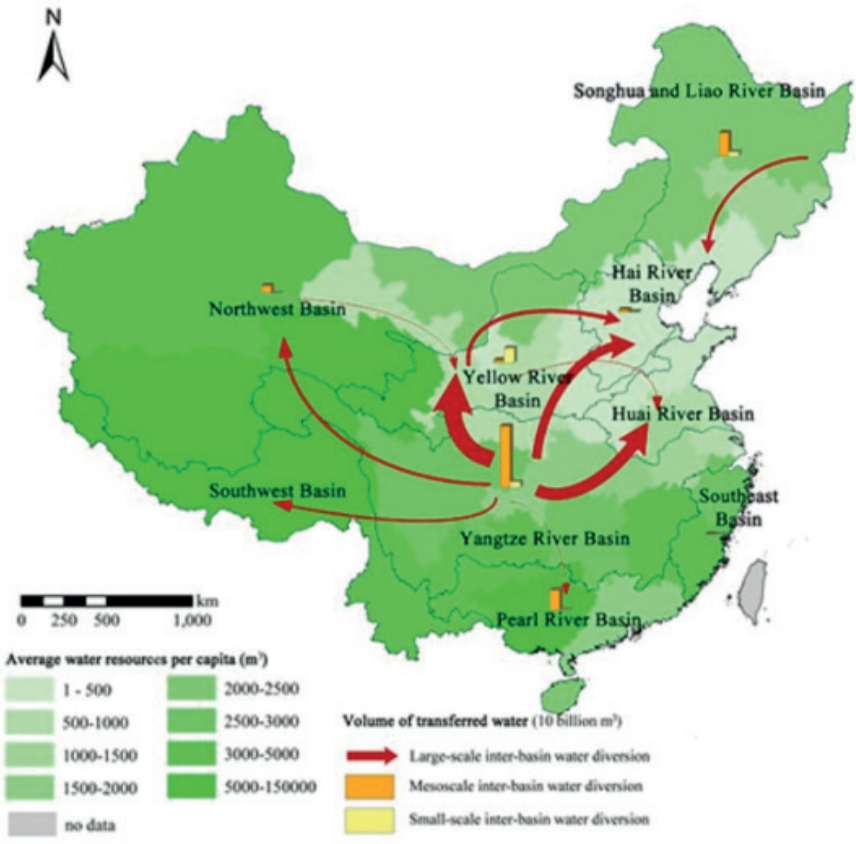
3. WATER DIVERSION PROJECTS AND DAMS

Water diversion is a term "used to describe the man-made conveyance of water from one area to another where the water demand has exceeded, or soon will exceed, supply" (Zhang et al., 2015: 280). As we have already discussed, water diversion projects were introduced by Beijing to tackle drought and also the unequal distribution of water resources. Such projects are controversial, in many cases benefits could not reach the level of losses, but China actively started to develop diversion methods and already during the 2008 Summer Olympic Games Beijing received water from Hebei province (Buckley, 2008). The biggest such initiative, the so-called South-to-North Water diversion project was approved in 2002 with three separate routes: the Eastern moving water from lower Yangtze through already existing centuries old canals and new artificial sections, the Middle section transferring water from Han, and a main tributary of Yangtze and the Western diverting water from the upper Yangtze and further Western rivers. The Middle route began supplying water at the end of 2014, the Eastern section supplied water already in 2013,[18] but the whole section is still not finished, while the Western stage is still in planning phase because of the environmental concerns. Until the end of 2019, these two existing routes "altogether diverted 29.4 billion cubic meters of water to arid areas in the north, benefitting more than 120 million people."[19] But not only this diversion project was constructed by China, by 2015 the country already had 16,000 km in channels, reaching over half of the country's provinces (Yu et al., 2017: 721) and diverting water towards the territories facing water scarcity and drought (*Figure 6.*).

As we can see, such projects can help water scarcity, but they can put pressure on electricity consumption and create further ecological problems. The main concern about such projects is pollution, how the transferred water might become (further) polluted through the artificial canals, in many cases concrete channels and the risk of overusing the water resources of the source regions, causing further economic and environmental problems in those regions as well.

[18] Factbox: China's south-to-north water diversion project, Xinhua. www.xinhuanet.com/english/2019-12/11/c_138623052.htm (Downloaded 03 30 2020).
[19] Ibid.

Figure 6. Annual inter-basin water transfers in China across nine major river basins as of 2015



Legend: The volume of transferred water here refers to the maximum annual capacity of water diversion projects. Projects constructed as of 2015, projects under construction as of 2015 and planned projects are all included.
Source: Yu, et al., 2018. (edited by the author).

Without addressing such concerns, the Vice-minister of Water Resources announced a new extension for the Eastern route of the South-to-North Water Diversion Project in November 2019, bound "to channel 490 million more m^3

of water northbound to the Beijing-Tianjin-Hebei region annually",[20] so water diversion projects are not over and the possible negative consequences are also staying, questioning the sustainability of such projects.

In 2009, at the Copenhagen Climate Summit, China announced that by 2020 it is going to reduce carbon intensity by 40% – mostly by using hydropower.[21] Traditional hydropower stations are highly criticised, since they are "based on the assumption that future stream-flow patterns will mirror those of the past",[22] which is no longer true thanks to climate change. Also, more and more[23] are criticising the whole concept of using water as a renewable resource, not just because of climate change, but since "nearly all dam reservoirs emit greenhouse gases, and some are as highly polluting as fossil fuel plants."[24] Dams are usually being built because of hydroelectricity or irrigation, flood control, water supply or other reasons, for example navigation. Dams and reservoirs in China have two main goals: electricitiy generation through hdyropower plants and gaining more control over the rivers helping flood-control and navigability, but as a result of the Copenhagen announcement, hydroelectricity became a top priority. According to the International Hydropower Association, by 2018 Chinese hydropower sector had a total capacity of 352 GW, over a quarter of the globe's installed capacity[25] and still hundreds of dams are under construction or are in planning phase. China has the world's largest potential hydropower resource[26] and Western provinces, especially Yunnan, the so-called *hdyropower battery,*[27] are playing an important role in hdyroelectricity generation. Already in 2000 the Western

[20] China extends water diversion project to pump more water to Beijing-Tianjin-Hebei, Xinhua. www.xinhuanet.com/english/2019-11/28/c_138590736.htm (Downloaded 03 30 2020).

[21] Climate Change & Hydro: Mutually Damming, China Water Risk. www.chinawaterrisk.org/opinions/climate-change-and-hydro-mutually-damming/ (Downloaded 03 30 2020).

[22] Ibid.

[23] Hydroelectric Power Isn't as Green as We Thought, Technology Review. https://www.technologyreview.com/2016/09/29/157286/hydroelectric-power-isnt-as-green-as-we-thought/ Downloaded 05 14 2020).

[24] Ibid.

[25] China statistics, International Hydropower Association. https://www.hydropower.org/country-profiles/china (Downloaded 03 30 2020).

[26] Hydropower boom in China and along Asia's rivers outpaces regional electricity demand, The Third Pole. https://www.thethirdpole.net/en/2017/04/28/hydropower-boom-in-china-and-along-asias-rivers-outpaces-regional-electricity-demand/ (Downloaded 03 30 2020).

[27] Ibid.

Development Strategy of China highlighted the national goal, developing the West and promoting the transfer of energy to the East (Habich, 2015: 58). Because of this goal the construction of dozens of hydropower stations and dams had started, for example on the Lancang-Mekong which also originates from the Tibet Plateau and through Yunnan it crosses the border of China.

There are plans to have altogether 23 dams on Lancang (Xu – Pittock, 2018), the upstream and Chinese section of Mekong. Basist and Williams are counting with 10 already operating dams (Basist – Williams, 2020: 11), but Chellaney talks about 11 dams (Chellaney, 2019), the actual number is not known yet, but for sure there are alredy at least 10 operating dams on the upstream of Mekong, and a lot more under construction.

At the same time, besides the environmental concerns,[28] hydropower has further consequences in the case of international rivers, and Lancang-Mekong is for example an international river: countries donwstream are going to face negative outcomes, lack of water and sediments or missing water flow.

4. INTERNATIONAL CONSEQUENCES ON SOUTHEAST ASIA

The dams and the reservoirs, the need for water and the need for energy generated by water internationalized the water conflicts of China – although its position as an upstream country provides a more comfortable position for them in this regard. The water resources of both Kazakhstan on the northwestern border and the countries of Southeast Asia depend on rivers from China, but are unlikely and would not be able to take relevant diplomatic or military action against Beijing. In this paper we are going to focus on the latter region, including Myanmar, Laos, Thailand, Cambodia and Vietnam and the case of Lancang-Mekong. "The Mekong is one of the most important geostrategic areas of East and Southeast Asia. [..] The river is a source of water and food for approximately 70 million people" (Kákai et al., 2019), The role of China is crucial since the upstream section "provides as much as 70 percent of the downstream water in the dry season" (Beech, 2020).

[28] The Three Gorges dam on the Yangtze River is a great example of how such big investments and projects can harm and destroy the environment and human habitats.

A progressive cooperation, the so-called Mekong River Commission, has been established, but only with four members. China (and Myanmar, the upstream countries) decided to stay away from the cooperation, making it an organization with important goals and aims, but with limited capacities and capabilities. Lately its political and strategic importance has further decreased but its members have made progress in a number of areas, such as flood warning, and China has even joined the forecast in this regard, possibly showing the only future relevancy of the organization. However, a complex cooperative mechanism would be required as a result of the fact that the already existing dams in China can seriously affect water flow. Not really as a reaction, but in 2015 China created the Lancang-Mekong Cooperation Mechanism (LMCM) as a strategic cooperation towards the downstream states. The goals of this scheme do not really cover the river-related environmental and ecological concerns, but mostly focus on the economic benefits and cooperation. China is interested in further pushing its political and economic leverage, while the participating countries are hoping for more money and investments arriving from the upstream country (Kákai et al., 2019). Dominance and position can be highlighted successfully through Chinese gunboats cruising down until the Thailand border on the Mekong: "About every month, a few Chinese gunboats cruise down the Mekong River through Myanmar and Laos from China's Guanlei port. [..] Thai patrol boats sit bobbing gently, watching" (Sullivan, 2018).

So, a mechanism dealing with water flow and environmental consequences would be required unless dependency on China is without control. And it seems China does not always play a fair game. According to Basist and Williams, the record low water-level, and as Beech puts it "the worst drought in living memory" (Beech, 2020) in Thailand, Laos, Cambodia and Vietnam is a consequence of China using its dams and reservoirs to generate electricity and to store water for the dry seasons (Basist – Williams, 2020: 5). China describes this process as a regulatory one, where they utilize "these dams to regulate downstream flow so that period of high and low flow would be more evenly distributed. This also suits their need to distribute the energy production across the annual cycle, allowing the generators to be used more equitably throughout the year. The consequence of flow regulation is that water that would normally flow during the wet season is released during the dry season"

(Ibid., 4). Nonetheless, in 2019 the downstream countries suffered drought and low levels of water in Mekong, while Basist and Williams, analyzing the wetness index stated, "it is evident that there was above-average natural flow originating from the Upper Mekong" (Ibid., 18). The five dams (Miaowei, Huangdeng, Dahuaqiao, Lidi and Wunonglong) might answer where the extra water is: "The five dams built since 2017 are compounding the alteration of natural river flow as the reservoirs are filled" (Ibid.).

Of course we should not hide the possible positive consequences, if functioning properly, as it was disclosed previously, reservoirs can help rainy seasons by containing water, and dry seasons by releasing water. Chinese Foreign Minister Wang Yi already highlighted this fact on a LMCM meeting: "China has overcome its own difficulty and increased water outflow from the Lancang River to help Mekong countries mitigate the drought."[29]

The fact that these countries are dependent on China in an economic way, and also rely on the upstream country regarding the water flow is alarming, a more extensive international cooperation would be required to control the watercourses and the dam constructions, but since China refused to join the Mekong River Commission and created the LMCM instead, focusing more on the economic benefits, the downstream countries can only hope that Beijing will always be ready to provide water flow for them.

5. RECOMMENDATIONS

China should give up prioritizing its economic growth and focus more on sustainable growth and environmental issues, because these challenges already can cost billions of dollars for China questioning future growth. "The World Bank's Cost of Pollution in China study estimated that the water crisis is already costing China about 2.3 percent of GDP [..]. These estimates only represent the tip of the iceberg. They do not include the cost of impacts for which estimates are unavailable, such as the ecological impacts associated with eutrophication and the drying up of lakes, wetlands, and rivers, and the

[29] China says will help manage Mekong as report warns of dam danger, Reuters. https://www.reuters.com/article/us-mekong-river/china-says-will-help-manage-mekong-as-report-warns-of-dam-danger-idUSKBN20E20T (Downloaded 03 29 2020).

amenity loss from the extensive pollution in most of China's water bodies. Thus, total costs are undoubtedly higher" (Xie, 2008: xxi).

- We could see that Beijing realized the water problems and attempted to react, but further steps should be taken in order to successfully tackle these challenges,
- All water sources (surface or groundwater) should be managed in an integrated way and controlled by centrally defined guidelines. We could see in many cases that local, provincial level officials, decisionmakers were looking for alternative resources instead of controlling or cleaning up previously used ones,
- Strict control of water usage, the abolishment of subsidies provided for the companies and limited increase in water prices for the agriculture – where the amount of wasted water should be regulated through penalties and modernization,
- Integrated management of tackling water-related challenges at national level, to avoid situations where an alternative solution (like extensive use of groundwater or reservoirs and dams) can further deteriorate the situation,
- Extensive water cooperation with downstream countries on environmental, ecological and water flow issues, participation in international bodies dealing with the authorization of further dams and reservoirs on international rivers,
- According to the previous recommendations, the UN should be more active in tackling such regional water disputes and should develop and implement a strategy on protecting the rights of the people and communities living by and from international rivers.

6. CONCLUSION

While trying to collect recommendations for the country and the region, it should be kept in mind that rural and poor population is subsidized for a reason, agriculture is important because of food security and all are connected to the decades-long (so far successful) fight against poverty. This is a key issue for China since it is visible that the Party and the officials understood the meaning

and the complexity of water challenges, but they are trying to navigate between working solutions, keeping the power and the legitimacy and still pushing for economic growth and poverty alleviation. Xie also highlighted that China's "central issue is how to reduce rural poverty and secure the nation's food supply while at the same time improving the efficiency of water use" (2008: xxxii), and as we could see, the plans are not always better, often are creating further issues, already reaching out to the neighboring countries with their water issues, internationalizing the problem. And the situation will not be better soon: according to forecasted climate change scenarios "China can expect an increase in both average temperature and precipitation in the coming 50 to 100 years, compared to the reference period (1961-1990). This will have significant impacts on hydrology and water resources [...] [suggesting] that there will be more floods in the South and more drought events in the North" (Wang – Zhang, 2011: 80-81).

Within such conditions, given the disproportional distribution of the decreasing water resources, the pollution, waste and the huge population, Beijing has to introduce a comprehensive reform never seen before while they should acknowledge that downstream countries have the very same rights for water flow as the upstream countries.

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Reményi Péter

BORDER DISPUTES AND WATER CONFLICTS IN THE WESTERN BALKANS[1]

1. INTRODUCTION

Territoriality is a major characteristic of human beings. We like to have our own confined territories at various scales from the individual (my room) to the communal (our city). Territories *per definitionem* involve boundaries of various sorts, since they are prerequisites of delimitation of areas, thus territorialization. The current political order, based on territorial nation states works similarly, territories confined with boundaries are the building blocks of it, where theoretically every single point of the Earth's land surface (except the Antarctica) belongs to a state and only one state, divided by state borders. In this system any deviation from the ruling principle is considered a dispute, a situation which is problematic.

Furthermore one major source of power for political elites, ruling the territorial nation states is territory itself (Newman, 2006: 91-92), thus no states are happy to give up territories for other states. This leads in many cases to the bitter and lingering nature (e.g. Israel, Cyprus) of border disputes which can further deteriorate bilateral relations.

In the region of former Yugoslavia – due to the dissolution of the state – several border disputes have remained even quarter of a century after the conflict. Some of these are connected to bodies of waters as they play a special role in border delimitation and since they weren't fully addressed by the late Yugoslav authorities. This non-regulation and the violent dissolution of the state led to the lingering border disputes of the successor states of former Yugoslavia. In this short paper we intend to collect the major border disputes of the successors of former Yugoslavia linked to waters.

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2. THE SIGNIFICANCE OF BORDERS

Borders are inseparable parts of the Westphalian modern world order where territorial nation states are the major players of the international arena. Their territories are separated from each other by lines in the sand, called borders, which therefore separate the areas of two adjacent states.

Borders are addressed in various ways in different disciplines (international law, history, sociology, geography etc.) and in the last decades several interdisciplinary approaches have also emerged. In the classical sense borders are seen either as barriers, the outer layer of their states where they confront the rest of the world, thus they are the first lines of defence. Borders are also viewed as filters, with the help of which those in power can decide who and what can enter or leave the state and who and what has to stay in or out. A third approach sees the borders as interfaces or bridges, where states meet, interact and cooperate.

In the last decade an increased interest can be seen towards borders and border studies (e.g. O'Dowd 2002, Kolossov 2005, Newman 2006, Scott 2011, Laine 2016). This is due to several mutually reinforcing processes and events. In the decades around the turn of the millennia globalization has been gaining ground and we experienced a fast development in transportation and communication technologies as well as new ideas of economic and cultural globalization. It created the perception of a shrinking world where borders were losing their importance. The fall of the Berlin wall and the iron curtain led to the re-unification of Germany and Europe, and the general deepening economic and political cooperation in the Western world resulted in supranational institutionalized cooperations (EU, NAFTA etc.) where borders has been deconstructed from above. The image of the 'borderless world' have never been closer and clearer which fuelled increased interest of borders from academics around the world.

In the meantime new borders have also emerged especially in Eastern Europe, where synthetic "federal" states (Soviet Union, Czechoslovakia, Yugoslavia) have been split creating new nation states with a lot of new borders; again something academics were eager to examine. The (re)birth of (new) borders created borderlands, cross-cutting previously established territorial links of economy, transportation, city networks etc., and resulted in modified spatial patterns of

development. In some cases – in Europe especially in the former Yugoslavia – the establishment of new borders did not go smoothly which fuelled inter alia the involvement of academics in researching border issues (Reményi – Végh, 2006).

One can classify borders along multiple typologies. The genetic approach focuses on the context of the genesis of borders, distinguishing antecedent, subsequent and superimposed boundaries. A rather geographical approach is the morphological division of borders, which investigates their position to natural features (physiographic, anthropomorphic and geometrical boundaries) (Anderson, 1999).

2.1. The relation of borders and waters

In the latter categorization a distinct type of borders are the ones connected to waters, which include inland waters (rivers or lakes) and the open seas. They both constitute relatively good markers of borders since they are well visible and create a boundary like disruption in the space.

In the case of inland waters and especially of rivers the uniqueness of the borders derive from the fact that since the border itself is linked to the body of water and rivers are rather unstable physical features the borders can change their position as a consequence of the change of the course of the flow. There are several possibilities to link borders to rivers but all have the same effect in some way: international borders can be either riverbanks, or median lines, but most often (especially at navigable rivers) thalwegs, which is a line connecting the deepest points of a valley/river, thus being the natural navigable channel within a river (Whittemore, 1937: 446). A typical dispute emerges when a river changes it is course through natural movement and therefore the location of the boundary also changes. In cordial relations these changes can be adjusted from time to time (as was in the case of Hungary–Slovakia at the 1999 and 2018 modifications), but tense relations can cause longstanding disputes.

Other type of water related borders are the maritime borders, the current system of which was established by the UN in the Convention on the Law of the Sea (UNCLOS)[2] in 1982 (with entry into force in 1994). This regulates

[2] United Nations Convention on the Law of the Sea: https://www.un.org/depts/los/convention_agreements/texts/unclos/unclos_e.pdf (Downloaded 04 08 2020).

the maritime borders as well as the different maritime zones of each coastal states. Usually these borders and zones are clearly defined, but conflicting claims of sovereignty (e.g. the South China Sea) or the interpretation of the Law of the Sea (maritime boundary of the two Koreas) can lead to territorial and border disputes.

Bodies of water can play an indirect role in border disputes as well. In this case the border does not run along waters, but access to the water (river or sea) is the ultimate goal of the territorial dispute. In these situations corridor-like territorial features (e.g. Danzig, Leticia etc.) can be created which on one hand can provide the access, but on the other these are territorial extremities usually prone to geopolitical conflicts (Pap, 2001).

2.2. Border disputes

When neighbouring states are unable or unwilling to agree on their international borders border disputes emerge. The major theoretical types are positional, territorial, resource and functional disputes (Guo, 2018). In positional disputes the exact line of the border is disputed, either because the delimitation or its explanation in documents are not accurate enough or because changes on the ground alter its relative position and the affected countries disagree on the interpretation of the new situation (e.g. changing courses of border rivers). One may call territorial disputes the 'classical' border disputes, where in the focus of the disagreement stands the debated sovereignty over a territory. In these cases not the border itself is important but the contested rule over a piece of land or sea. Resource based disputes are centred around cross-border or border side resources, including but not limited to minerals (e.g. oil fields), fresh water (Jordan, Nile…), fertile lands etc. Again not the border itself is challenged but the use of resources affected by the border. Finally functional border disputes are related to the functioning, regulation and utilization of borders. Unilateral moves (closing the border, introducing discriminative measures…) are typical triggers of functional border disputes of neighbouring states.

3. THE BORDER ISSUES OF FORMER YUGOSLAVIA

During the dissolution of Yugoslavia (in several waves from 1990 to 2008, with still existing potential for further territorial fragmentation) territorial sovereignty and therefore border issues has been in the centre of the debates (Reményi – Végh, 2006). This is no surprise at all, since usually any state disintegration involves the necessity of agreeing on the new territorial order, thus on borders as well. One major reason from a geographical point of view, why the dissolution triggered a series of armed conflicts over territorial control can be found in the spatial configuration of former Yugoslavia (other major factor being the political elites' willingness and intentions to go to war for territories and power).

Firstly, the spatiality of ethnic groups did not match the territorial administrative structure of the state (Kocsis, 1993). Except Slovenes and their republic all federal units were multi-ethnic and the largest ethnic groups has lived in multiple republics and provinces, the Serbs (the largest group within the state) being the most scattered throughout Yugoslavia, which was, to some degree (Đilas, cited by Bataković, 1995: 32), an intentional move of Tito, aiming to curb potential Serb hegemonic aspirations. Secondly, the road to the dissolution was beset on all sides by growing ethnonationalism, which on one hand can't be perceived as something unusual in late socialist Europe during the last years of communism, while on the other, it was fuelled from the top by the national elites of each ethnonational groups (Juhász et al., 2003).

Thirdly, the borders of the federal units of Yugoslavia have been viewed only as administrative lines and have not been addressed by the state bureaucracy even when disputes among federal units arose. Tito even addressed internal borders as just lines drawn in granite, not to divide but to connect the nations of Yugoslavia (Bataković, 1995: 32). The exact moves, talks and debates surrounding the (re)establishment of internal borders after World War II are rather obscure (Režek, 2015), but Milovan Đilas, an influential politician of the time had important role in it (Klemenčić – Schofield, 2001: 12). The general rule (as agreed in 1945 by the Yugoslav communist leaders) was to re-establish the 1878 Berlin Congress international lines (Spahić et al., 2014), thus the historical approach was widely used, but not always and not everywhere, since some of them have never been international borders before

(e.g. the Danube between Croatian Baranja and Serbian Vojvodina). In some cases ethnic principles (defining the boundaries of Macedonia or Syrmia) or other strategic considerations (Bay of Kotor) have been used. Documents addressing the whole issue are missing (if ever existed) and one can rely only on indirect references. Various factors contributed to the creation of internal borders prior to the 1946 constitution, including historical, ethnic and administrative ones (Režek, 2015: 442).

Based on the above, it is no surprise that at the time of the dissolution of the state one of the major issues was the definition of the international borders of the newly emerging states. According to the Serbian position (which have been kept throughout the conflict, especially in the case of Croatia and Bosnia-Herzegovina) the internal borders of the member republics are merely administrative boundaries and not internationally recognized borders, furthermore the last constitution provides the right of secession to nations and not republics (people vs. territory), thus after the civil war the principle of the right of ethnic self-determination should be the basis of further territorial agreements, instead of the principle of the inviolability of borders. In contrary, the Bosniak and Croat positions, referring also to the last Yugoslav constitution, emphasized the international recognition of the republics' borders, the right of secession of the republics (and not the people), and refused to agree on anything else but their secession with their existing boundaries. During the clash of the two major positions reasonable and less reasonable arguments have been articulated for and against both ambitions. Apparently all parties tried to interpret the rules along their interests, but at the end, based on the rulings of the Badinter Commission, the republics' borders became the new international borders (Pellet, 1992; Radan, 1999; Hoffmann 2007).

The use of the *uti possidetis iuris* principle seemingly simplified the territorial consequences of the succession, but the ethnic tensions, which constituted an important layer of the conflict,[3] remained. Almost all former member republics (except Slovenia) inherited smaller or larger ethnic tensions

[3] We do not think that multiethnicity was the primary cause of the dissolution of the federal state, but it did contribute to the nature of it, triggering a bloody territorial war marred by large scale violence against civilians, mass displacement of people on ethnic basis, ethnic cleansing, etc.

in close connection to their new international borders. Therefore, instead of solving one important problem of the region, it was simply bestowed one administrative scale down from a federal level to the level of former republics (now independent states) (Reményi – Végh, 2006).

The wars that broke out during the prolonged disintegration of Yugoslavia (with the exception of the so-called Ten-Day War for Slovenia, which was a last effort to save the federal Yugoslavia) were all fought to fit the ethnic and administrative borders, and include as many members of the respective nation as possible. Due to the fragmented, mosaic-like ethno-territorial patterns of many regions of Yugoslavia, this resulted in displacement of 'others' from territories under the rule of a given nation and the violent occupation of lands under the control of other nations on ethnic claims.

After the series of brutal wars a US brokered peace deal ended the first stage of the dissolution. The treaty, which was agreed in Dayton, Ohio and signed in Paris in 1995, set the new territorial structure of the region including borders. All independent countries inherited their pre-independence administrative borders and a new, unique type of boundary was set up in Bosnia-Herzegovina to divide the warring parties, creating the Federation of BiH and the Republic of Srpska (Juhász et al., 2003). Later secessions also followed suit, both Montenegro and (however not a settled issue so far) Kosovo declared their independence within their former administrative borders.

3.1. Case studies

Following the dissolution, former internal administrative borders became international, and the disagreements among them turned from domestic disputes to international tensions. Due to the Yugoslav administration's neglect of internal borders, and it's perception that they are only for administrative reason, no one was prepared for managing them in an international environment, which in some cases led to lingering border disputes among the former member republics. In the following section we give a brief overview on the ones connected to waters.

3.1.1. The Gulf of Piran and the Slovenian exit to the sea

In the core of the maritime border dispute (the wider issue also involves disputed land borders) is the lack of previous maritime border delimitation between Slovenia and Croatia. The maritime boundaries of the north Adriatic have been agreed in 1975 by Italy and Yugoslavia in the Treaty of Osimo, which also divided the territory of the Free city of Trieste. The UNCLOS maritime border system was also debated during the existence of Yugoslavia, signed and ratified in 1982/1986 by the federation. This means that the Yugoslav–Italian (external) maritime border was set, but internal maritime lines between Croatia and Slovenia have never been properly established (Avbelj – Letnar Černič, 2007: 4).

Slovenia's short coastal strip (46 km) consists entirely of the parts of the former Free city of Trieste and due to the shape of the gulf, following the independence of Slovenia and Croatia, the former found itself stuck between the maritime zones of Italy and Croatia. From 1995 the border dispute has revolved around the Slovene demand of free access to the international waters which were blocked by the territorial waters of Croatia and Italy. Slovenia claimed the whole gulf or at least beyond the median line and a corridor to the international waters.

On the other hand, Croatia insists on the median line and refuses providing the corridor through the claimed territory. Both countries refer to different parts of the UNCLOS agreement, and several rounds of talks have been organized together with agreements (Drnovšek-Račan in 2001, Bled in 2007) which have later been ratified only one party. Slovenia even used its veto blocking Croatia's EU accession to enforce its interests. The dispute seemed to be ended by a binding rule of Permanent Court of Arbitration (in 2017, favouring Slovenia), which was however refused by Croatia (Pavlic, 2017).

3.1.2. The Pelješac bridge and the Bosnian exit to the sea

Similar to the Slovenian coast, the Bosnian is also a narrow strip of land (21 km), a consequence of previous treaties, but in this case dating back to the late 17th, early 18th centuries (Treaties of Karlowitz 1699 and Passarowitz 1718). Neum in the north, together with Sutorina in the south were established as

buffer zones between Ragusa and the Venetian Republic. As border changes continued in the region, Neum remained part of the territorial unit now called Bosnia-Herzegovina and serves as the only access to the Adriatic for the country after its independence (Bickl, 2019: 51).

The corridor of Neum therefore disrupts the land continuity of Croatia, creating a sort of an exclave in Southern Dalmatia. The control of transit traffic through the corridor is a potential leverage in the hands of Bosnia-Herzegovina, and the mere existence of it once Croatia joins the Schengen Area can create unmanageable border situations. In the late 1990s negotiations have started between the two states involving special transit rights for Croatian traffic through the corridor and special commercial rights for Bosnian companies in the Croatian port of Ploče (the largest port in the region, where the V/C transport corridor ends, linking major Bosnian cities like Tuzla, Zenica, Sarajevo and Mostar), also known as the Neum/Ploče agreement, but without final consensus so far.

Since the early 1990s Croatia has had, at least theoretically, a plan to solve the unfavourable situation unilaterally: constructing a bridge over the Adriatic, linking mainland Croatia with its southern exclave, bypassing the Neum strip. While the bridge is to be constructed over Croatian territorial waters, Bosnia-Herzegovina opposes it for two reasons: it may hinder the maritime traffic to and from the potential Neum port (if a commercial port will be constructed here ever), and since the maritime boundaries between the two states are not concluded yet (similar to the context of the Gulf of Piran dispute), and the ownership of two small uninhabited islands (Mali Skolj and Veliki Skolj) is still disputed (Papadopoulos, 2018). Furthermore, the history of the bridge shows that such a large and expensive construction, perceived by some as prestige investment, is hard to accomplish. In the last plans the bridge will be high enough to let all vessels enter the Bay of Klek and even EU financing can be involved (Pavlic, 2018).

3.1.3. Sutorina

Sutorina is located in Western Montenegro with a narrow coastal strip to the Bay of Kotor. The municipality, together with Neum served as a buffer zone between Ragusa and the Venetian Republic from 1699. From the Berlin

Congress (1878) both areas became parts of Bosnia-Herzegovina and while Neum still belong to that country, Sutorina was transferred to Montenegro in 1947 as part of a land swap between) the two socialist member republics (however without direct written sources on the transfer (Spahić et al., 2014: 8-9). After its independence, Bosnia-Herzegovina started to dispute the area until the 2015 Vienna Agreement, where it renounced claims on the municipality. For Bosnia-Herzegovina, the small exit to the sea is more than just a symbolic issue, knowing the disputes along its other narrow corridor at Neum. This dispute is (was) clearly a territorial one, the sovereignty over the municipality is debated, and not the position of the border itself.

3.1.4. The Prevlaka peninsula

Not far from the Sutorina area another disputed border is located. The Prevlaka peninsula of Croatia is a narrow strip of land in front of the entrance of the strategic Bay of Kotor of Montenegro. From the Treaty of Vienna (1815) until World War I the Habsburgs, between the two world wars Yugoslavia ruled both. During the establishment of the internal borders of Yugoslavia, the Bay of Kotor was ceded to the Montenegrin republic of Yugoslavia while the Prevlaka peninsula remained part of the Croatian republic, which meant they were separated into different federal units of the same state. Tensions arose following the secession of Croatia and the explanation behind have been the same as with the Gulf of Piran dispute: the international border dispute of successor states grew from the lack of proper definition of maritime boundaries between the federal units . However, in the case of this dispute the stakes are not as high, it does not practically block other countries' access to the sea or significant resources. The dispute is more symbolic, but it has not been solved yet, though an agreement have been reached in 2002 (Pavlic, 2017).

3.1.5. The Danube

The most important fluvial border dispute in the region is the one between Croatia and Serbia along the Danube. The core of the dispute is the disagreement of the parties on where the actual border should run (a positional dispute). The Croatian position insists on the borders set in the 19th century along the

then current course of the river. Since then these borders have always been used in lower territorial scales (municipal territories and cadastral mapping), and also in military maps in socialist Yugoslavia (the 1:50.000 topographic maps prepared by the Army Map Service of the US Army based on the 1964 Yugoslavian military maps show the same boundaries).

Due to hydro engineering and natural movements of the Danube, the river does not follow the course it used to centuries ago, meanders have been cut off and the river now flows a bit more to the west. The Serbian position is that the international border should follow the actual thalweg, in simple the actual course of the river. Their claim is based on the report of the Đilas commission which defined the internal border to be run along the Danube in 1945. Furthermore this would make life easier for all, in case the two states could agree on exchanging territories which belong to them but are now cut off by the new course. Two major obstacles can be identified here: firstly, from a practical approach, the Croatian territories which are now on the eastern side of the river are somewhat ten times larger than the Serbian territories west of the river (1000 vs 10,000 ha) (Klemenčić – Schofield, 2001: 19). Secondly, from an ideological approach, regardless of the size of territory it's hardly imaginable that Croatia who just fought a territorial defensive war 30 years ago against Serbia would give up an inch of its territory.

This leaves the boundary issue along the Danube in a deadlock where even strange border-related ventures show up. In 2015, on a small island which was claimed by neither Serbia nor Croatia (being to the west of the main branch of the river, so from a Serbian perspective it's Croatia, but being east of the former course, so from a Croatian perspective it's Serbia), thus theoretically being a *terra nullius*, a Czech politician proclaimed the new state of Liberland. From our point the intentions and interests of the state-founder are of secondary importance, but they clearly display how the disagreement on the border between Serbia and Croatia can cause turbulences in international relations even beyond the confines of the two neighbouring nations (Rossman, 2016).

4. CONCLUSION

Border disputes following state dissolutions can be lingering issues, especially if the dissolution takes shape in a series of bloody territorial civil wars like in former Yugoslavia. The symbolic aspect of boundaries and territories in these cases cannot be overestimated, nation buildings are usually at full swing in post-conflict societies, identities are still under constructions and those constructing them are overly sensitive. This makes any border adjustments difficult, but still, the most troublesome cases are the ones which include objective advantages as well besides the symbolic/spiritual ones, like access to resources.

Among the disputes of former Yugoslavia the most problematic ones are those connected somehow to waters. On one hand because of their rational advantages (access to seas, rivers as resources), while on the other because these are either the boundaries which had been rarely if ever addressed in details by authorities in former Yugoslavia, or because the modifications are without proper explanation. Some lines, especially the maritime borders, have never been set up, while others have been left unattended for decades (e.g. the Danube), despite the changes in the natural environment around the boundary.

The unresolved border issues have far-reaching consequences on politics as well. Long lasting disputes can be focus points of political mobilization against other nations but at least issues that prevent the establishment of cordial neighbourly relations in an unstable region which for its development first of all needs stability. In the case of the countries of former Yugoslavia Euro-Atlantic integration creates further complications. Border disputes are not welcomed in the community and territorial extremities (like the Neum corridor disrupting Croatian land continuity) are problems to be solved in systems like the Schengen Area. In the new EU strategy towards the Western Balkans (A credible enlargement perspective for and enhanced EU engagement with the Western Balkans) it is explicitly stated that the EU cannot and will not import bilateral border disputes, they have to be solved before a country accedes (European Commission, 2018; Orlandic, 2019). Since EU accession is by far the most important stabilization and development factor for the Western Balkans currently on the horizon, unresolved border disputes seem to be, as for now, unsurmountable obstacles of long-term stabilization of the region. Or at least not in a European context, the signs of which are already present in the region.

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Norbert Pap

GEOPOLITICS OF RIVERS AND SEAS IN THE CARPATHIAN-BALKAN REGION:
THE HUNGARIAN PERSPECTIVE

1. INTRODUCTION

Writing about the geopolitics of high seas as a citizen of a land-locked country in the middle of Europe is an astonishing opportunity to reflect on broader contexts.

Considering the east-to-west waves of peoples between the 4th and 10th century in the Eurasian region, Hungarians have been among the last to arrive to the Carpathian Basin. Neither them, nor the populations cohabiting the Basin and mixing with them had actual connections to the seas, their way of life was and remained continental. Considering the most significant bodies of water, only rivers played a major role in their lives. Till the 19th century, society depended greatly on nature and was influenced by the precipitation/drought, the volume of production and the sequence of floods.

Following the Turkish Wars in the 15-17th century, the modernisation of the country was on the agenda, also making a sea exit more valuable. Roads connecting Hungary with the Adriatic coast (primarily the town of Fiume/Rijeka) had to be constructed through the limestone mountains of the Dinaric Alps. It was very problematic to cross the dry limestone ranges in the summer period. Charles III of Austria launched significant developments from 1725 in the region, established the road through the Karst and also improved seaports. At the same time, Rijeka (Fiume) became a free port. During the reign of Maria Theresa, with a rescript issued in 1779, Rijeka was created "Separatum corpus Sacrae regni Hungariae Coronae adnexum" (*a separated body attached to the Hungarian Crown*), recognising the town's direct relationship with the Hungarian state.

In the 19th century, the Adriatic gateway had become a practical and symbolic place of Hungarian economic modernisation and overseas trade. In the transportation concept of statesman and first Hungarian Minister of Public Works and Transport István Széchenyi, it also played a prominent role, but the ambitious plans only started to materialise following the Austro-Hungarian Compromise of 1867.

The few decades from 1867 to 1918 were the golden years of Hungarian maritime policy under the aegis of the Austrian imperial aims. The Adriatic gateway was manifested in the development of the Fiume/Rijeka port and the rapid growth of overseas trade. However, the romantic notion of Hungarian coastline also played an important role in culture, arts and science. During the Austro-Hungarian Empire, especially the town of Opatija (Abbázia) was an important symbolic holiday location and became a popular tourist destination of the politico-economic elite.

After World War I, the borders of Hungary fell far from the seas, but the symbolic remote connection persisted through the Hungarian admiral uniform of regent Miklós Horthy, or birthplace of communist general secretary János Kádár in Rijeka.

Following the transition to democracy in 1989/1990 and especially following the accession to the European Union in 2004, Hungarians started to have an en masse experience of the seas. The Adriatic Sea has once again become a somewhat "Hungarian" sea, but nowadays this notion is only based on the half-million Hungarian tourists visiting the area annually, and the thousands of holiday homes purchased near the beaches. In the last few decades several Hungarian cabinets have taken efforts to develop Hungarian maritime capacities, focusing primarily on the ports of Koper, Rijeka, Trieste and Ploče (Pap, 2020: 46).

2. MARITIME POWER, LAND POWER AND THE SITUATION OF HUNGARY

Hungary is situated very close to the regions where "maritime power thinking" was born: the Balkan Peninsula. Also, according to some (minority) approaches, it is also a part of this region (Carpathian-Balkan region). The concept of

maritime power (and at the same time of land power) was born in the culture of ancient Greece. They were the first to distinguish between thalassocracy (a state whose power derives from sea supremacy) and tellurocracy (associated with land) (Momigliano, 1944). The Minoan civilisation established on the Aegean Islands was the first state to apply the term "sea power". The artefacts discovered first at the Knossos excavations and then at the archaeological sites of other towns depict the life of maritime peoples.

Obviously, the existence of sea power also presumes the existence of land power. One of the first major representatives of land power was the Persian Empire fighting the Greeks, a classic continental state in Asia. The Greco-Persian Wars in history symbolise the political and civilisation clashes between Asia and Europe, as an antitype of the fights between the enlightened West and the despotic Asian states, and also between democracy and tyranny.

The distinction between sea and land has continued during the millennia that have passed since, repeatedly arising, but nowhere as dominantly as in Anglo-American political thinking. The dimensions of this approach are global, since first the British and then the Americans became able to use world seas as the political domain of enforcing their interests, more than any other power preceding them. However, it is interesting to see that they often reflect on the original territory where the concept was born.

According to the approach tied to US naval officer Alfred Thayer Mahan (1890), the Mediterranean region plays a key role in controlling the strategic waterways (Bosporus-Dardanelles in this case). According to the Heartland/Rimland idea coined by Nicholas John Spykman, the place of conflict for the sea/land antagonism is the East-Mediterranean region. Then, it played a central role in the application of President Truman's containment policy (based on the ideas of Spykman) as one of the primary strategic objectives of the United States, in order to protect Greece and Turkey, countering Soviet expansion. In the "evil empire" concept professed by President Ronald Reagan, it is part of the buffer zone between NATO and the Soviet satellite states. In Huntington's civilisation conflict theory, the Bosnian conflict is one of the key demonstrative examples, where Catholic Croats, Orthodox Serbs and Muslim Bosniaks wage war with their allies from the same civilisation identities (Huntington, 1996). In American geopolitical visions dividing the world in a Manichaean fashion, the Balkan Peninsula is often depicted as a region of suspicious dictatorships,

which export terrorists, organised criminals or blind-faith nationalists to disturb peace.

The abovementioned facts clearly show that Hungary as a neighbour country is undisputedly connected to discourses about the nature of maritime power.

3. LAND-LOCKED STATES AND SEA EXITS AROUND HUNGARY

Altogether, 15 states are cut off from the sea in contemporary Europe, and their sea access requires crossing the territories of other states. The distribution of land-locked countries increases from the west to east. Their territorial distribution, considering distance from the nearest sea is characteristic. It can be concluded that out of the 15 states, 12 lie closer to the Mediterranean, one (Luxembourg) to the Atlantic Ocean, and two (Belarus and the Czech Republic) to the Baltic Sea. They do not share many common features, but they are all relatively small countries with low population. Even when combined they give a small, approximately 10% share of the continent.

In classic geopolitics, land-locked countries have been typically considered buffer states, but we categorise them into three groups according to their origins. The first group comprises microstates with origins in the Middle Ages, or "remnant states" (Andorra, Liechtenstein, San Marino, Vatican City). The second group comprises states that traditional political geography considers buffer states (Switzerland, Austria, Luxembourg and Hungary, as well as the former Czechoslovakia). These include Switzerland, one of the most stable elements of the European system of governments, in the belt separating the southern Latin and the northern Germanic Europe. And this belt also includes Luxembourg and Austria which are less typical in this manner. After the Treaty of Trianon Hungary was created as a "cordon sanitaire" of the Middle European (Mitteleuropa) buffer state zone. The third group comprises the Central European states established in the new wave of state-formation in the 1990s, also supported by efforts of major powers to renew and strengthen the buffer state zone. But these are mostly states established on an ethnic basis.

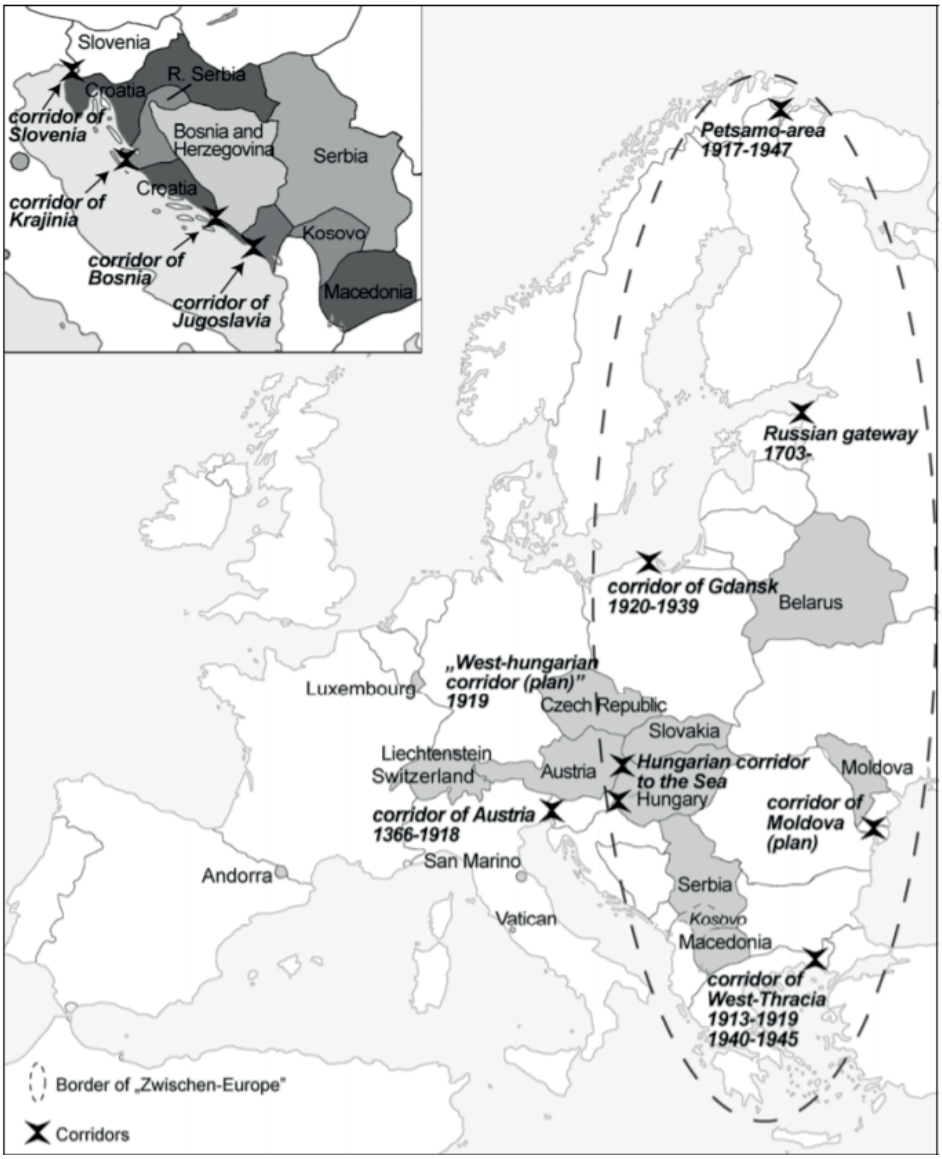
Internal processes played the main role in their development, and then they were granted recognition by major powers.

In the course of history, several different methods of accessing the sea have evolved. In the Middle Ages, the use of navigable rivers leading to the seas was considered to be granted by divine right (natural right). In reality, this was a limited option. In the modern period, accessing the seas could be provided in treaties and agreements. The internal transportation systems of Europe are defined by two key rivers: the Rhine and the Danube. The Central Commission for Navigation of the Rhine – one of the oldest multilateral bodies in Europe – was created in the convention of the Congress of Vienna. Its main task was duty is to solve issues related to free navigation. Its members initially included some of the states along the river, while Belgium and the United Kingdom joined after World War I. Originally navigation of the river was not free at all, and it could only be reached in several stages, through several treaties. These include the Mainz Convention of 1831 which ensured free navigation to states along the river route, or the Mannheim Convention of 1868 regulating that both the vessels of the states along the Rhine and other states are enabled to freely navigate the river (Pap, 2001). However, some privileges (e.g. cabotage) are still not authorised entirely.

Free navigation of the Danube developed similarly. In 1840, Austria and Russia concluded a so-called Danube-navigation treaty to stipulate the freedom of navigating the river. The same thing was set forth in the 1854 English-French and Austrian-Turkish treaties, and then the Treaty of Paris (1856) concluded by major powers declared the Danube an international river (Pap, 2001). They also established several organisations to oversee approved formulas. Regardless of the principle of free navigation, transportation on the Danube developed subject to the power relations of the major states. Defeated countries of the wars were typically banned from the river commissions and provisions were adopted to their detriment.

Therefore it is no wonder that states facing issues related to maritime transportation considered actually occupying coastal areas as the safest solution, in order to open a land exit to access the sea.

Figure 1: Corridors in Europe



Source: Pap, 2001.

From a historical perspective, the most significant effort was conducted by the Russian Empire which set out the objective of securing a free passage to a warm sea. Till the 18th century, the Russian state was land-locked. Endeavours

were started by Peter the Great to construct own ports for the Russian Empire in the Baltic Sea and then the Black Sea, but with less than satisfactory results. In addition to Russia, there are states in the Baltic and Black Sea regions with exits to a closed, controlled and controllable closed sea. Based on historical experiences, their opportunities to exit to the world seas must be considered limited. Such countries include e.g. Bulgaria and Finland. The heyday of disputes and efforts related to corridors was in the first half of the 20th century. At this time, the states of the extremely disintegrated European continent were characterised by borders difficult to pass, high tariffs and a tendency of autarchy. Nations were suspicious of each other and the wounds of mutual damage were still fresh, which ultimately led to World War II.

Following World War II, the situation did not improve much during the Cold War. As the iron curtain was drawn, Eastern Europe was even strictly isolated from Szczecin to Trieste, compared to the previous period. Only détente periods improved the situation, until the arms race was finally won by the Western Allies, and the peoples of Central Europe changed their social/economic systems and in many cases their states as well.

The state-building wave of the 1990s in Central Europe increased the importance of corridors to the sea, primarily in the Mediterranean and the Black Sea region. In the Balkans where new states were formed in the course of acts of violence and wars in the territory of the former Yugoslavia, the land-locked status was included in the themes of intergovernmental relations. The Greek blockade of Macedonia in 1994 showed how serious advantages an own sea exit can have. This can explain the efforts of Yugoslav successor states to have their own seaports, and also to construct these ports and provide them with the appropriate transportation background. Narrow sea access points are available to Slovenia in Koper and Bosnia and Herzegovina in Neum. The international legal status of the Piran Bay led to international tension between Croatia and Slovenia. The Croatians strive to bypass the Neum corridor which divides the territory of the Croatian state, by constructing new roads and a bridge through the islands. The self-proclaimed Serb proto-states also wanted to have their sea exits ensured. Serbia's sea exit was lost in 2006, when Montenegro left the state union.

In the wider region, the Balkans is not the only ones where controversial situations have arisen. One of the new Eastern European states, Moldova has

found itself in a peculiar situation. This state would have to ways of connecting to the Black Sea. It can either implement a land exchange to access the sea, or establish a waterway through the Danube, enabling it to receive seagoing vessels in a port to be constructed on the Prut.

4. GEOPOLITICS OF WATER AND TERRAIN IN THE CARPATHIAN-BALKAN REGION

Geographical conditions can significantly support or restrict the political activities of communities within the society. In the Carpathian-Balkan region, the horizontal and height fragmentation of the surface, the distribution of resources, the characteristics of the internal water bodies and the sea neighbourhood relations, as well as the lack of territorial closure from the east, such (geo)political consequences may arise which fundamentally influence the lives of the communities living here for centuries, and also affect their future prospects.

Considering height fragmentation, mountainous and forest areas are typical: 15% of the area is above the height of 1000 m. Compared to other areas of Europe (only 6% above 1000 m), mountainous conditions are much more definitive in this region. The role of river valleys is significant in settling and political spatial organisation as well, demonstrated by the development of the network of townships and towns, as well as the history and organisation of the historical state system. A prevalent characteristic of the Balkans is the connective/transit feature between Central/Western Europe and Asia. This has had a major impact on the road network, flow of persons, goods and military movements, in addition to the town network. The region has a secondary connective importance between Central Europe and the Mediterranean, and a tertiary importance in the East-West direction between the Black Sea and the Ionian Sea. Not only settlement processes, but e.g. the flow of ideologies also follows these directions.

Hungarians have had knowledge about and interest in this region since the Hungarian conquest of the Carpathian Basin in the 9th century. It has been impacted several times from the south, and Hungarian-oriented states have also had major impacts on the history of the region. Hungarians have achieved

this while being culturally distinct, with a language, identity and cultural background that were already distancing them from other peoples in the region, which looked at them as foreign, with their origins back in Asia. Also contributing to this, Hungarians are generally continental people residing on the plains and on hillsides (with such identity), with only a single significant exception: the Székelys (Szeklers). In the main directions of international relations, Hungarian interest has been and is still present, since the Carpathian Basin has played a pivotal role as an unavoidable transit area (Pap, 2020: 38).

5. THE BALKAN PENINSULA, NATURAL WATERS AND THE APPROACH TO SPACES

The peninsula character is a defining aspect of the self-identity of peoples living in the Carpathian-Balkan region. As a question of neighbourhood, the Balkans (and the space of the Balkans) has not only become a question for Hungary and Hungarians, but also for the ancestors of Slovenes, Croats and sometimes Austrians. It has also become an important direction for orientation for Romanians and Romania, but in their case the question of inclusion is more emphasised than in the case of other northern border peoples. Due to heritage of the Ottoman past and Orthodoxy, the Balkans will always mean a similar content and quality for the Romanians, although the country is also closely linked to both Central and Eastern Europe. Austrians have an actual neighbourhood connection, while their economic (and sometimes political) interests also linked them to the region. In the case of Slovenes, belonging to the group of South Slavic languages, the shared Yugoslav history in the 20th century and their business interests form the basis for the connection. For Croats, in addition to the South Slavic language and the Yugoslav history, their municipal territory deeply extends into the area of the Balkan Peninsula also (Pap, 2020).

Regarding the question of where the northern border of the Balkan Peninsula lies, there is no agreement, but maybe a geography-based consensus is not even possible to reach. If we compare it to the two other major peninsulas in Southern-Europe, those have high-rising, almost wall-like mountain ranges at their northern ends (Pyrenees, Alps). In the case of the Iberian Peninsula the political (state borders unchanged for 400 years), while in the case of the

Apennine Peninsula the cultural (Latin-Germanic) borders have become the reasons of clear divisibility. In the case of the Balkans, natural factors, border marks found in nature are less dramatic in their appearance, the cultural space is intertwined and political borders have changed in a very variable manner during the last 200 years. The comparison clearly identifies disadvantages in the case of the Balkans. Researchers have come up with many definitions to the northern border of the Balkans, the latest in 2020 (Pap, 2020: 39). However, these disputes about "borders" clearly direct our focus on the many possible approaches of the region and some of its key geographical elements.

The main underlying question of geography related to the Balkans is whether there is such thing as the "Balkan Peninsula"? Many researchers in the French field of geography suggest that the southern part of the area we are examining is the Greek Peninsula, while north of it lies the "Danube Europe", or at least the space and territory of a major geographical misunderstanding (Derruau, 1958; Blanc, 1965). This distinction plays a key role in the geographical approach of the region, not only in the present, when a large European experiment/project has been launched in the Danube Strategy. This was also the case in the 19th century, when peoples liberated from Ottoman rule linked the relationships along the Danube to modernisation, opening to the West and Europe. Greece,[1] the "most Balkan" state in the geographical sense, has "escaped" from the Balkans following the outbreak of the Cold War, when it joined the Western, European and Atlantic structures. Thus, the South Balkans "slipped" to the north, into the southern areas of the former Yugoslavia and Albania. These examples show that in the Balkans, borders, geographical nomenclature, spatial community identity, and in the end, the identities built upon all these have a key role even today.

Unsurprisingly, it is the consequence of a geographical mistake. In the 18th century, not long after the first great geographical space theory (the landscape

[1] The social/religious character, approach to its neighbours and political culture of Greece is not particularly different from its northern neighbours. At the same time, it successfully established a European image as the motherland of ancient Greek culture, democracy and the Olympics movement. It was successful in having these recognised at the mass level, as a significant tourist destination, using the infrastructure constructed using European transfers. And with economic successes in the 20th century, it was able to have a good position to participate in the re-integration of the Balkans as the most developed neighbour, as a key investor and a stable democracy. In this positive process, the financial crisis of 2008 and then the crisis of the Eurozone was a major breaking point.

theory) was born, Europe was divided into large "objective" geographical units based on physical features. Beforehand, the usual space management described and managed distinct areas based on their political identity, but the political frameworks were changing and this caused obvious problems in establishing a scientifically appropriate spatial nomenclature. German geographers played a decisive role in defining large European territorial units, even though they often lacked field experiences. Through the work of Gatterer in 1775 (Gatterer, 1775) the name Pyrenean Peninsula was born,[2] and then using a similar methodology, the area south of the Alps (on the present Apennine Peninsula), and thirdly the area named after Haemus in the ancient era (called by Bulgarians Stara Planina) were also treated as distinct units. Finally Zeune (Zeune, 1808), another German geographer called the first the Alpine Peninsula, while the other the Balkan Peninsula (replacing Haemus with its Turkish name, "Balkans" which means "forest mountain"). Suggesting the actual lack of geographical information about the Ottoman Empire, and based on common map depictions in the 18th century, it was generally thought that the Balkan Mountains spread all along the northern part of the peninsula in east-west direction. In the 19th century it was obvious that this presumption had been false, but the use of the name carried on, while the more established Alpine Peninsula name is not used and the Pyrenean Peninsula name is less used nowadays.

It also had other names, such as Slavic Greece, and Ritter called the area spanning from the Danube to the Peloponnese the Greek Peninsula, but these name variants did not gain ground. The term Southeast Europe, which also reflects the German geographic approach and geopolitical content, is still in use, although with significant changes as to its content and a different scope (covering more than the actual peninsula).

It is safe to say that the name of the region is not based on its physical properties, it is a social construct, however the efforts to describe a range of cultural, civilisation and political phenomena with physical features still persists. Balkans is the most commonly prevailing category in people's minds, but it still suggests the notions that refer to Asian features in the Southeast European region (Pap, 2007). Some interpret the Balkans as a geopolitical crossroad with changing contents, which does not only exist in people's

[2] Johann Christoph Gatterer (1727-1799) German historian, geographer, professor at the University of Göttingen.

minds (Prevelakis, 2007). The author of this paper accepts the view that the Balkans and a "Balkan identity" cannot be interpreted without Europe and a "European identity". In many ways, this region means everything contrary to Europe and European values, and in reality these are the greatest challenges it has to face nowadays.

We may come to ask the question: is the Balkans as a territorial framework the foundation of any kind of regional (Balkan) identity? Compared to the other South European peninsulas, opposite-direction processes have led to different answers. Following the storms of the Migration Period, large state frameworks have been created during the centuries that followed in both Italy and the Iberian Peninsula (Italy and Spain), in addition to some remaining territories which did not integrate into these[3]. Loyalty to the states has resulted in peninsula identities.

However, the Balkans was put on a different track. The Ottoman Empire had unified the Balkans for centuries, and after it collapsed, the region disintegrated in an extreme way several times. Integrative forces are weak and the regional identity is lacking, because there is no content that would be based on positive past experiences and an attractive vision. Considering the supranational identities, the Yugoslav identity lives on somewhat (in the form of Yugo-nostalgia), but it is only relevant in some parts of the Western Balkans. In the case of the Vlachs, sharing the "Balkan identity" the most, no national awakening has been happening, and therefore they failed to develop a regional common identity. The Turks are the keenest on treating the Balkans (the peninsula) as one, all other local actors find it a community uncomfortable to handle, due to the conflict-laden relationships. The Balkans is a category with no real positive message for associating with it, and therefore it is quite problematic to find such identities.

Also, examining other borders of the Balkan Peninsula can lead to lessons learned. The other borders are maritime borders, and therefore the boundaries are less like to cause dramatic issues, but it is interesting to note that the approach of the peninsula is very different in certain coastal areas. The Hellenic world of the southern areas is an organic and essential part of the Balkans, but due to different reasons (including the key role of ancient

[3] The Vatican and San Marino in the Apennine Peninsula; Portugal and Andorra in the Iberian Peninsula.

Greek culture in European history, early accession to NATO and the EU in 1952 and 1981 respectively, a more intensive experience of a Mediterranean lifestyle compared to other similar areas of the peninsula), people living in the Greek areas also consider themselves part of the Mediterranean, as much as the Balkans. Additionally, the links of some Greek islands to the Middle East are also not lesser than to the Balkans/Europe. Greece has acted as a "European" state for decades, first as a member of the Atlantic community, and since the 1980s as an acclaimed member of the European community. This country with an increasingly modern reputation, progressing with the integration seemed to have left its past behind for good, when the Olympic Games were taking place in Athens. However, in the country that had accumulated an unsustainable amount of debt, the financial crisis of 2008 has led to consequences that basically "pushed it back" to the group of problematic Balkan countries. Also, the migrant/refugee crisis has shed a light on the general transit country nature of states in the region, as well as the relative geographical unity of the whole peninsula. This led to the beginning of another deep-dive process of the "Balkans".

Figure 2: Possible northern borders of the Balkans

Edited by Norbert Pap, based on several geography works, especially the paper by Sándor Konkoly (Konkoly, 2006). Graphic design: Csaba Heitmár

Table 1: Possible northern borders of the Balkans

Order of boundaries from North to South		**Boundary name**
1.	Danube – Drava line	*Györffy, I.,*
2.	Trieste – Odessa line	*traditional theoretical boundary with no identifiable first representative*
3.	Danube – Sava – Gulf of Trieste	*Lóczy, L.; Cholnoky, J.*
4.	Danube – Sava – Soča	*J. Cvijić*
5.	Danube – Sava – Ljubljana – Gorica line	*G. Ricchieri*
6.	peninsula bordered by latitude 46°	*H. Renier*
7.	Sava – Kupa – Gulf of Trieste	*Mendöl, T.; Lóczy, L.*
8.	Danube Delta – Istria Peninsula line	*Kogutowitz K.*
9.	Southern Carpathians ridge	*Lóczy, L.; Cholnoky, J.; Mendöl, T.; Szabó, P. Z.*
10.	Danube – Sava line	*Havass, R.*
11.	line of the Danube	*Tóth, Z.; Hézser, A.*
12.	ridges of the Dinarides	*Hézser, A.; Morgenstern, H.; A. Zeune*
13.	Danube – Sava – Una line	*Tóth, Z.*
14.	ridge of the Balkan Mountains	*A. Zeune, Morgenstern, H.*
15.	Balkan Mountains – Sar Planina – Kosovo Polje – Dinarides	*Morgenstern, H.*
16.	Thermaic Gulf – Black Drin valley	*Cholnoky, J.*
17.	Thermaic Gulf – Bay of Vlorë	*Mendöl, T.*
18.	The Balkans is a problem, not an area, therefore it has no boundaries	*Blanc, A.*
19.	There is only a Greek Peninsula	*Derrau, M.*

Source: Pap, 2020, Konkoly, 2006.

Different authors were clearly uncertain, while they were trying to define a northern border for the Balkans using geographical elements. The original, classic solution was finding which mountain range closed the peninsula to the north. In addition to the Balkan Mountains (Stara Planina), the Southern Carpathians to the north were also considered a possible boundary, as well as the Julian Alps mountain range in the north-western corner of the peninsula or some ridges of the Dinarides. However, in many areas, vast plains are located between the mountains, and soon the rivers running on the plains and at the foot of the mountains were highlighted as geographical elements applicable as regional boundaries. There are several rivers and neither of them is a significant barrier, on the contrary, they have a linking character. Therefore selecting the rivers bordering the Balkans from the north is quite arbitrary.

The Danube and the Sava are the most frequently mentioned ones as peninsula boundaries, but the Drava, Soča, Una, Kupa and Drin rivers are also used. This uncertainty and the weak nature of the arguments for the boundaries contributed to the rise of alternative solutions to the classic boundaries. There are some authors who state that the peninsula simply comprises the Greek Peninsula, and something else lies north of that, for example Danubian Europe (Pap, 2020: 40). This gave rise to boundaries between gulfs and bays, spanning from the Thermaic Gulf to a bay on the west coast (Bay of Vlorë) or a river estuary (Black Drin valley).

Another possible boundary leaves the details unclear, but draws "lines" and bands from the northern Adriatic to the area of the Black Sea. These include the relevant section of latitude 46°, the Trieste-Odessa line or the Istria Peninsula-Danube Delta line. In addition to the above, composite solutions also occur, such as the Danube-Sava-Ljubljana-Gorica line which combines natural phenomena with towns.

In summary, we can conclude that there is no legitimate and widely accepted northern border of the Balkans. Everyone is free to define his own North Balkans (or the northern border thereof) by naming an appropriate river section, mountain ridge or land protrusion (peninsula or bay) of his choice, or a significant town.

Each of the Adriatic, Ionian, Mediterranean, Aegean and Black Seas have their own internal characteristics. The populations of ports and seaside towns of the Balkans have established close relationships with the people living on the opposite coasts of these narrow seas, and for millennia have been mixing with other people living in these spaces. Croats have also settled in Molise in Italy. In Southern Italy, Albanians and Greeks established settlements centuries ago. Italians have settled in Istria and on the Dalmatian and Montenegrin costs. Greeks migrated to Asia Minor and the Pontus region as well, as well as to several points of the Black Sea coast where they have formed communities for millennia in some places. Tatars, Turks, and even Lipovans live in Dobruja. In the spatial approach of these areas, the seas are the regional horizon.

Table 2 is a statistical overview of the Balkans coastlines, islands and the maritime character of the states. Based on the data, the Balkans is characterised by great extremities. In addition to Greece and Croatia, the two

explicitly maritime states, we also find three land-locked countries. There is also a range of other states possessing important ports, coasts of strategic importance and significant ports (Albania, Slovenia, Montenegro, Bulgaria and Romania). Bosnia and Herzegovina is an interesting exception, since it formally does have a coast, but lacks any notable sea port and maritime capacity. Turkey is missing from the table, because its interest in the Balkan coasts only covers a very small area, but it is extremely important. Istanbul is by far the most important city and port of the region.

Table 2: Maritime nature of states in the Balkans[4]

Country	**Length of coast, km**	**Coastline per the area of 10 000 km^2 (km)**	**Area of islands (% of country area)**
Slovenia	46.6	23.0	-
Croatia	5835.3*	1030.9	5.8
Bosnia and Herzegovina	10.0	2.0	-
Macedonia	-	-	-
Serbia	-	-	-
Montenegro	102.0	72.4	0.1
Kosovo	-	-	-
Greece	13676	1036.0	16.6
Bulgaria	378.0	34.1	-
Romania	193.5	81.2	-
Albania	380.0	132.0	-

including islands
Edited by Pap based on Erdősi, 2005.

In the geographical spaces discussed here, several supranational, sub regional cooperation forms and bodies have been developed (Alps-Adriatic, Central European Initiative[5], Adriatic-Ionian cooperation, Black Sea Economic Cooperation */Figure 3/*, Union for the Mediterranean).

[4] Turkey could not be considered in this table, because its data would have greatly distorted the outlook.
[5] Originally Pentagonale, then Hexagonale etc.

Figure 3: Adriatic and Ionian Sea region (2014)

Source: European Comission

In the northern part of the area, not a sea, but a large river, the Danube is the basis for the link. The space of the Danube (also treated recently by the European Union as a preferred space) is one of the main macroregional planning and cooperation frameworks which can also become absolutely definitive from the Hungarian perspective as well. The Danube is a community of space with a positive message. For peoples of the Balkans, it symbolises the relationship with the Central European space, European modernisation, freedom and development. In 2011, the European Union adopted the Danube Strategy during the Hungarian EU Presidency, which bears more than symbolic importance *(Figure 4)*.

Figure 4: The Danube regional cooperation and planning area

Source: European Commission

The proximity of the sea influences the spatial approach of all states. Thus, in the geographic approach of the Balkans, distance to (the nearest) seas is an extremely important question. Access to the sea was and still is an important geopolitical issue to small and large states. Because of this, corridors/ landbridges have led to geopolitical conflicts and intergovernmental disputes to be solved. In the Adriatic region, Koper and Piran for the Slovenes, Neum for the communities in Bosnia, Montenegro, and especially the region of Bar for the Serbs, in former historic periods Trieste for Austria, Rijeka (and partially Constanta in Romania) for Hungary were equal with access to the sea and participation in global economic/trade relationships. For Bulgarians, Alexandroupolis was the opportunity to access the Aegean Sea in two historical periods (1914-1918 and 1940-1944).

The number and area of islands in the Balkans region is very high. Two major states with fragmented territories are located on the peninsula: Croatia

along the eastern Adriatic coast with 1180 islands and Greece in the Ionian Sea and the Aegean Sea with approx. 1400 islands and many reefs. Many of these are uninhabited and even cause problems for state integration (regular ferry, boat and air traffic is required to connect the islands to the state and international relations). Some islands and archipelagos share traditions of independent statehood (Rhodes, Crete, Ionian Islands) which also left a mark on the identity of the local population.

Islands and "functional islands"[6] (Prevelakis, 2007) represent distinct, isolated space types. Although the sea provides "infinite" transportation possibilities, due to their actual poverty, island life means isolation instead of freedom to many of them.

Contrary to the attributes of being on a peninsula, there are still states in the Balkans and in Southeast Europe which face significant challenges due to their distance from the sea or being enclosed on land. These include firstly Kosovo,[7] and up until 2019 also Macedonia[8] which struggle with a significant lack of international legitimacy, or Serbia[9] which was born as a "land-locked" state and obtained territories on multiple instances to develop into a state with a long coastline. After the dissolution of Yugoslavia, Serbs lost their coast in the 1990s. Being enclosed on land is also a problem for Hungary, since it has lost its coast in 1918 and has thus become a land-locked state.

In addition to lying on the coast, mountains also play a significant role in the regional divisions of the Balkans (Braudel, 1996; Mendöl, 1948; Prevelakis,

[6] Prevelakis calls certain internal, isolated mountain areas using this specific terminology.

[7] Kosovo became independent in 2008. Since its intergovernmental relationships with Serbia and Macedonia remained problematic, a highway was constructed on the Pristina-Prizren-Durrës route to establish a vital transportation route for the new small state in the Balkans, to ensure that the country's mineral resources can be loaded onto ships in Albanian territory.

[8] Macedonia became independent in 1991 in the territory of the former Yugoslav Republic. Some parts of the historical Macedonia have remained outside of the borders of the new state, therefore Bulgaria (Pirini Macedonia) and Greece (Aegean Macedonia) welcomed the new state with ambivalent/hostile feelings. Greece disputed Macedonia's authority to use the name, and in order to enforce its claim it put the new state under blockade when it closed the Thessaloniki port. Regarding the use of the name, an international law dispute commenced which is still ongoing today.

[9] Serbia was reborn in the 19th century as a "land-locked" state in the Šumadia region and some adjacent territories. Being enclosed into the interior of the peninsula became an element of consciousness and subject of frustration to many Serbs when Austria-Hungary enforced a commercial blockade against them from 1906 to 1911 (after occupying Bosnia and Herzegovina and the Sanjak of Novi Pazar).

2007). The Dinaric Alps, the Balkan Mountains or the Rhodope Mountains are the fields of lifestyles different from those of the coast and the plains (transhumant herders, monasteries, historical bandits, and smuggling in the present), and up until recently, the fields of characteristic political behaviours (communities organised on family relations, tribal community forms, warlords). All in all, mountain territories are suitable for the development of the so-called internal peripheries.

The areas of plains are smaller than hills and mountains (Podunavlje, Posavina, Maritsa valley), but their social, economic and political role is also bigger. These are the location for higher concentration of population, the biggest cities, and the largest processing industry centres. These territories are the most similar to a consolidated type of cultural landscape.

Thus, in the spatial approach of the Balkans region, distance from the sea, fragmentation of the archipelago, divisions based on altitude, extents of valleys and plains, the waters of the Danube, and its plains in the north play major roles. In addition to regional divisions, an observer for Hungary must also consider – that the quite different geographic approach characterises different areas of the peninsula. From a Hungarian viewpoint, the northern part of the Balkans is the "soft lower body" of the historical Hungary, a space for Hungarian economic and political expansion efforts. Efforts of Hungarian "imperialism" used to focus on this region once. Nowadays Hungarian corporations (MOL, OTP, Telekom, Trigránit, etc.) see it as a field of expansion and it is also one of the key destinations of tourism from Hungary. Following the order of the distribution of assets, Hungarian interest also focuses on the coasts and some river valleys (in addition to the regions populated by a significant Hungarian minority). The regional impact affecting Hungary is aligned into the system of transatlantic processes with an Asian (Middle East) and African or Mediterranean background. These flow spaces follow the main transportation routes, primarily the route along the Danube, as well as the former military road from Istanbul towards north and the Vardar-Morava axis. The 2015 refugee/migration crisis is not the first occurrence to prove the importance of this.

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László Kákai

MAY DAVID DEFEAT GOLIATH AGAIN?[1]

A HANDFUL OF CIVILS AGAINST A MULTINATIONAL COMPANY

1. Introduction

The world of civil organizations[2] has been investigated in several books and studies. Some of these systemized the theories on the civil sector and the characteristics of their operation and economy in a schoolbook manner (Bartal, 2005; Kuti, 1998; Czike – Kuti, 1999; Harsányi – Széman, 1999; Bocz, 2009; Csegény – Kákai, 2001; Kákai, 2004; 2019). No doubt, plenty of papers have been written; however, most of these are meta-theoric works of monographic ambitions that have not really been useful for the stakeholders of this topical world since they had been written about them but not with them and for them, and did not offer knowledge useful for them (Kákai, 2009: 5). It is difficult to find today – without the danger of replication – an area that is "unexplored" in terms of the analysers' attention. However, we know little of the best practice, toolkits and opportunities applied by the civic players in conflict situations.

This study undertakes to speak about what has been omitted or has been talked about little: the stakeholders and their everyday "fights", failures and successes. The paper introduces the members of the NGOs and their activities in a different way and from a different point of view. Furthermore, the study focuses on the participation of civil stakeholders in conflicts going on in their environs. To put it more exact, by means of two real cases, I examine the specific chances of civil stakeholders. What opportunities and circumstances determine the outcome, so the success or the failure of a specific case? What toolkits are available to have a certain decision changed, modified or even

[1] This research project was supported by the European Union. EFOP-3.6.3-VEKOP-16-2017-00007 – Young researchers from talented students – Fostering scientific careers in higher education.

[2] NGOs

finally withdrawn?[3] How is it possible that despite the unequal distribution of resources civilians sometimes win?

2. Development of environmental NGOs in Hungary

The "green" movements were not born as advocacy organizations but as social movements, which was an absolutely new phenomenon after World War II (Boda – Scheiring, 2006: 43). The exploitation of the environment has become gradually more and more visible since the 1960s,[4] together with the international events of the millennium (e.g. Seattle,[5] Genoa or Prague), made the green and alternative movements well-known for the global public, too. The impacts of this process slowly spilled over to Hungary, as well.[6]

It is a general objective of the green movements that the environment must be preserved in its original state. One of the most significant aims of environmental NGOs is to involve ecological issues in everyday life. In some cases it is enough to show the fact that there is a problem: for example, the issue of clearing away some pollution; however, there are more complex cases when organizations reveal background information needed to make average people understand the casual relations. In addition, in some cases these movements call upon decision makers that political change – for example, a new resolution – is necessary or to amend an act.

[3] To demonstrate this, I will present two cases that also represent two different frameworks of protest action. One of them actually provided as the base of a movement, while in the other one, individuals left alone searched the solution to settle their affair. Thus the first one is basically a social movement by which I mean that "they strive to achieve the social change aimed by the movement by using and mobilizing available resources" (Mikecz, 2010: 116). The other case is rather a NIMBY (Not In My Backyard) phenomenon that sets out from the point that although citizens accept that a plant considered "dangerous" to their lives and safety must be built but they deny to let this happen in their own environment (Glied, 2016: 87).

[4] It became clearer and clearer that the excessive exploitation of the natural environment would endanger the renewal of the energy resources and finally the basic conditions of sustainable development (Selján, 2009: 19).

[5] About the impacts of this on the green movement see Gábor Scheiring's study (Scheiring, 2008).

[6] Besides technocratic and political environmental care, globalization critical organizations attributing the roots of environmental problems to the system of global distribution and economic control appeared in Hungary, as well (Mikecz, 2016: 62).

2.1. "Moves" taking shape before the transition

Hungarian "green" movement appeared in the middle of the 1980s when amongst the growing socio-economic and then political crisis moreover because of the narrowing of individual life strategies, new forms of searching the way out were formed (Szabó, 1993: 54). The self-organizing groups awakening beside the "pseudo-movements" embedded in the cracking monolithic power structure (Szabó, 1993: 48) were not only apt to stand for issues considered "soft" at that time (ecology, international peace etc.) but to express discontent with the communist Kádár regime, too, without attacking directly the base of the monolithic system (Mikecz, 2016: 71). The Danube Circle, which was formed during the protest against the planned Gabčíkovo-Nagymaros Dam Project, became the emblematic symbol of the "action-focused" period.[7]

The primary aim of the Danube Circle was to inform people on the damages the dam system would cause, therefore, they kept the public updated about the developments in the time of censorship and silence kept by the media. Finally, in October 1989 the Parliament decided to suspend the building of the Nagymaros hydroelectric power plant, and then, in lack of an agreement with the Czechoslovakian partner, the Hungarian party exited the international contract unilaterally (Nagy, 2014: 65).[8] The protest against the plant and dam system planned to be located on the common Slovakian-Hungarian border was unprecedented in the course of the Hungarian history so far; the opposition powers used the movement as a base of building themselves and made political advantage of the demonstrations. According to experts, the enhancement of the Hungarian green movements can be connected to these processes definitely.[9] It is part of the follow-up of the movement that the way of the organizations having acted together as the Nagymaros-committee in

[7] The Danube Circle finally became an important political movement of the whole democratic transition. At the peak of mobilization, 40 thousand people protested against the construction of the dam (Mikecz, 2016: 60).

[8] Although the judgement of the ICJ declared in 1997 condemned both parties, it commissioned them to agree, so the negotiations have been, with shorter or longer brakes, going on until today, and no final result has been achieved. As the conflict became an interstate conflict after 1990, it did not any more allow the organization of a wide-range and comprehensive political or environmental protest (Gergely, 2009: 164).

[9] Faragó Tibor (2013): A hazai környezetügy az elmúlt negyedszázadban. Az Országgyűlés Fenntartható Fejlődés Bizottsága, http://real.mtak.hu/62438/1/Kornyezet25ev_OGy_u.pdf (Downloaded 29 04 2020).

1988, diverged after the transition. Those who remained the members of the Danube movement were tired out in the period of constraint-activities when, as a kind of state administration clerks, they had to be present in the work of various committees continuously (Fleischer, 1992: 12).

2.2. Changes after 1990. Expanding or shrinking space?

The "golden era" of environmental NGOs was the period just before the transition when social support and environmental cases reflected the protest of the society against the current power and economic structure (Szirmai, 1999). After the democratic transition, the main field of political and public activity was political parties, so the social organizations and movements suffered a loss in their importance, and several of their leaders trickled over to the political parties (Pickvance – Gábor, 2001: 110). The other fact enforcing change was the technocratic nature of environmental affairs stirred up by the European cooperation. This way, the number of the coherent ecological conflicts of national importance decreased, and they were replaced by local protests, which brought into the limelight the think-tank organizations doing mainly expert work (e.g. the Humanist Movement (1991), Protect the Future! (2000), Green Youth (2001), the domestic subsidiary of ATTAC (2002) or Greenpeace Hungary (2002)[10] in the highly institutionalized sector.

According to Anna Vári (1994), after the transition, there were only few environmental organizations that enjoyed the trust of the stakeholders and were also able to mediate between them. Thus the professional environmental NGOs were able to join the various "green" initiatives subsequently at the best (Lányi, 2000).

In most cases, environmental conflicts emerge because of the collision of the stakeholders' interests, therefore, it is worth exploring who the parties of the conflicts are and what kind of interests motivate them. The first level of managing environmental conflicts is the investigation of the stakeholders of the given environmental issue and the exploration of their interests and expectations connecting to the given case as well as of their social and power background (Szirmai, 1996). The key players of local environmental conflicts

[10] Most of them concentrated at the capital and rarely appeared in local affairs.

change according to the nature and complexity of the problems. Since the local societies are of similar structures according to the settlement types, we have good reasons to presume that the stakeholders of the conflicts are more or less alike in certain areas. This way, in cases of environmental conflicts we might think that we always meet the same pros and cons in relation to the various affairs (Szíjártó, 1998).

As the state was driven back, the organizations who had weak supporter bases, insufficient financial resources and in many cases non-professional management found themselves face to face with the companies of considerable means employing professional marketing and communication experts and the local governments and public administrations depending on the tax and employment policy of the companies. Owing to this, in certain cases, values difficult to quantify came up against well-articulated and legal interests that were further strengthened by the informal isolation of people and organizations,[11] the manipulative and distorted information transmitted by the media and the bureaucracy of the new democracy (Gergely, 2009). Amongst the power relations of the stakeholders of conflicts (citizens vs. investing company, state or municipality) the imbalance of relations is quite general. Depending on the nature of the specific case, some stakeholders (citizens or organizations) fight for their own "backyard"; in some cases they get engaged into fights with agencies and companies to protect the sustainability of their home built during a life or their environment (Fülöp, 2018: 20). One example of this was the mayor of Szalánta who campaigned against the construction of a waste incinerator and was able to organize a comprehensive regional movement (the inhabitants of Villány, Siklós and Harkány) obstructing the investment,[12] and then convinced the decision makers to stand up against the implementation of this construction. The result was that no waste incinerator was built in Garé.[13]

[11] Although besides governmental, municipal and business investors connecting to environmental issues, those concerned (residents, civilians etc.), who can take apart in the decision making process having an impact on them and can use legal means to vindicate their rights, appear (Glied, 2016: 83), as well, as indicated in the examples, the regulations can be evaded since the authorities or the investors do not address anyone; those who want to take part, must be proactive (Fülöp, 2018: 19).

[12] He searched for supporters and legal experts who were experienced in such affairs and were far enough to avoid potential retribution or revenge.

[13] At the end of the there-and-back legal processes the mayor won. But several similar cases happened around the millenary, e.g. refuse utilization investments were obstructed in Apc

In the reverse example, it is the investor who attacks the criticizing party. The base for this is not provided by the investment itself but the offence against the investor's reputation (or discrediting).[14] Whatever is the object of the suit in terms of an environmental affair, it is difficult to prevent the question of the probable impacts of the given investment (e.g. environmental and health damages, causing loss in value or spoiling the landscape etc.), which, of course, must be proved in each case.[15] These cases shed light on the complexity of the problem, on the imperfection of the limits of expressing opinions[16] on one hand and the lack of independent institutions on the other.[17]

3. The Zengő Case

In 1995, after the Balkan war, the Hungarian Parliament passed a resolution about the modernization of the Hungarian antiaircraft systems. According to the resolution, a military radar station was to be built in Bánkút (Northern Hungary) and one on the Zengő-hill. Finally, the two planned radar stations

(protest of the population of Zagyvaszántó), in Monok (protest of the wine producers of Tokaj), in Komló (protest of Hosszúhetény and other settlements) and in Vekerd (protest of the neighbouring Zsáka) (Fülöp, 2018: 18).

[14] They reason that the investment has not been implemented because of discrediting, and so claim compensation for their earlier expenditures from the concerned individual or organization. The outcome of such a suit is always unsure because in case the investor loses, they will pay the legal costs at most but in case the individual or the organization does, they may face total financial breakdown (impact analyses, acquiring permissions, wages etc.) (Gergely, 2009: 166).

[15] One example of this is the suit initiated in relation to the Auchan's investment in Budaörs, which was at first lost by the president of the Clean Air Action Group (Levegő Munkacsoport), but finally, owing to the decision of the Budapest Court of Appeal, he won. But we could also refer to the case of the Viresol Ltd. in Visonta (according to the Directorate of Borsod-Abaúj-Zemplén County Disaster Management, unclarified refuse water of high organic matter concentration is regularly/permanently emitted from the premises of the Viresol Ltd. to the Özse-valley stream through which the sewage gets into the Özse-valley reservoir) who appealed to the court against the Átlátszó news portal in 2019 on the very same grounds. Source: Bodoky Tamás (2019): Perrel fenyegeti az Átlátszót a Mátrai Erőmű ügyében Mészáros Lőrinc keményítőgyára,

https://blog.atlatszo.hu/2019/11/perrel-fenyegeti-az-atlatszot-a-matrai-eromu-ugyeben-meszaros-lorinc-kemenyitogyara/ (Downloaded 10 04 2020).

[16] In case it is too narrow, it can prevent the assessment of the environmental risks of certain investments; in case it is too wide, investments useful for a bigger community could be obstructed, as well.

[17] This is important because they have the official opportunity to involve independent experts and place the aspects of the population into the foreground as a result of which the environmental impacts of an investment could really be measured.

became three since the NATO took up the decision[18] and contributed to the development. Therefore, after Hungary has joined the NATO in 1999, one of the new radar stations was deployed in Békéscsaba at their cost. The other site was Bánkút where construction was implemented in perfect trim. The third venue would have been the Zengő, near Pécs that is the 5th largest Hungarian town. By 2003, a protest movement was organized from local civils.

The Civilians for the Zengő Movement rose objections against the works in the very moment of the publication of the plans. The reason for this was the possible extinction of the protected flora living in the building area. That part of the Zengő belongs to the Eastern Mecsek landscape protection area, and plenty of indigenous and protected plants can be found here; they would have probably been eradicated by the construction.

The peak of the protest was the "battle of Zengő". The case caused a great stir not only in the media but changed the political communication of the currently governing Hungarian Socialist Party (MSZP), as well, compelling the socialist-liberal Ferenc Gyurcsány-cabinet to back off.

To balk the works, the civils scratched the signing paint off the bark of the trees, so the woodcutters did not know which trees they could touch and which they must not. Afterwards the civils were attended by the activists of *Greenpeace* and other NGOs, with the assistance of László Sólyom, the former President of the Republic (Pánovics, 2014: 224).

The news arrived by the end of the "battle": the Ministry of National Defence withdrew the permission of the contractor company to cut the trees. As indicated, the Zengő-incident exerted a considerable impact on political life, as well. The rivals of the MSZP, and even the Alliance of Free Democrats (SZDSZ) that was a member of the coalition, took sides with the civil movement. However, the motivation of their support was not the will to protect the natural values of Hungary; they only found a new possibility to criticize the politics of the Gyurcsány government.

However, the delight of the NGOs did not last very long. On 23rd of November in 2005, Prime Minister Ferenc Gyurcsány announced that the construction

[18] According to the decision, the NATO would locate five new radars of minimal radiation in the region; three of these were to be built in Hungary and two others in the Czech Republic.

would not be stopped, only the venue would be replaced.[19] The decision choosing the Tubes was likely to have instantaneous political reasons instead of careful professional considerations. Moreover, it meant a political risk: while at the Zengő the government had to face about 10 thousand worrying residents, nearby Pécs this number was more than 160 thousand.[20]

3.1. Tubes... the alternative?

The movement against the building of the radar station started at the end of 2005 and became stronger by the beginning of 2006; the activities of the NGOs were going on in parallel with the oppositions' activities. The first big civil event was the open university organized by the Association of Union for Pécs, while a politician of the Alliance of Young Democrats (Fidesz) organized a protest meeting on the Tubes. The Zengő seemed to be a consensual site until the end of 2003; after the scandal had erupted, Fidesz obstructed the government in each possible instance also because the civic circles, that formed the hinterland of Fidesz and were difficult to keep under control, joined the protest. Thus the biggest opposition party backstabbed the construction at local level, while their national experts were keeping deep silence. In November 2005, the local representative group of Fidesz still voted for the pronouncement of the "health care forest" located at the hill top into a military area. Organized anti-radar communication started only in the second half of 2006 when the MSZP's local group realized that they actually did not want a military radar station above the city, either.

After several meetings and discussions, the Civilians for the Mecsek Movement (CMM) was established officially in 2006. The choice for this name was backed by two reasons. On one hand, they wished to pay their respect to the Civilians for the Zengő Movement, and they included the name of the Mecsek to show that they would deny having the radar station located back to the Zengő.

[19] The Big-Tubes had already appeared earlier as a B-plan but the Láng-committee examining the alternative of the Zengő omitted it from the list of the possible sites together with the Jakab Mountain nearby Pécs for demographic and environmental reasons in advance.

[20] Katalin Soltész, Parliament's Library, Media review: Locator on the Tubes? February 2007, 1-9, https://www.parlament.hu/biz38/korb/dok/tubes.pdf (Downloaded 18 04 2020).

The first public appearance of the Movement took place short after its establishment. In January, the Ministry of National Defence held an open forum at the city hall in Istenkút (a suburb district of Pécs). It was here that the residents first declared their denial since the plan had been issued in the winter of 2005. CMM also attended the event, and as a consequence, there was a rapid growth in the number of their members, and they gained publicity, as well.

As their first public action, the CMM canvassed signatures to have a referendum declared in Pécs. They wanted to get the municipality of Pécs to organize a public hearing about the radar station planned to be built on the Tubes. Not long after the closure of the collection of signatures, a piece of news exploded in the city: the municipality of Pécs in fact had already decided on the Tubes case.

Meanwhile, the CMM had collected more than 8000 signatures, which was numerous enough to make the mayor declare the public hearing using his authority.

It was a very unfortunate event that brought a favourable political development for the CMM. The mayor of Pécs suffered a car accident and he lapsed into coma. The coming municipality elections caused a great stir in the public life of Pécs. Together with the Association for the Istenkút Community, the CMM wanted to have a referendum declared, enforcing local politicians by this to accept the civil will. However, this action was late. By the time the initiation was judged and the sheets with the signature validated, the greatest part of the campaigns had already been over. Generally, the parties' reaction to the Tubes issue was that they would stand for the result gained at the referendum.

The canvass put a big burden on the movement, and for a long time it seemed impossible to collect the signatures of 10 percent of the residents of Pécs. The situation changed in the last phase of the collection when many anonymous activists joined the process. Finally, the 19 thousand signatures needed to have the referendum declared were collected. After validating the signatures, the notary announced the referendum to be held in March 2007.

The main deficiency in relation to the campaign was, of course, the lack of financial resources. The CMM gained only moderate private donations

to finance their campaign, which was almost unnoticeable. Moreover, the municipality was not very active in promoting the initiation. The movement did the most of what they could with the limited resources. They disseminated posters and stickers all over the city and organized residents' fora and some concerts, as well. Since neither the Ministry of National Defence, nor the parties of Pécs joined the campaign, media attention avoided them, too, and so few people were informed. As a result, the referendum was unfortunately invalid. Only 32 percent of the citizens voted instead of the 50 percent necessary to reach the validity threshold.[21] Although more than 94 percent of the voters said no to the construction of the radar station, the government was not legally obliged to take the result of the referendum into consideration.

After the local referendum, the Ministry of Defence thought that each of the obstacles were removed and the building plans could be accepted since the abstention of the population from the referendum meant they had accepted the radar station. The next scandal started with the encryption of the plans: the NGOs wanted to see the architectural plans but the Ministry of Defence, referring to their being a state secret, refused to allow them.[22]

The media paid some attention to the issue of the radar station again, however, opinions were determined by political affiliation. The opposition put the socialists under fire, claiming a prohibition of change in relation to the area concerned; however, this was denied by the MSZP-SZDSZ coalition. The opposition groups took side of the civilians again, while the political elite being close to the government were belittling the referendum and the civil initiative. At the beginning of June, the coalition leading the city ultimately refused the opposition's proposal. Meanwhile, the preparation of the construction was going on undisturbed. In June 2007, the Ministry of Defence was given the legally binding building permit. The civils started collecting signatures again, and sent a declaration of 4000 flat owners of Pécs that in case the radar station was built, they would bring a suit against the Hungarian State for the loss of

[21] The 32 percent was far below the validity threshold since in the case of a local referendum, the participation of 50 percent of the entitled population plus one person is the necessary minimum, however, the 38 700 votes against the locator exceeded the number of the votes gained by László Toller, the most popular mayor of the city after the transition, at the peak of its popularity in the autumn of 2002.

[22] Origo (2017): A tubesi lokátor titkosítását bírálják civil szervezetek, https://.origo.hu/itthon/20070423titkositottak.html (Downloaded 20 04 2020).

value of their properties.[23] The change in the state of art was well indicated by the first open confrontation between the socialist leaders of the city and the Ministry of Defence: despite the stressful request of Minister Imre Szekeres, the general assembly made an unanimous decision about the modification of the Building Regulations of Pécs, declaring that the radar station could only be built beside the thermal plant, on an absolutely flat area.[24] Subsequent to this, the NGOs, with the support of the inhabitants of Pécs and now the municipality, appealed the building permit of the radar station. Despite this fact, the Minister made the permit absolute as a reaction to which the inhabitants of Pécs brought a lawsuit to court.

30 March 2008 was an important day for the whole civil movement. On this day, within the frames of the 18th National Meeting of Hungarian Environmental NGOs, which was held in Pécs this time, 39 organizations officially joined the Civilians for the Mecsek Movement and its objectives. They also asked the official organs of Hungary to take the aspects of the people and the nature into consideration during the legal processes.

The lawsuit was going on for years and the final result was only born in 2010. On 17 March 2010 the Supreme Court annulled the contentious building permit in its judgment.[25] The politicians did not take much interest in the fact that for reason of the lack of a valid construction plan the immediate beginning of the construction was unlawful. During the following weeks, the Ministry of Defence approved their intention to start the works as soon as possible.

As the verification procedure of the judgement lasted until March that year, the Ministry of Defence could not start the construction before the upcoming elections. Meanwhile, Zsolt Páva became the mayor of Pécs whose programme had long been including the obstruction of the building of the radar station, and so the chances that the plans could be implemented declined further. Also, the international environment changed in that the NATO did not insist on the site near Pécs, experts should have accepted any other venue meeting the

[23] The judgment announced in the almost parallelly running case of the transformer station played a considerable role in this.

[24] Katalin Soltész (2007): Parliament's Library, Media review: Locator on the Tubes? (Lokátor állomás a Tubesen?), February 2007, 10-19, https://www.parlament.hu/biz38/korb/dok/tubes.pdf (Downloaded 09 03 2020).

[25] Peták Péter (2012): Állampolgári mozgalom egy NATO-radar építése ellen. Összefoglaló a pécsi Tubes-ügyről. Parola, 2. szám, www.kka.hu/_Kozossegi_Adattar/PAROLAAR.NSF/cimsz/764A78BED1052693C1257A0600502EDF?OpenDocument (Downloaded 21 04 2020).

strategic and geographic requirements, thus NATO referent Robert Pszczel suggested to discuss the site issue again.[26]

The Civilians for the Mecsek Movement, who had been fighting against the investment in Pécs, acknowledged contently the fact that, after the energetic insistence of the socialist governments of the preceding cycles, the Ministry of National Defence terminated the building authority procedure of the radar station planned to be built on the Tubes, and so ceased from the construction. Taking the heritage of the Civilians for The Zengő Movement, they achieved that the radar station could not be built anywhere in the Mecsek Mountains. They also succeeded in having the political and civil groups as supporters who had formerly been neutral or hostile about the activists' work. The most important rationales of the greens were based on environmental protection and safety of the inhabitants of Pécs.

However, the Civilians for the Mecsek Movement could not celebrate their victory unclouded. Finally, the two sides within the movement mentioned above turned against each other.

At last, the Ministry of Defence found the proper venue on the Medina hill in Tolna County. In the case of Medina, no counter reasons worded by the civil side prevailed since there was a radar station that had been operating on the chosen venue since the Soviet occupation, it was not on an area under natural protection and its possible attack would not endanger the civil lives of a whole quarter.[27] For a period of four years, the Ministry of Defence provided HUF 100 million support in total for the development of the receiving settlement. Thus, the village with 800 inhabitants that had an annual budget of HUF 130 million, received HUF 25 million per year. The settlement used this support (compensation) mainly for infrastructural development. For example, they replaced the doors and windows of the school, reconstructed the surgery and later they renovated the village centre, developed their green areas, the rain drain system and many other things.[28]

[26] Hetek (2010): Tubes or not Tubes. Váratlan fejlemény a pécsi „NATO-radar" ügyében, www.hetek.hu/hatter/201001/tubes_or_not_tubes (Downloaded 21 04 2020).

[27] Palotás Péter (2016): Idén tíz esztendeje, hogy a pécsiek megnyerték a Tubesért folytatott küzdelmet. Pécsi Újság, https://www.pecsiujsag.hu/helyi-hireink/iden-tiz-esztendeje-hogy-a-pecsiek-megnyertek-a-tubesert-folytatott-kuzdelmet (Downloaded 21 03 2020).

[28] Civilhetes (2015): Súlyos érvágás volt az országnak a Fidesz pálfordulása, https://civilhetes.net/sulyos-ervagas-volt-az-orszagnak-a-fidesz-palfordulasa (Downloaded 21 03 2020).

4. David and Goliath reloaded

4.1. The mysterious construction

Residents of a street in the greenbelt[29] of a city with county rights in Hungary recognized that there was an investment requiring enormous earthwork getting started behind their houses, on the territory of a company interested in catering trade.

When one of the residents raised questions, the representative of the contractor company did not provide any information but, saying it was harassment, called the police; thus, instead of getting answers to his questions, the flat owner became the resident of the police lockup for some hours.

Despite secrecy, it turned out that the estate was not any more in the possession of the company in catering industry, and that the investment was in fact the construction of a strong current station meant to provide electricity for the given part of the city.

Interestingly, the building of the neighbouring subdivision, advertised as an estate with a beautiful panorama, had been permitted by the local government, not telling the investor the fact that the "panorama" would soon mean a transformer station. Supposedly, the creation of the station had been included in the urban development plan years before, however, financial means had not been available.

Because of the total lack of adequate information, the supposed health damaging impacts of high voltage and the arrogance of the investor urged the owners of 40-50 properties to proceed at the responsible authorities to make the details of the investment clear.

First, the tenants were groping in the dark concerning both the person of the investor and the authority issuing the permission. Finally, they succeeded in exploring that the investor was a multinational electricity provider company, and that consultations with the responsible authorities had already been conducted, and the building permit was legally binding.

[29] Most of the family and row houses of the neighbourhood were built in the 1970s, and a subdivision was built the year before the investment.

The concerned residents were shocked and ultimately resentful and started to collect signatures in order to have the building operations stopped; however, they did not succeed.

During the upcoming period, their discussions were mainly dominated by their fears from the health destroying impacts of the station. Some of them were in total despair in terms of the future. Others were considering moving elsewhere.

4.2. In the labyrinth of bureaucracy

To calm down arisen tempers, the electricity provider organized a local forum – which had a rather tense atmosphere – where the representatives of the company tried to soothe the tenants, proclaiming that the station was safe, not noisy, not dangerous for health and fitted into the environment. In its response to the tenants' question why the investment was not built on another state, further from the living belt, the investor enumerated only profitability reasons. In terms of the loss in the value of the concerned properties, one of the managers present at the forum declared that they wished to negotiate about the proved harms with the owners one by one.

Their conduct was cynical and contemptuous, originating in their economic superiority, and they lacked empathy. One of the clearest indicators of this was perhaps the statement that they would build the station by the end of the year, "by hook or by crook".

But to dissolve the residents' bitter feelings, the provider summoned a visitation on the premises. Local authorities were unable to give satisfying responses to the questions put here in terms of health destroying effects and the fact that the permitting resolution was not handed. As for the compensation, they had a stand point differing from the one before, saying that as a result of the fence embracing the building, it would not affect the value of the neighbouring estates. The representative of the investor said they would not boggle at legal proceeding, either, in case it was necessary.

One reason for the unusually rapid legal enforcement of the building permission was that the electricity provider had six months to implement the

building process of the transformer station for reason of the changes in the regulations made by the European Union.

It was also a remarkable circumstance that to help to begin the constructing process as soon as possible, the permitting authority made its resolution practically out of turn. The local government, as the permitting supervisor authority, also helped this process by resigning their right of appeal – contrary to their former practice. The right of appeal with the help of which, they could have prevented the implementation of a building project of this volume in a living belt to protect the interests of the property owners. For some inexplicable reasons, the municipality did not keep it important to do so.

Disapproving this behaviour, the owners wrote a severe-tone letter to the current mayor. The mayor strived to calm the residents saying that the investment would be implemented observing the building regulations and referred to the unfounded fears from health damage; however, with regard to the question why a democratically elected body disregarded the interests of the citizens living in its territory in a case of such a volume, he remained "elegantly" silent.

The residents tried to lobby at a local politician but his standpoint was not very promising for them. He argued that as this was an investment of public interest and public interest is prior to private interest, there was not much to do about this case. To protect their rights, the property owners searched for other fora. They appealed to the supervision of town clerks and the public prosecutor but came up against walls everywhere. They were not given real answers and help anywhere. To achieve the termination of the building process, they addressed the Commissioner for Fundamental Rights, domestic and international environmental organizations and print and electronic media.

There was no result. Residents were left alone, without any help. The mystery surrounding the investment was deepened by the concerned authorities' "winking" at each other. Since the property owners did not get the legally binding building permission, they had to acquire it in an informal way.

4.3. Party or not / Retail client or not?

The authority issuing the permission later explained why they had not sent the resolution to the owners by saying that they were not direct neighbours of the structure, they were not retail clients and so the obligation of delivery did not exist with regard to them.

It is worth mentioning the definition of the client concept: Party means any natural or legal person or any organisation whose rights or lawful interests are directly affected by the case.

The arrogance of the authority is well indicated by the stand point according to which the "neighbour" (and so the party) is the stream flowing between the owners' estates and the planned transformer station, and that the authority cannot be expected to search for party for themselves.

What is striking, in addition to the cynical manner, is the – perhaps – intentional misunderstanding of the relevant legal regulation: as for a multinational company, a conduct of shifting between the various forms of regulations in order to enforce their interests for the expected profit is explicable, however, as for the public administration system, whose approach is expected to be objective and impartial, and cannot divert from the understanding of the regulation accepted by judicial practice, it is inexplicable to bring a company in position. The non-delivery of the resolution, based on the very peculiar explanation of the notion of neighbour/retail client, divested the owners of the possibility of appealing, therefore, using the possibilities assured by law, they addressed the inspection authority of the permitting office to enforce their rights.

Referring to the absence of the violation of any rights by the permitting authority proceeding at the first degree, the inspection body refused their appeal.

At this point, the bothered owners referred to the court in order to have their retail client status verified and the resolution permitting the building process overruled. In their lawsuit, they presented that the structure had a negative impact on their life quality and health as well as considerably reduced the value of their properties. The depreciation declared in the written opinion

of the real estate expert they had engaged concerned the legal interest that they considered to be the base for their retail client status.

In addition the noise and sound effects, the disappearance of tranquillity and the disturbing radio frequency effect attending the operation of the transformer station were all circumstances that the permitting authority should have taken into account. They hoped they could make the building process halt, however, despite the demonstration, the construction was carried on rapidly. The station had been built and put into operation before the court declared the retail client status of the property owners.

By "forcing" the stakeholders to the court, the permitting authority – doing the investor electricity provider a favour – played stonewalling, and succeeded in achieving its aim. It was in vain that the court declared in its judgment – almost two years after the building operations were finished – that by reason of violating the relevant regulations the station was practically built without permission, there was no hope to have it demolished.

The piquancy of the case is that the transformer station is still operating – with a post-construction permit that was issued three years after the station had been put into operation, but without a permission of operation. Through the glasses of reality, this fact is a clear sign of the defencelessness of the residents who have won the suit. The court declared their retail client status in vain, it was no use to them.

While the authority demolished a garage built without permission, in the case they did not insist on the reconstruction of the original state. The opinion of the authority after losing at the court did not change regarding the owners: making themselves independent of the legal regulations. This kind of "I'll do what I want" conduct and the neglect of the court's judgement.

By this time, the affair showed up already in the local media; however, the articles did not go beyond presenting basic facts.

4.4. Being chased to the court

The owners of the flats of decreased value were at a crossroads: they either accepted that there would be no consequence of the construction at all or initiated a compensation suit with regard to the value loss of their properties.

Some of them were very resolute for the lawsuit, others thought it was impossible to win against a multinational.

Also, initiating a suit contained serious financial risks. If they lost, it was possible they would have to pay millions for the law costs. Considering the possible outcomes, and to prevent expensive legal proceedings, the concerned owners offered an accord – for approximately one third of the amount later judged for them – for the electricity provider, which refused it with an "usual" condescending tone. Thus there was no other way for the residents than bringing the case before the court.

Their legal representation was undertaken by a lawyer's office with solid professional experiences, which seemed satisfying for most of the owners. However, some of them did not dare to join because they did not believe that it was possible to win such a suit. Formerly, there had been no compensation suit of this volume and content pursued in Hungary. By this decision, the case was raised to a higher level.

With regard to the nature of the affair, the defendant multinational company and the amount of the compensation, even national media took notice of the suit and later were also present at each trial at the court.

The 36 plaintiffs indicated their claims individually and in the amount of 3-10 percent of the value of their properties, which was, of course, debated by the electricity provider. As a result of the building of the station the panorama of the earlier woody and bushy area as well as the hick town/relaxing nature of the environment considerably changed and deteriorated.

The station can still be totally seen from the neighbouring flats, and the evening lights are extremely disturbing. As each of the lamp posts is equipped with lightning rods, they attract close thunderbolts.

The so far pleasant panorama has changed in the case of each property, and when there is a stormy weather, there are increased sound effects that arouse fear in the residents. It is also a fact that people in general strong health destroying effects and electromagnetic radiation in relation to the operation of transformer stations, and these presumptions raise frights in the potential buyers of these properties, which have considerable negative effects on their market value.

The electricity provider questioned the legal base of the claims, as well, referring to the opinion that during the construction process they proceeded as expectable in the given situation, complied with the relevant regulations and so they were not accountable for the damages taking place. Based on the experts' opinion, more than three years after the investment had been finished, the court declared that the electricity provider was obliged to pay for the damage in relation to the properties. The electricity provider, also to gain more time, appealed against the first instance judgement.

The appeal court worded, for the first time in its practice, the notion of *unnecessary disturbance*, and stated that reference to the optimization of economic interest proclaimed so loudly by the electricity provider at the forum organized by the company could not lead to exemption from responsibility. To be so, it should be proved that the station was possible to be built exclusively on this estate. The electricity provider did not offer such a proof.

4.5. The precedent judgement

The loser electricity provider, taking advantage of the possibility of remedy, appealed against this judgement at the Supreme Court (now the Curia in Hungary). Here, they absolutely did not want to leave anything to chance, so they engaged an acknowledged lawyer's office with international experiences to represent them at the court. Probably, in this phase of the affair, the investor understood that their former condescending behaviour was not expedient any more.

The lawyer's office used all means at the trial to have the suit refused: in their very detailed submission they contested each tiny details of each element, and tried to chase the residents into discussing the health damaging effects of the transformation station despite the fact that they had never referred to that in their applications.

The Supreme Court did not entertain this reasoning and approved the former decisions. The judgement was a precedent one since this was the first time in its settled case-law that the Court defined the notion of unnecessary disturbance. Namely, the fact that the establishment of the transformer station serves public interest does not imply that in case it is built in an inhabited

area, the owners of the neighbouring estates are bound to endure all the disturbing circumstances connecting to the construction. The legal basis of the compensation, i.e. the obligation of the defendant to pay compensation, was clearly declared by the court – five years after the investment was completed. At this point, even "scoop-hunting" commercial televisions reported on the case, thus the property owners and their legal representatives were placed in the focus of public attention. They were interviewed by the media, and the news reporters even asked to be let in their homes to shoot some B-rolls.

Besides the definition of the "terminus technicus" of unnecessary disturbance, this suit was of a precedent value also because the Court accepted the reasoning that the public opinion about the health destroying effects of the transformer as an object is an influential factor in the reduction of the market price of the properties. Similar decision had already been made in relation to a mobile relay station, but not to a transformer station. The judgement of the Supreme Court was not only precedential as it was but had further impacts, as well: it provided a legal basis for the locator case, too. As indicated in Chapter 3, the former government was planning to locate a radar station on the hill around this city. A group of local citizens initiated a movement against the military project, and within the frames of this movement they applied to the court asking a declaration that building the locator would violate the right of physical and mental health of about 4 thousand property owners.

The precedential judgment of the transformer case was warmly welcomed by the speaker of the movement, as well, and he said that it might be significant during the examination of the value loss of approximately HUF ten billion caused by the military radar.

Finally, the military locator was not built – probably because of the danger of the horrible amounts of possible compensation to be paid. In the light of the facts, it is not an overstatement to say that a handful of citizens "saved" – although not on purpose – the city from a military locator. Subsequent to the enforcement of the intermediate judgement, the court was only to determine the amount of the compensation to be paid for the aggrieved owners.

4.6. A never-ending story?

With regard to the fact that the appointed real estate expert stated a loss of value three times as much as the private expert, in this phase of the procedure, the owners raised the amount of the compensation they claimed.

Raising their claim was very risky because in case they had forfeited the suit, they would have been fined by incredibly high legal costs; however, they were all resolute and decided to go on. The trial was open to the press and had a tense atmosphere. Many of the residents demonstrated their commitment by attending the trial.

Five and a half years after the construction of the transformer the first-degree county court ordered – that the raised claims must be paid; however, the electricity provider, obviously playing for time, appealed again. The appeal was based on the opinion that the triple difference between the opinions of the private expert and the appointed expert cannot give ground for a judgement.

The decision of the appeal court, which accepted the application of the electricity provider and ordered the lower court to conduct a new process, was an unexpected turn in the case. The totally worn out owners hoped that the affair would be closed after a procedure of nearly seven years, but they were mistaken. Some of them queried the principle of legal certainty, others queried the competences of the judges.

The appeal court made this decision because the court assessed the difference between the two experts as flagrant, and also stated that the 30 percent loss of value proposed by the appointed expert was not compatible with domestic judicial practice, which had never declared a loss in the value exceeding 20 percent, not even in the case of cell towers.

The council of the acting court could have written history with a brave decision but – for unknown reasons – they did not dare to make it. In this case they could have saved years for the plaintiffs, but they approved the first-degree judgement, and they created a never-ending story.

One of the claimants, who had legal qualifications, was one of the initiators of the suit and did plenty of work concerning both the process and providing mental help for the owners, helped them get over the dead point. This phase

of the suit was really risky for them, so he had to convince the owners one by one about the necessity of going on. Finally, each owner undertook to keep on.

In the repeated process, the lower court appointed a third expert who approved the raised amount of the residents' claim. The judgement on the compensation of a record amount was adopted seven years after the transformer station was built and set into operation without permission. Displaying a legally correct conduct, the defendant paid the compensation for the owners in full.

4.7. The successful end of the story and the "encore"

In the repeated process the lower court appointed a third expert who approved the raised amount claimed by the residents. The judgement declared a compensation of a record amount seven years after the construction and the start of the operation of the transformer lacking permission. However, the winner owners did not stop here.

Mainly for professional reasons, the plaintiffs' legal representatives applied to the European Court of Human Rights because of the conduct of the Hungarian State extremely prolonging the suit.

The court accepted the appeal and obliged the Hungarian State to pay a symbolic amount of compensation.

5. Conclusions

Both cases imply interesting lessons. Besides the Gabčíkovo-Nagymaros dam, the story of the Zengő-Tubes radar station case was another very important environmental issue of political history in Hungary. In this case, in addition to environmental issues, democracy and rule-of-law state aspects appeared amongst the elements of the conflicts, as well, so there was a relatively wide supporter base established in the background. The nature of the affair, i.e. that it was about a military investment of the government that had direct international impacts, assured the nation-wide publicity and importance of the case (Mikecz, 2016: 124). It is not a marginal circumstance, either, that those joining the protest could express their reservations against current politics or

the government's decision, as well.[30] We can surely consider it a great success of the initiators that the radar station was not built. However, the issue of the transformer station must be treated as a very different case. It reflects another area of local issues, which is much more about services and investments. In this case, the interests of a smaller group (with clear local borders) were violated while the investment was useful for the bigger community. It was impossible to build local or national movement or supporter basis to be the background for this issue. The political thread to be represented against the system was also absolutely missing. The stakeholders were practically left alone. They had to put together the base from the sea of legal regulations[31] that they could later vindicate via the system of judicial institutions.

The decisive factor in the transformer case was basically the proactivity of the residents by which they succeeded to act against the measures of the company, the local government and the public administration endangering their interests and life quality directly. The lack of the movement is reflected in the fact that despite the owners winning the suit, the disputed investment was built.

In my opinion, the key aspect is how it is possible to make the decision makers understand the complexity of environmental policy and the investments affecting the natural environment and how the population and the NGOs can be prepared, strengthened and made proactive so that they can become useful and really relevant participants of the decision making processes (Kákai et al. 2019).

[30] Thus the movement was able to build on an extended social basis where the interests of those really engaged for environmental care and those protesting against the "secret" decisions of state power intertwined.

[31] Client right, unnecessary disturbance, loss in value etc.

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DATA AND STATISTICAL APPENDIX

1. Total internal renewable water resources per capita (m^3/inhab/year)

	1992	**1997**	**2002**	**2007**	**2012**	**2017**
Albania	3372	2565	2145	1771	1536	1327
Algeria	8300	8697	8625	8896	9212	9181
Andorra	413.9	376.4	351.6	328	299.5	272.3
Angola	5 359	4 906	4 505	3 817	3 829	4 101
Antigua and Barbuda	11413	9808	8422	7048	5897	4969
Argentina	759.9	668.9	602.8	569.1	537.3	509.8
Armenia	8676	8149	7707	7305	6936	6596
Australia	1992	2189	2261	2339	2380	2341
Austria	28137	26641	25263	23488	21558	20123
Azerbaijan	7023	6847	6762	6617	6457	6297
Bahamas	1086	1024	980.4	930.2	875.9	825.7
Bahrain	2631	2439	2264	2045	1882	1770
Bangladesh	7.647	6.724	5.441	3.861	3.077	2.679
Barbados	944.1	847.8	768.7	713.6	674.3	637.6
Belarus	305.1	299.7	294.7	289.6	284.1	280
Belgium	3327	3375	3467	3565	3590	3591
Belize	1198	1177	1158	1122	1083	1050
Benin	78538	68863	58200	51139	45322	40726
Bhutan	1932	1640	1412	1218	1059	921.6
Bolivia	178739	153177	133575	113537	103586	96582
Bosnia and Herzegovina	42555	38559	35075	32147	29642	27461
Botswana	8375	9462	9401	9406	9731	10123
Brazil	1648	1465	1348	1254	1149	1047
Brunei Darussalam	36626	33788	31424	29635	28226	27049
Bulgaria	31022	27244	24503	22673	21266	19827
Burkina Faso	2420	2557	2670	2775	2873	2964
Burundi	1345	1172	1017	877.1	754.3	651.3
Cabo Verde	1777	1646	1492	1267	1079	926

Cambodia	835.4	734.9	663.6	616.8	583.7	549
Cameroon	12534	10676	9545	8818	8161	7535
Canada	22000	19273	16972	14841	12949	11349
Central African Republic	100409	95308	90993	86311	81660	77818
Chad	45543	40091	36080	32975	31403	30264
Chile	2363	2002	1666	1392	1181	1007
China	64736	60225	56644	53662	51127	49017
Colombia	2285	2185	2118	2058	2001	1952
Comoros	60322	55505	51597	48338	45754	43717
Congo	2750	2390	2107	1870	1658	1474
Cook Islands	86147	74949	65160	55835	47917	42197
Costa Rica						
Côte d'Ivoire	34695	30682	27812	25864	24280	23033
Croatia	5838	4975	4424	4026	3587	3163
Cuba	7965	8319	8576	8643	8774	9000
Cyprus	3552	3461	3398	3372	3349	3319
Czechia	974.3	875.2	798.4	733.1	687.2	661
Democratic People's Republic of Korea		1272	1283	1270	1242	1238
Democratic Republic of the Congo	3200	3000	2871	2768	2696	2628
Denmark	24099	20534	18059	15406	13047	11065
Djibouti	1160	1137	1117	1097	1 069	1046
Dominica	487.7	453.9	402	370.6	340.4	313.5
Dominican Republic	2818	2827	2865	2819	2776	2706
Ecuador	3146	2879	2661	2473	2314	2183
Egypt	41323	37099	33843	31144	28690	26611
El Salvador	16.66	15.12	13.78	12.57	11.39	10.25
Equatorial Guinea	2894	2729	2631	2569	2512	2451
Eritrea	57130	47741	39016	31352	25024	20505
Estonia		885.8	774.6	674.2	613.9	552.4
Eswatini	8356	9014	9190	9457	9592	9702
Ethiopia	2914	2629	2442	2320	2115	1931
Faroe Islands		2001	1731	1506	1320	1162

Fiji						
Finland	38348	36007	35001	34200	32681	31530
France	21209	20769	20526	20196	19767	19374
Gabon	3478	3404	3321	3228	3143	3078
Gambia	163184	143608	126739	110141	93341	80988
Georgia	3062	2660	2288	1949	1665	1428
Germany	10972	11909	12569	13238	14150	14859
Ghana	1337	1313	1311	1315	1320	1303
Greece	1959	1721	1521	1335	1177	1051
Grenada	5550	5291	5171	5096	5098	5197
Guatemala	2058	1978	1959	1931	1896	1855
Guinea	11247	10029	8944	7971	7151	6456
Guinea-Bissau	33437	27105	24735	22383	20034	17771
Guyana	15052	13559	12365	11065	9768	8598
Haiti	322149	316897	320521	322236	320011	309808
Holy See	1761	1604	1473	1361	1264	1185
Honduras						
Hungary	17275	15037	13210	11762	10658	9785
Iceland	579.2	582	590.1	598.6	607.9	617.2
India	653344	623396	595864	557012	522273	507463
Indonesia	1596	1450	1327	1226	1145	1080
Iran (Islamic Republic of)	10753	9954	9282	8666	8112	7648
Iraq	2206	2049	1890	1784	1681	1583
Ireland	1907	1637	1411	1240	1074	919.7
Israel	13653	13200	12324	11141	10475	10290
Italy	156	133.2	120.2	108.3	97.42	90.12
Jamaica	3191	3191	3157	3077	3055	3074
Japan	4389	4182	4015	3899	3809	3744
Jordan	3431	3388	3362	3346	3348	3373
Kazakhstan	171.9	141.1	129	110.1	85.32	70.29
Kenya	3904	4130	4260	4062	3803	3535
Kiribati	829.2	714.9	623.2	543.5	474.3	416.5

Kuwait						
Kyrgyzstan	0	0	0	0	0	0
Lao People's Democratic Republic	10986	10397	9804	9428	8747	8094
Latvia	42292	37651	34637	32000	29680	27763
Lebanon	6466	6906	7264	7704	8199	8687
Lesotho	1701	1552	1362	1175	976.4	789.2
Liberia	3137	2890	2750	2639	2502	2342
Libya	98863	84818	65295	56931	47824	42265
Liechtenstein	150.5	17.05	126.6	117.3	112.9	109.8
Lithuania						
Luxembourg	4192	4318	4488	4742	5091	5349
Madagascar	2351	2311	2254	2107	1878	1714
Malawi	27396	23488	20101	17341	15080	13179
Malaysia	1659	1555	1343	1166	1003	866.7
Maldives	30505	26895	23968	21783	19883	18341
Mali	127	113.5	101.9	89.26	77.68	68.76
Malta	6766	5932	5155	4387	3748	3236
Marshall Islands	136.3	130.4	125.8	123.1	120	117.2
Mauritania						
Mauritius	186.8	161.8	139.2	120.7	104.4	90.5
Mexico	2540	2384	2289	2229	2196	2175
Micronesia (Federated States of)	4604	4204	3919	3657	3385	3167
Monaco						
Mongolia						
Montenegro	15508	14897	14239	13426	12367	11313
Morocco						
Mozambique	1124	1042	982.7	928.7	870	811.4
Myanmar	7128	6006	5240	4520	3906	3381
Namibia	24046	22604	21277	20398	19672	18793
Nauru	4069	3502	3140	2962	2721	2431
Nepal						
Netherlands	10023	8852	8068	7561	7168	6763

New Zealand	725.3	702.7	682.8	666.4	655.2	645.7
Nicaragua	93349	87154	82513	77250	73187	69486
Niger	36066	32630	30201	28287	26578	25121
Nigeria	409.4	343.8	286.7	238.6	197.4	163
Niue	2205	1947	1718	1509	1321	1158
North Macedonia						
Norway	2715	2700	2635	2615	2604	2592
Oman	88982	86425	84030	80932	76217	72008
Pakistan	706	622.2	599.8	525.7	404	302
Palau	483.5	426.1	380.2	343	309.1	279.2
Palestine						
Panama	355.1	282.8	240.3	216.4	189.1	165
Papua New Guinea	53028	47863	43379	39548	36205	33325
Paraguay	176587	155383	136643	120851	107792	97079
Peru	26393	23494	21238	19611	18341	17178
Philippines	72173	66097	61689	58000	54412	51018
Poland	7361	6556	5888	5364	4945	4565
Portugal	1403	1391	1393	1398	1399	1404
Puerto Rico	3796	3713	3638	3575	3591	3679
Qatar	1979	1895	1870	1896	1920	1938
Republic of Korea	113	104.8	86.73	47.06	26.54	21.22
Republic of Moldova	1479	1404	1351	1322	1298	1272
Romania	370.3	378.1	387.8	392.3	397.6	399.9
Russian Federation	1813	1872	1939	2015	2101	2154
Rwanda	29073	29181	29698	30122	30065	29947
Saint Kitts and Nevis	1417	1457	1113	1006	880.5	778.2
Saint Lucia	580.3	547.3	514.6	482.1	456.4	433.7
Saint Vincent and the Grenadines	2114	1985	1877	1793	1716	1678
Samoa	925.9	925.9	925.1	917.4	914.9	909.9
San Marino						
Sao Tome and Principe						
Saudi Arabia	18350	16629	15045	13366	11919	10671

Senegal	138.1	123	109.6	95.04	82.51	72.86
Serbia	3213	2805	2481	2173	1883	1628
Seychelles				920.3	938.6	956.3
Sierra Leone						
Singapore	36943	37166	32278	26600	23648	21172
Slovakia	188.1	164.4	145.2	126.8	113.8	105.1
Slovenia		2337	2333	2334	2326	2313
Solomon Islands	9307	9391	9391	9270	9063	8976
Somalia	135455	117663	102688	90688	81052	73123
South Africa	801.2	737.4	627.4	543.5	470.1	407
South Sudan	1138	1026	952.7	898	845.3	789.9
Spain					2403	2067
Sri Lanka	2814	2771	2649	2450	2373	2399
Sudan	2976	2858	2770	2665	2585	2529
Suriname					111.1	98.69
Sweden	234153	217105	204969	194232	184323	175719
Switzerland	19685	19281	19168	18662	17923	17254
Syrian Arab Republic	5928	5697	5577	5344	5030	4766
Tajikistan	540.8	469.9	417.4	363.3	349.2	390.4
Thailand	11532	10694	9842	8873	7937	7114
Timor-Leste	3882	3689	3504	3391	3309	3252
Togo	10200	9421	8893	7714	7100	6339
Tokelau	2895	2536	2190	1918	1677	1475
Tonga						
Trinidad and Tobago						
Tunisia	3104	3045	3005	2934	2861	2805
Turkey	487.6	447	425.3	407.4	385.3	363.8
Turkmenistan	4072	3760	3485	3262	3044	2811
Tuvalu	360.3	322.6	304.8	288.5	266.7	244
Uganda						
Ukraine	2091	1784	1516	1275	1074	909.9
United Arab Emirates	1072	1098	1148	1188	1215	1246

United Kingdom	71.87	55.56	42.77	24.82	16.85	15.96
United Republic of Tanzania	2522	2485	2443	2361	2257	2191
United States of America	3086	2655	2326	2004	1711	1466
Uruguay	10946	10355	9802	9375	8994	8685
Uzbekistan	29223	28187	27704	27605	27142	26671
Vanuatu	762	689	64.3	598.7	553.1	512
Venezuela (Bolivarian Republic of)	64433	57143	51546	45455	40404	36206
Viet Nam	38704	34833	31682	29070	26929	25174
Yemen	5053	4640	4385	4184	3973	3762
Zambia	157.6	128	111	96.54	84.3	74.34
Zimbabwe	9489	8296	7212	6302	5456	4692

Source: FAO AQUASTAT,
http://www.fao.org/nr/water/aquastat/data/query/results.html
(Downloaded 25 05 2020).

2. Total water withdrawal (Billion m^3/year)

	1988-1992	**1993-1997**	**1998-2002**	**2003-2007**	**2008-2012**	**2013-2017**
Afghanistan			20.28 (2000)			
Albania	1.2 (1990)		1.838 (2000)	1.311 (2006)		
Algeria	4.5 (1990)		5.723 (2001)		8.425 (2012)	10.46 (2017)
Andorra						
Angola			0.6405 (2000)	0.7058 (2005)		
Antigua and Barbuda	0.005 (1990)			0.0084 (2005)	0.0115 (2012)	
Argentina		28.58 (1995)			37.78 (2011)	
Armenia		2.925 (1995)	1.733 (2002)	2.858 (2007)	2.941 (2012)	2.866 (2017)
Australia		22.19 (1996)	21.7 (2001)	18.76 (2005)	16.02 (2012)	16.55 (2017)
Austria	3.807 (1990)	3.644 (1997)	3.668 (2002)		3.492 (2010)	
Azerbaijan	16.2 (1992)	12.51 (1997)	10.07 (2002)	12.27 (2007)	11.97 (2012)	12.78 (2017)
Bahamas						
Bahrain	0.239 (1990)			0.3574 (2003)		0.4344 (2016)
Bangladesh					35.87 (2009)	
Barbados		0.081 (1996)		0.081 (2005)		

Belarus		1.98 (1995)	1.837 (2000)	1.706 (2005)	1.548 (2010)	1.397 (2017)
Belgium		7.69 (1997)	6.738 (2002)	6.217 (2007)	6.017 (2012)	3.994 (2015)
Belize			0.101 (2000)			
Benin			0.13 (2001)			
Bhutan					0.338 (2009)	
Bolivia					2.088 (2009)	
Bosnia and Herzegovina						
Botswana	0.113 (1992)	0.1434 (1995)	0.194 (2000)		0.1943 (2012)	0.193 (2017)
Brazil		54.87 (1996)		58.07 (2006)	74.83 (2010)	65.68 (2017)
Brunei Darussalam	0.076 (1991)	0.092 (1994)				
Bulgaria	7.494 (1990)		6.589 (2002)	6.202 (2007)	5.715 (2012)	5.659 (2017)
Burkina Faso	0.376 (1992)		0.7157 (2001)	0.818 (2005)		
Burundi			0.288 (2000)			
Cabo Verde			0.022 (2001)			
Cambodia				2.184 (2006)		
Cameroon	0.4 (1992)		0.9664 (2000)			
Canada	45.09 (1991)	42.21 (1996)		41.32 (2007)	38.8 (2009)	35.6 (2017)
Central African Republic			0.0662 (2000)	0.0725 (2005)		
Chad			0.8492 (2002)	0.8796 (2005)		
Chile	20.29 (1992)			35.43 (2006)		
China	500 (1990)	525.4 (1993)	549.8 (2000)	571.3 (2007)	603.3 (2012)	598.1 (2015)
Colombia			7.746 (2000)		11.77 (2009)	
Comoros			0.01 (1999)			
Congo			0.046 (2002)			
Cook Islands						
Costa Rica					2.339 (2012)	3.194 (2015)
Côte d'Ivoire	1.1 (1990)	1.232 (1994)	1.409 (2000)	1.549 (2005)		1.162 (2014)
Croatia			0.5735 (2002)		0.6693 (2012)	0.715 (2017)

Cuba		5.211 (1995)		4.937 (2007)		6.959 (2013)
Cyprus	0.226 (1990)	0.211 (1993)	0.2102 (2002)	0.2166 (2007)	0.2558 (2012)	0.311 (2017)
Czechia		2.493 (1997)	1.908 (2002)	1.969 (2007)	1.841 (2012)	1.63 (2017)
Democratic People's Republic of Korea				8.658 (2005)		
Democratic Republic of the Congo			0.5841 (2000)	0.6836 (2005)		
Denmark	1.261 (1990)	0.9325 (1997)	0.6679 (2002)	0.5708 (2007)	0.7285 (2012)	0.7411 (2016)
Djibouti			0.019 (2000)			
Dominica		0.0166 (1996)	0.0166 (2000)	0.0166 (2004)	0.02 (2010)	
Dominican Republic			4.865 (2000)	5.47 (2005)	7.156 (2010)	
Ecuador			9.369 (2000)	9.918 (2005)		
Egypt		58.87 (1995)	68.3 (2000)		72.3 (2012)	77.5 (2017)
El Salvador	0.729 (1992)		1.376 (2000)	2.118 (2005)		
Equatorial Guinea			0.0174 (2000)			
Eritrea			0.4134 (2000)	0.582 (2004)		
Estonia	2.63 (1992)	1.358 (1995)	1.413 (2002)	1.834 (2007)	1.631 (2012)	1.785 (2017)
Eswatini			1.042 (2000)			
Ethiopia			5.558 (2002)	7.861 (2005)		10.55 (2016)
Faroe Islands						
Fiji			0.0817 (2000)	0.0849 (2005)		
Finland	2.347 (1990)	2.586 (1995)	2.328 (1999)	6.562 (2006)		
France	39.22 (1992)	30.34 (1997)	32.37 (2002)	31.41 (2007)	28.06 (2012)	26.44 (2016)
Gabon			0.1203 (2000)	0.1391 (2005)		
Gambia			0.0905 (2000)			
Georgia				1.813 (2005)	1.823 (2009)	
Germany	46.27 (1991)	45.2 (1995)	39.15 (2001)	32.3 (2007)	33.04 (2010)	24.44 (2016)
Ghana			0.982 (2000)			
Greece	8.038 (1992)	8.695 (1997)	9.259 (2002)	9.63 (2007)	9.935 (2012)	11.24 (2016)
Grenada				0.01 (2005)		0.0141 (2014)

Guatemala				3.324 (2006)		
Guinea			0.5533 (2001)			
Guinea-Bissau	0.0166 (1991)	0.175 (1996)	0.175 (2000)			
Guyana	1.46 (1992)		1.64 (2000)		1.445 (2010)	
Haiti	0.9799 (1991)	1.285 (1995)			1.45 (2009)	
Holy See						
Honduras				1.607 (2003)		
Hungary	7.137 (1992)	6.01 (1996)	5.72 (2002)	5.584 (2007)	5.051 (2012)	4.501 (2017)
Iceland	0.167 (1992)		0.165 (2002)	0.165 (2004)	0.2943 (2012)	0.26 (2016)
India	500 (1990)		610.4 (2000)		761 (2010)	
Indonesia	74.34 (1990)		113.3 (2000)			222.6 (2016)
Iran (Islamic Republic of)		83 (1995)	89.7 (2001)	93.3 (2004)		
Iraq	42.8 (1990)	54.4 (1995)	66 (2000)			38.55 (2016)
Ireland		1.176 (1994)		0.73 (2007)	0.757 (2009)	
Israel	1.804 (1990)	1.812 (1995)	1.831 (2002)	1.954 (2004)	1.919 (2010)	2.304 (2017)
Italy			45.41 (2000)		53.75 (2009)	34.19 (2015)
Jamaica		0.928 (1993)		0.812 (2007)		1.354 (2016)
Japan	91.4 (1992)	89.23 (1997)	84.65 (2002)	82.98 (2007)	81.45 (2009)	
Jordan	0.984 (1992)		0.803 (2002)	0.932 (2007)	0.849 (2012)	1.044 (2016)
Kazakhstan		33.67 (1995)	22.27 (2002)	22.81 (2007)	21.39 (2012)	24.45 (2017)
Kenya	2.049 (1990)			2.32 (2003)	3.218 (2010)	4.032 (2016)
Kiribati						
Kuwait		0.538 (1994)	0.9132 (2002)			
Kyrgyzstan		10.09 (1994)	10.08 (2000)	8.007 (2006)		
Lao People's Democratic Republic				3.493 (2005)		
Latvia		0.418 (1995)	0.2563 (2002)	0.2182 (2007)	0.2602 (2012)	0.1811 (2017)
Lebanon		1.293 (1994)	1.433 (2000)	1.31 (2005)		1.84 (2015)
Lesotho			0.0438 (2000)			

Liberia			0.1308 (2000)			
Libya	4.76 (1990)	4.6 (1994)	4.326 (2000)	4.869 (2005)	5.83 (2012)	
Liechtenstein						
Lithuania		4.352 (1995)	2.768 (2001)	2.269 (2007)		0.259 (2017)
Luxembourg		0.0565 (1995)	0.0605 (1999)		0.0445 (2012)	0.0456 (2017)
Madagascar			13.37 (2000)	13.56 (2006)		
Malawi		0.936 (1994)	1.325 (2002)	1.357 (2005)		
Malaysia	10.12 (1990)	5.488 (1996)				
Maldives					0.0059 (2009)	
Mali				5.186 (2006)		
Malta		0.056 (1995)	0.0538 (2002)	0.0557 (2007)	0.0401 (2012)	0.0638 (2017)
Marshall Islands						
Mauritania			1.601 (2000)	1.35 (2005)		
Mauritius	0.566 (1990)	0.615 (1995)	0.61 (2000)	0.63 (2007)	0.582 (2012)	0.616 (2017)
Mexico			72.6 (2002)	78.95 (2007)	82.73 (2012)	87.84 (2017)
Micronesia (Federated States of)						
Monaco	0.0067 (1990)	0.006 (1997)	0.0058 (2002)	0.0055 (2007)	0.005 (2009)	
Mongolia		0.428 (1993)		0.54 (2006)	0.551*(2009)*	0.4624 (2016)
Montenegro					0.1609 (2010)	
Morocco	11.04 (1992)	11.26 (1995)	14.82 (2002)		10.43 (2010)	
Mozambique	0.605 (1990)		0.8842 (2001)			1.473 (2015)
Myanmar			33.23 (2000)			
Namibia	0.249 (1991)	0.273 (1995)	0.288 (2002)			
Nauru						
Nepal			9.562 (2000)	9.497 (2006)		
Netherlands	7.983 (1991)	6.507 (1996)	8.914 (2002)	10.95 (2007)	10.72 (2012)	16.08 (2016)
New Zealand			3.14 (1999)	4.908 (2006)	5.201 (2010)	
Nicaragua			1.388 (2001)		1.545 (2011)	

Niger	0.5(1988)			0.9836 (2005)		1.751 (2017)
Nigeria			10.31 (2000)	11.57 (2005)	12.47 (2010)	
Niue						
North Macedonia		1.555 (1996)	0.6332 (2002)	0.5512 (2007)		0.5235 (2017)
Norway		2.42 (1996)	2.399 (2002)	3.026 (2007)		
Oman	1.223 (1991)		1.36 (2000)	1.321 (2003)		1.872 (2013)
Pakistan	155.6 (1991)		172.6 (2000)		183.5 (2009)	
Palau						
Palestine			0.279 (2001)	0.418 (2005)		0.3752 (2017)
Panama					1.037 (2010)	1.211 (2016)
Papua New Guinea			0.2714 (2000)	0.3921 (2005)		
Paraguay			0.49 (2000)		2.413 (2012)	
Peru					13.66 (2009)	16.1 (2016)
Philippines				81.5 (2007)	84.25 (2012)	92.75 (2017)
Poland	13.39 (1992)	12.8 (1997)	11.73 (2002)	12.03 (2007)	11.48 (2012)	10.08 (2017)
Portugal	8.6 (1991)		11.14 (1998)	9.151 (2007)		
Puerto Rico	4.21 (1990)		3.881 (2000)	4.162 (2005)	4.153 (2010)	3.275 (2015)
Qatar		0.2849 (1994)	0.2939 (2000)	0.436 (2007)		0.9126 (2016)
Republic of Korea	20.57 (1990)	25.44 (1997)	29.16 (2002)	29.2 (2005)		
Republic of Moldova	1.963 (1992)			1.065 (2007)		0.84 (2017)
Romania	20.41 (1990)	12.46 (1997)	9.222 (2002)	6.884 (2007)	6.482 (2012)	6.773 (2017)
Russian Federation		77.1 (1994)	66.2 (2001)			64.41 (2017)
Rwanda			0.15 (2000)			
Saint Kitts and Nevis					0.0156 (2012)	
Saint Lucia				0.0429 (2007)		
Saint Vincent and the Grenadines		0.01 (1995)				0.0085 (2013)
Samoa						
San Marino						

Sao Tome and Principe		0.007 (1993)				0.0409 (2016)
Saudi Arabia	17.02 (1992)			23.67 (2006)	20.88 (2012)	23.35 (2017)
Senegal			2.221 (2002)			
Serbia				3.958 (2007)	4.403 (2012)	5.377 (2017)
Seychelles	0.0119 (1989)			0.0137 (2005)		
Sierra Leone			0.1889 (2000)	0.2122 (2005)		
Singapore						0.6594 (2017)
Slovakia		1.31 (1997)	1.094 (2002)	0.688 (2007)	0.6653 (2012)	0.5563 (2017)
Slovenia			0.8992 (2002)	0.9349 (2007)	0.9281 (2012)	0.9314 (2017)
Solomon Islands						
Somalia			3.29 (2000)	3.298 (2003)		
South Africa	13.31 (1990)	12.9 (1995)	12.79 (2000)			19.38 (2017)
South Sudan					0.658 (2011)	
Spain	36.9 (1991)	34.6 (1997)	35.94 (2002)	35.57 (2007)	36.64 (2012)	31.22 (2016)
Sri Lanka	9.769 (1990)		13.01 (2000)	12.95 (2005)		
Sudan					26.93 (2011)	
Suriname			0.67 (2000)	0.6159 (2006)		
Sweden	2.973 (1992)	2.711 (1997)	2.676 (2002)	2.63 (2007)	2.689 (2010)	2.375 (2015)
Switzerland	2.695 (1992)	2.559 (1997)	2.518 (2002)		2.005 (2012)	
Syrian Arab Republic		14.43 (1997)	16.36 (2002)	16.76 (2005)		
Tajikistan		11.87 (1994)	11.96 (2000)	11.49 (2006)		
Thailand				57.31 (2007)		
Timor-Leste				1.172 (2004)		
Togo			0.169 (2002)			
Tokelau						
Tonga						
Trinidad and Tobago		0.297 (1997)	0.314 (2000)	0.345 (2005)	0.3832 (2011)	
Tunisia	3.075 (1990)	2.857 (1995)	2.85 (2001)		3.305 (2011)	4.875 (2017)

Turkey	31.6 (1992)		37.78 (2002)	35.99 (2006)	50.51 (2012)	58.79 (2017)
Turkmenistan		23.78 (1994)	24.91 (2000)	27.95 (2004)		
Tuvalu						
Uganda			0.3174 (2002)		0.637 (2009)	
Ukraine	26 (1992)		18.28 (2000)	15.08 (2005)	14.85 (2010)	9.18 (2017)
United Arab Emirates		2.108 (1995)	2.904 (2000)	3.998 (2005)		
United Kingdom	12.05 (1990)	12.12 (1995)	15.81 (2002)	8.513 (2007)	8.214 (2012)	8.42 (2016)
United Republic of Tanzania			5.184 (2002)			
United States of America	559.3 (1990)		559.3 (2000)	562.4 (2005)	485.6 (2010)	444.3 (2015)
Uruguay			3.66 (2000)			
Uzbekistan		58.05 (1994)	60.58 (2001)	56 (2005)		58.9 (2017)
Vanuatu						
Venezuela (Bolivarian Republic of)			9.064 (2000)	22.63 (2007)		
Viet Nam				82.03 (2005)		
Yemen	2.932 (1990)		3.4 (2000)	3.565 (2005)		
Zambia	1.747 (1992)	1.706 (1994)	1.572 (2002)			
Zimbabwe			4.205 (2002)	3.57 (2007)		3.339 (2017)

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