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***Water Security in a Changing World:
A Case Study of Central and Eastern Europe***

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Introduction

A researcher, when conducting research on a topic in any academic field, must always have as focal point the following question: what will future scholars think or see when they study us? What the generations to come will think of our generation? Will they think of us as barbarians? If anything, we live perhaps in the most dangerous era of human history. Constant wars, misinformation, artificial intelligence, climate change, outline the state of global society over the last hundred years. The annihilation of species and any living organisms is now more than ever a reality, and not some kind of science fiction action movie. From this prospective, we risk losing the title of the “*Thinking man*” and probably, in the future, we may be labeled as “*Homo fatuus destructor*”.¹ How we present ourselves and the need to be remembered is a fundamental human need. The first and oldest record of this need, can be found in Lascaux, France with paintings of animals, human figures, and abstract signs, that belong to Upper Paleolithic humans; a living ecosystem that has persisted for millions of years. This need is not only a biological need, but a social need as well.

The first major revolution in human history came with the invention of agriculture and the use of fire. The whole structure of how humans shaped and understood their own existence changed, and new bases were put in place, that led to a chain of pivotal developments. Societies began to emerge, and the creation of complex social structures was inevitable. With the use of fire, people learnt not only how to protect themselves from predators, but fire as an element, altered the physical anatomy of humans. One of the most famous myth² in Greek mythology connected to fire, is the one of Prometheus. The two brothers, Prometheus and Epimetheus, were instructed with the creation of humans and other living things. Epimetheus started with the creation of animals, and by the time he got to humans, all the important and useful characteristics were given to the animals, thus, humans were only left with hair and nails. This very fact led Prometheus to steal the fire from the gods and give it to humans. This act resulted in the creation of human civilization and technological advancement. According to the myth, Prometheus was punished for his decision to give the fire to humans. This consequence shows that humans even then understood that the power that humans hold over nature is a dangerous one. And just like that, nature was tamed.

¹ Foolish Destroying Human

² Theogony (507–616)

Throughout the centuries, the advancement of human civilization has been inextricably linked with technological innovation. People and technology have walked side by side for a long time, which allowed a steady and balanced progress. By the 20th century, this balance was destructed, and it led to the creation of a widening gap between technological development and human civilization. Technological maturity is not equivalent to human maturity. There are many reasons that caused this gap, with some of them being socioeconomic reasons, laws of development, history and politics. After the Second World War, the international community progressed towards a bipolar world order and entered the era of the Cold War, that lasted roughly 45 years. This period was characterized by the domination of the USSR and the USA, and in this bipolar word order, the two sides were competing, which led to significant achievements. One of the many examples is the Space Race and the quest to conquer space, that has re-emerged in the second half of the 21st century.³ Furthermore, humanity's most recent achievement is the use of Artificial Intelligence in every aspect of our lives. Many demonize the use of AI, by giving biblical characteristics of mass destruction and catastrophe. I would argue that artificial intelligence is a tool, just like fire or a knife, that plays an important role in our everyday lives. The tool in its natural state is a tool, without any natural given purpose, and by using the tool, we give it "life". Of course, artificial intelligence is indeed something new under the sun, and we are not able to say with certainty what the future holds regarding this matter.

Yet, the crucial question is how are the above-mentioned examples connected to water, and more specifically, to water security? The answer is very simple; water is the fundamental element of life; it is the cornerstone of life on Earth. Every living creature on the planet depends on water consumption to survive. From plants to animals, to microorganisms to humans, water is the essential resource that allows existence on Earth. That is why, having access to clean water, is a basic human right protected under the UN Charter of Human Rights⁴. It is important to highlight that water scarcity is a consequence of climate change, and climate change does not affect only humans, but animals and plants as well. I would argue that animals and plants are affected even more than humans, since many animals and plants have become extinct or are

³ Robertson, Derek. "Trump, Musk and the second Space Race." November 25, 2024 <https://www.politico.com/newsletters/digital-future-daily/2024/11/25/trump-musk-and-the-second-space-race-00191548> [Accessed December 30, 2024].

⁴ Resolution A/RES/64/292. United Nations General Assembly, July 2010 General Comment No. 15. The right to water. UN Committee on Economic, Social and Cultural Rights, November 2002 https://www.un.org/waterforlifedecade/human_right_to_water.shtml [Accessed November 13, 2024].

an endangered species⁵. Anthropocentrism is a worldview that put humans at the center of existence, and it has deep roots in the Judeo-Christian canon, as well as in the ideas of Aristotle. This worldview is at least a dangerous one, and unfortunately it has been the dominant idea that shapes and molds societies. The anthropocentric worldview has directed life towards a path where the sustainability of both human civilization and natural ecosystems is threatened. On the other hand, anthropocentrism is one of the main reasons for technological development and the creation of advanced civilizations. The coin has always two sides, there are pros and cons in every situation, harmful and fruitful decisions. It is a matter of common agreement and scientific consensus that the balance between nature and mankind has come to a point where the existence of life itself is threatened.

Water properties and water as an entity

There are many aspects of water and many ways of examining it. For example, water can be studied from an anthropological perspective, a meteorological one, and from a political one. As stated in the abstract, this paper will examine the political and social aspect of water under the prism of water security and the securitization theory of water in Central and Eastern Europe. However, before presenting my arguments and theories regarding the subject, it is crucial to present water in its natural form, what water is made of and how we can interpret water as an entity.

The chemical formula of water is H₂O, and a water molecule consists of two hydrogen atoms bonded to a single oxygen atom⁶. A water molecule can be described as bipolar, which means that there is a positive and negative side to the molecule. This polarity is an important property of water as it leads to the bonding between molecules of water: hydrogen bonding⁷. Water is the most common substance on Earth, with oceans covering over 70% of it. Water is found in three states: solid, liquid, and gas. The liquid form refers to oceans, rivers and lakes. And as for the gas form of water we have water vapor, which is present in the atmosphere of the earth and is a key component in Earth's weather and climate. These characteristics can be described as the physical properties of water, and they are critical for human survival on planet earth⁸.

⁵ International Fund for Animal Welfare, "The Impact of Climate Change on Our Planet's Animals" February 28, 2022. <https://www.ifaw.org/journal/impact-climate-change-animals> [Accessed 07 November 2024].

⁶ Davie, Tim. "Hydrology as a Science." In *Fundamentals of Hydrology*, page 24. 2019

⁷ Davie, Tim. "Hydrology as a Science." In *Fundamentals of Hydrology*, page 24. 2019

⁸ Davie, Tim. "Hydrology as a Science." In *Fundamentals of Hydrology*, page 23. 2019

In the above paragraph the natural properties of water were mentioned. In addition to its physical properties, water holds significant philosophical and spiritual meanings⁹. It is often used as a symbol of life and rebirth, source of wisdom and reflection, cleansing and purification, as well as having the aspect of emotional symbolism. Water plays a cosmological role in the human psyche and in the human-created religions. Across all major worldwide religions, water has a central role in the rituals. For example, in Christianity water is used in the ritual of baptism and in the concept of Holy Water. In Islam, in Judaism and in Hinduism water is a symbol of purification. The traditions of Wudu¹⁰ and Mikveh¹¹ in Islam and Judaism respectively, are examples of the cleansing and spiritual rituals. In the Indigenous cultures, water is connected to spirituality. Perhaps the most well-known ritual connected to water is the rain dance which traditionally is considered to be a performance to invoke rain. All the above-mentioned illustrate that water has been, and still is one of the bases of human behavior.

According to the Oxford dictionary¹², the definition of entity is when something that exists separately from other things and has its own identity. The origin of the word can be traced to the late 15th century, and it comes from the French *entité* or medieval Latin *entitas*, from late Latin *ens*, *ent-* ‘being’ (from *esse* ‘be’). In philosophy, the concept of entity is fundamentally connected to the theory of ontology¹³ which is a branch of metaphysics. In legal terms, when we speak about a legal entity, we refer to anything that can legally own things, have rights, and be held responsible for its actions. This includes individuals (natural people) as well as organizations and businesses (artificial people). But why is it important to think about water, and more specifically think about water as an entity? I will present two different approaches regarding this question.

⁹ Terje Oestigaard, "Water and Religion," in The Oxford Research Encyclopedia of Religion, ed. Steven J. Sammons (Oxford: Oxford University Press, 2021), <https://doi.org/10.1093/acrefore/9780190854584.013.477>

¹⁰ Wudu is the tradition ritual which Muslims follow as a prerequisite of prayers. Wudhu has to do with cleansing parts of the body, following steps: (1) intending to perform the wuḍū', (2) washing the hands to the wrists three times, (3) rinsing out the mouth and snuffing water into the nostrils three times, and (4) washing the face from the hairline to the neck, the chin, and the openings of the nostrils. (5) The beard (if there is one) is then combed with wet fingers, and (6) the hands and arms are washed up to the elbows three times. (7) The head—from the forehead to the nape of the neck, including the ears—is then rubbed with both hands, and (8) the feet, particularly the tops and including the ankles, are rubbed. Finally, (9) the Muslim says, "I bear witness that there is no God but God, the unique, who has no partner. I bear witness that Muhammad is his servant and his Messenger. Written and fact checked by The Editors of Encyclopaedia Britannica. <https://www.britannica.com/topic/tahara-Islam> [Accessed 09 december 2024].

¹¹ Mikvah, ("collection [of water]"), in Judaism, a pool of natural water in which one bathes for the restoration of ritual purity. Males bathe each Friday and before major festivals, while women use the mikvah (as the law prescribes) before their wedding, after childbirth, and following menstruation. Written and fact checked by The Editors of Encyclopaedia Britannica. <https://www.britannica.com/topic/mikvah> [Accessed 09 december 2024].

¹² <https://www.oxfordlearnersdictionaries.com/definition/english/entity?q=entity> [Accessed 09 december 2024].

¹³ Steffen Staab and Rudi Studer, eds., *Handbook on Ontologies* (International Handbooks on Information Systems) (Berlin: Springer, 2009), 1–17.

The first approach has to do with the way we think about water. Currently, the dominating view about global affairs is based solely on the Western perspective. The last decade (2014 – 2024), and especially after the 2008 financial crisis, there has been a steady and linear increase in the influence of the global East and Far East, with the People's Republic of China and the Russian Federation challenging the Western Powers. As Henry Kissinger mentioned in his book *Diplomacy*, in each century, there is a country that shapes and influenced the entire international system in accordance with its own values¹⁴. The 17th century belongs to France, the 18th century belongs to the United Kingdom, the 19th to the Austrian Empire and Germany. The 20th century was dominated by the United States. The conflicts of the 21st century have their roots in the transition of the “global power”. Every empire has its peak and after that, the natural way is the decline and at the end the demise of the empire. All the signs suggest that after this transitioning period that we are experiencing currently, Asia will be the dominant power of the 21st century. The cultural and social structure of Asian countries is in inverse proportion to the Western ones. Thus, norms and ideas like democracy, freedom, economy, will have a different approach and interpretation than they have had until now. That is why I argue that our interpretation and approach regarding water, and water related issues will change and adapt to the new circumstances.

The second approach has to do with the legal entity of the water. There is an interesting legal case in New Zealand regarding environmental law. In 2017, the country passed a legislation¹⁵ in which it granted legal personhood to the Whanganui River. By making this decision, the act recognizes the river as a living entity with its own rights and interests. This is the second act also in New Zealand that provides environmental personhood to a natural area. As the country is part of the Commonwealth, the political structure and system defers to non-Commonwealth countries. In this case, the river is represented by two legal guardians, one appointed by the Māori iwi (tribes) and one by the Crown (New Zealand government). I would like to emphasize two main elements of the *Te Awa Tupua* (Whanganui River Claims Settlement) act. First, this is a step that ensures the protection of the river for future generations. The second has to do with the fact that this decision is a milestone in environmental law and a powerful example of how indigenous rights and culture can and should influence the legal framework. Worth mentioning are the following environmental law cases that have some association with the legal

¹⁴ Kissinger, Henry "The New World Order," in *Diplomacy* (New York: Simon & Schuster, 1994), [Chapter One].

¹⁵ Te Awa Tupua (Whanganui River Claims Settlement) Act 2017, New Zealand Legislation <https://www.legislation.govt.nz/act/public/2017/0007/latest/whole.html> [Accessed December 13, 2024].

personhood of a river or watercourse: the Atrato River¹⁶ case in Colombia, the Ganges River case in India¹⁷, and the legal framework for environmental rights in Ecuador¹⁸. The significance of the law will be discussed in the next chapters, with the focus being in Central and Eastern Europe.

My aim regarding the presentation of the natural properties of water, and the philosophical approach of water being an entity, has to do with the thought that every element of life, natural or artificial, is connected to each other. There is a cycle that repeats itself, influencing and impacting all the involved parts, and due to the world being connected, everyone and anyone is affected, regardless of nationality, lifestyle, and personal preferences.

The importance of Central and Eastern Europe

For centuries Europe has dominated and shaped the Western world and influenced global affairs. The colonization of other lands started here, modern ideologies and philosophies emerged from the period of the Renaissance and the Enlightenment, and two global wars have their roots in this continent. Until recently, the last major war that took place on European soil ended in 1945, with the conflict between the Russian Federation and Ukraine being Europe's first 21st century war. After the collapse of the Soviet Union, a chain of events unfolded, with many conflicts, and civil wars taking place. The regions that were mostly affected by this change were the Southeast, Eastern and Central Europe, with Yugoslavia being the epicenter of these hostilities.

In contrast to the Balkan region, the transition from communism to independence in the former Soviet bloc countries of Eastern and Central Europe was relatively smooth. The best example is the so-called Velvet Divorce of Czechoslovakia, where armed intervention was not necessary for the dissolution of the country and the establishment of the new borders. Notable examples of conflicts after the collapse of the USSR in Central and Eastern Europe as well as in Eurasia are the first Chechen War, the Transnistria War, and the Nagorno-Karabakh war. All these conflicts are still present in the region, and diplomatic pressures could not solve the issues.

¹⁶ Wesche, Philipp. "Rights of Nature in Practice: A Case Study on the Impacts of the Colombian Atrato River Decision." *Journal of Environmental Law* 33, no. 3 (November 2021): 531-555. <https://doi.org/10.1093/jel/eqab021>.

¹⁷ India court case *Salim v. State of Uttarakhand* establishing legal personhood for the Ganga and Yamuna Rivers <https://ecojurisprudence.org/initiatives/salim-v-state-of-uttarakhand/> [Accessed December 13, 2024].

¹⁸ Constitution of the Republic of Ecuador, 2008, art. 71, Official Register, October 20. <https://pdpa.georgetown.edu/Constitutions/Ecuador/english08.html> [Accessed December 13, 2024].

Today, countries of Central and Eastern Europe have a major role in the geopolitics of the region, however, shadows of the past are still present in these societies.

Perhaps the most intricate dilemma regarding Central and Eastern Europe is to give an accurate definition of the countries that constitute this region. Due to the complex history, the cultural and ethnic diversity of this region, determining one specific definition is not possible without excluding important elements that shape the area. Offering a single definition of Eastern and Central Europe is challenging. Any attempt at providing a single definition risks firstly omitting crucial elements of the region's identity and secondly, it could lead to the creation of misconceptions of the character of the region.

Perhaps the most perplexing aspect of this research involves the ongoing question of whether to include the European side of Eurasia in the scope of this study. Currently, at this stage of my research, I will not examine in depth the water related conflicts of the European side of Eurasia. The focus of this paper is the region from Switzerland to Ukraine, which includes the following countries: Germany, Hungary, Romania, Ukraine, Poland, Slovakia, Austria, Slovenia, and Switzerland. The reason behind this choice has to do with the two main reasons. First, the main water supply rivers of the above countries are connected to each other, and they form a complex water system. Secondly, these countries share numerous historical, political, cultural, and social commonalities.

The next 10 years are going to be extremely important for the region, not only because of the current conflict between Ukraine and the Russian Federation, but also because of the global affairs. Due to the multipolarity of the world, proxy wars are the new reality, which means that the stability of the international community is going to be unstable for longer periods. This is going to affect the global economy, cause social unrest and deepen the gap among the different socioeconomic groups. On the other hand, it also offers an opportunity for capital investment. The forty-five-year presence of the communist regime in Central and Eastern Europe has resulted, among other things, in the slow development of the region compared to the rest of Europe, which was not under the influence of the Soviet Union. This region is rich in various natural resources; fossil fuels, metals such as iron, lead, copper, natural gas, forest products, fertile soils, and good microclimate. The combination of all these elements can lead a country to become a global political player. But with the rise of political aspirations, the risk of environmental disasters is inevitable.

The political and social aspect of water and climate change

Traditionally when there is a matter that affects the wellbeing of a society, political figures, academics and people in general tend to use philosophical theories, political ideologies and norms, to create solutions for the problems poor governance created. The 20th century is one of the most important and defining centuries of human history. This marked the emergence of a truly globalized world, both politically and socially. This was the period where ideas, that have their roots in the Enlightenment and the French Revolution, were tested, implemented, or abandoned. For example, the idea of the nation and national identity is only one of the many questions that were present throughout the 19th and 20th century. Moreover, it is interesting that environmental awareness was present even in the late 19th century with scientists like Svante Arrhenius¹⁹ and Joseph Fourier expressing warnings about the connection between human behavior and the rise of global temperatures.

The Industrial Revolution led to the rapid increase of urbanization, increasing the demand for water. This fact increased the demand for not only water use within the industry, but also the demand for clean and accessible water in big cities. Consequently, this led to the development of water infrastructure of big cities. However, there is a difference between big cities and the rural areas. In Hungary for example, there was the drainage project on the Great Hungarian Plain that started in the 19th century and continued across the socialist era. As for 2024, climate change and mainly human activity, have resulted the desertification of Kiskunság²⁰, affecting the ecosystem of the area. Another example, that has its beginning as well in the 20th century, are the Zuiderzee Works in the Netherlands.

The so-called Zuiderzee Works was a massive hydraulic engineering project undertaken by the Netherlands during the 20th century. The Netherlands, a relatively small country in northern Europe, has a long history of facing floods due to high tides and storms, that caused many catastrophes. This problem had to be faced. The first step was for the engineers to reclaim land from a large shallow inlet which was called Zuiderzee. The next step was the construction of the Afsluitdijk dam that sealed off the Zioderzee inlet, that resulted in the creation of Afsluitdijk, a freshwater lake. This project, not only helped in the control of floods, but also it

¹⁹Svante Arrhenius, NASA Earth Observatory, Published Jan 18, 2000. https://earthobservatory.nasa.gov/features/Arrhenius/arrhenius_3.php#:~:text=His%20calculations%20demonstrated%20that%20if,21%20degrees%20Celsius%2C%20and%20that [Accessed 09 November 2024].

²⁰ Kertész, Adam. "Is Desertification a Problem in Hungary?" *Landscape & Environment*, vol. 10, no. 3-4, 2016, pp. 242-247. DOI:10.21120/LE/10/3-4/18

created polders and land that could be used for agricultural purposes. The idea of reclaiming land from the Zuiderzee had been discussed for decades before the project was officially launched. The Zuiderzee Association, founded in 1886²¹, played a crucial role in advocating for and researching the feasibility of this ambitious undertaking. The Zuiderzee Works serve as an example of good governance and water management and the Dutch dam system is considered one of the most advanced dam systems in the world.²²

As mentioned in the introduction, the main players in the political field of the 20th century were the United States and the Soviet Union. Two opposite parts of the political spectrum race each other, offering better solutions, creating innovations. However, regardless of the political system, the issue of climate change and water security is not being properly addressed. The primary goals of many political powers often include maintaining power and generating economic growth. Climate change, unfortunately, is not a profitable business. Military spending and industrial growth are prioritized over environmental protection. It is arguable that no single ideology or philosophy has proven to be entirely effective in reversing the effects of climate change, which are largely a result of human behavior and the exploitation of nature. In matters of climate change, environmental issues and water security, neither capitalism nor communism nor authoritarian power holders can do much to reverse the damage done to nature.

Politics are a game of domination and power distribution. For a state to become a significant player in decision-making processes, it often seeks to leverage unique advantages or acquire new tools that other states do not possess. One type of gaining influence over a region is interventions. Political interventions can take many forms, from subtle diplomatic pressure to an open military action. Any kind of intervention is directly connected to soft and hard power, and the application of soft or hard power depends on the interests and the purposes of one state or nation.

Soft power serves a longer influence over one nation or region, whereas hard power is more effective in the short run. Soft power is a term that was coined by Joseph Nye²³, a political scientist, and it can be identified as a method of political influence without armed intervention or the threat of it. Soft power can be applied through diplomatic channels, export of culture

²¹ Mari Smits, "Het onderzoek van de Zuiderzeevereeniging," Historiek (29 February 2024) <https://historiek.net/het-onderzoek-van-de-zuiderzeevereeniging-3/55334/> [Accessed November 15, 2024]. The article is written in Dutch, and the use of Artificial Intelligence was used for the translation to the English language.

²² Cassidy, Emily. "Zuiderzee Works." NASA Earth Observatory, June 1, 2021. <https://earthobservatory.nasa.gov/images/148799/zuiderzee-works#:~:text=A%20spine%2Dlike%20archipelago%20known,lake%20known%20as%20Lake%20Ijssel>. [Accessed November 15, 2024].

²³ Nye, Joseph S., Jr. "Power and Influence after the Cold War." Foreign Policy, no. 80 (1990): 153-71. <https://doi.org/10.2307/1148580>

(Hollywood and Bollywood films, K-Pop), and education (Ivy League Universities, Oxford, Sorbonne). In simple words, soft power is about making others want to do what you want, without the element of force. On the other hand, the term hard power²⁴ refers to the use of force or the threat of force, in order to influence the behavior of one state or one country or individual. In the majority of times, hard power equals military interventions, economic sanctions or any other kind of form of coercion to achieve the main agenda or goals. In essence, hard power is about using force or the threat of force, to get others to do what you want.

Financial interventions are one form of intervention that can immediately cause political and social unrest within a country. Imposing financial sanctions and trade restrictions can lead to the isolation of the targeted country and to the creation of new relations between the opposite parties. For instance, financial sanctions imposed on Russia have prompted them to develop stronger bilateral relations with China²⁵ and Iran²⁶. Additionally, aid and development assistance can be also considered an intervention when it is done with force.

Cultural interventions are the types of interventions that are not necessarily seen by the public as interventions. On the contrary, these interventions are most influential and long-lasting. They are closely tied to propaganda, and it is used to shape public opinion and influence political behavior. The film industry plays a crucial role regarding the spread of cultural intervention. More specifically, movies and TV series created in the United States²⁷ promote the idealization and the greatness of the US military.

Military or armed interventions are the most common type of intervention. They can be categorized into two main branches: humanitarian intervention and peace enforcement. The first is imposed, the second is the consequence of such an imposition.

Depending on their nature and execution, these types of interventions can be both soft and hard powers. In any case, diplomacy is the most important element of any political, financial, or cultural issue within the international community. Diplomacy must be the core operating principle of bilateral and multilateral relations. If we have any kind of intervention, it means that diplomatic solutions have failed.

²⁴ Klare, Michael T. "Hard Power, Soft Power, and Energy Power: The New Foreign Policy Tool." Foreign Affairs March 3, 2015. <https://www.foreignaffairs.com/articles/united-states/2015-03-03/hard-power-soft-power-and-energy-power> [Accessed November 09, 2024].

²⁵ Notte, H. (2023, October 6). Moscow Is Bringing Washington's Enemies Together. Foreign Affairs. <https://www.foreignaffairs.com/russian-federation/russias-axis-sanctioned> [Accessed November 10, 2024].

²⁶ Esfandiary, Dina. "Axis of Convenience: Why Iran's Partnership With Russia Endures." February 17, 2023.

²⁷ Bergman, J., Wells, K., & Nordyke, K. (2024, July 3). Declare Your Independence: Hollywood's Most Patriotic Movies and TV Series. The Hollywood Reporter. <https://www.hollywoodreporter.com/lists/best-patriotic-movies-tv-shows/mr-smith-goes-to-washington/> [Accessed November 09, 2024].

In relation to the control of water sources, my opinion is that financial and armed interventions are going to be the solution many powers and actors in the global community will choose. As will be presented in the following pages, numerous conflicts around the globe demonstrate the connection between water security and the potential for conflict. The examination of those conflicts suggests that first, water conflicts are very well present even though they are overlooked, and second, that water management and cooperation is mandatory for the wellbeing of the specific region suffering the water conflict consequences.

Furthermore, water can be used as a geopolitical tool of force and influence. It is interesting to observe that countries are giving up control of water supplies, in a time when most of the conflicts around the globe have a focus on the dominance of natural resources²⁸. The phenomenon of the privatization of water supplies is an alarming phenomenon that in the future will impact not only the relations between state and private companies, but also will lead to violent movements across the globe. There is a wide gap between the privileged elites and the general population, and the thought that someone must pay an extremely huge price for the use of an element that is necessary for its survival, is at least provoking, if not inhuman. Of course, one could argue that water in its form is free, the price has to do with the infrastructure and the cleansing of water. Yet, as water is considered a basic human right, the exploitation of it goes against the fundamental use of water supplies.

On the other hand, even though access to water resources is considered a basic human right, the responsibility of protecting water sources is not just the responsibility of one state or one government. First and foremost, the responsibility to protect water lies on humans themselves. Individuals are those who have the first contact with water in their everyday lives, thus they need to treat it with carefulness and respect. Overconsumption, pollution and abuse are examples mainly found in western societies. Responsibility is even more serious for developed countries, because in theory there should not be any water-related issues in the developed part of the world. An even more irresponsible behavior is watering lawn and gardening, in regions where summer drought is the new normal. In Spain for instance, mass tourism²⁹ and illegal wells³⁰ usually connected to agricultural use, worsen the already serious situation. One of the

²⁸ Naziz, Arjuman. "The Privatisation Of Water In Developing Countries: The influence of transnational actors." *World Affairs: The Journal of International Issues* 24, no. 3 (2020): 130–41. <https://www.jstor.org/stable/48590647>. [Accessed November 15, 2024].

²⁹ Joseph Wilson, "Catalonia tourists may soon face water restrictions - but swimming pools spared as 'climate refugees'," 17 April 2024. <https://www.euronews.com/green/2024/04/17/catalonia-tourists-may-soon-face-water-restrictions-but-swimming-pools-spared-as-climate-r> [Accessed 18 November 2024].

³⁰ Isabelle Piquer, "Thousands of illegal wells in Spain worsen water shortage," 13 August 2022. https://www.lemonde.fr/en/environment/article/2022/08/13/thousands-of-illegal-wells-in-spain-worsen-water-shortage_5993512_114.html [Accessed 18 November 2024].

main elements that are needed for the reduction of the consequences of climate change and water security is education. Societies must educate their citizens about water problems and give them tools that can be used as mechanisms for reduced water consumption or the recycling of used water. This idea presumes that the decision-making process involves the active participation of citizens in the decision-making process and that power holders, private and state ones, are willing to have as a base the wellbeing of society and nature. With the combination of individual efforts, technological advancement and water nature- friendly government policies, societies can ensure a sustainable water and environment solution for the generations to come. The key behavior is cooperation, both in a local sense and a global one.

Another political aspect of water and climate change is migration, more specifically migration related to climate change. The definition of the norm is hard due to its complexity, but in general, environmental migration refers to any movement of people that was caused by environmental reasons, such as natural disasters and pollution³¹. Climate migration is a subcategory of environmental migration, and it refers to the movement of humans that are affected by climate change. Notable examples are the rising sea - levels, extreme weather events, droughts, wildfires, and floods³². Changes in the environmental sphere have an impact on humans and societies. The recent floods in countries of Central and Eastern Europe, as well as the floods in the south of Spain, state that as a human society we are not ready to handle neither the aftermath of these extreme events nor the socio-economic imbalances that are likely to follow.

Water Security and the securitization of water

Water security and the securitization of water are two interrelated concepts. As was mentioned before, access to clear and drinkable water is a fundamental human right, protected by the United Nations. The definition of water security refers to four main points: sustainability,

³¹ Jean-François Durieux, Deputy Director, Division of Operational Services, UNHCR, "Climate Change and Forced Migration Hotspots. From Humanitarian Response to Area-wide Adaptation," 6 April 2009. <https://www.unhcr.org/media/presentation-climate-change-and-forced-migration-hotspots-humanitarian-response-area-wide> [Accessed 09 November 2024].

³² International Organization for Migration (IOM). *Institutional Strategy on Migration, Environment and Climate Change 2021–2030: For a comprehensive <https://environmentalmigration.iom.int/resources/institutional-strategy-migration-environment-and-climate-change-2021-2030-english-french-spanish-arabic> [Accessed 09 November 2024].

accessibility, the quality and the quantity of water³³. These four points ensure and prioritize security, protection, responsible management practices and conservation around water.

Accessibility indicates equal distribution and access to water resources, regardless of the socioeconomic status of one community. Sustainability refers to the correct and secure management of water that preserves the availability and access to water for the current population and the generations to come. Quantity of water is connected to the distribution of water for domestic, industrial and agricultural use. Quality refers to the sustainability of water for environmental health and secure human and animal consumption.

Water security is a delicate social and environmental issue that can be easily disturbed, with human behavior and climate change being the main threats of its stability. Climate change is a global phenomenon that affects every region and every community, but not on the same level. Statistics³⁴ have shown that, because of climate change, social inequality has risen both in the developing world and the developed world, with the lower classes being mostly affected. The concept of climate-based social inequality is multi-dimensional, with serious socioeconomic consequences that need protection.

Another important factor that can be characterized as an obstacle regarding actions against climate change is climate change denial. This denialism theory is based on the thought that the climate change crisis is a fabricated crisis, that is based on data manipulation by the scientific community³⁵. The purpose of this crisis is political control and economic power over societies. On the opposite side of the spectrum, there are global movements, sometimes radical ones, that support the idea of climate justice³⁶ and climate action. The fundamental idea behind the concept of climate justice is that climate change is a human rights issue that immediately affects the lives of billions of people. Vulnerable populations with limited access to mechanisms that could help them in the adaptation of the impact of climate change, are exposed and unprotected.

³³ What is Water Security? Infographic, United Nations, 08 May 2013, available at: <https://www.unwater.org/publications/what-water-security-infographic> [Accessed 11 November 2024].

³⁴ S. Nazrul Islam and John Winkel, Climate Change and Social Inequality (October 2017), DESA Working Paper No. 152, ST/ESA/2017/DWP/152, Department of Economic & Social Affairs. United Nations https://www.un.org/esa/desa/papers/2017/wp152_2017.pdf [Accessed 11 November 2024].

³⁵ Viet Phuong La, Minh Hoang Nguyen, and Quan Hoang Vuong. "Climate Change Denial Theories, Skeptical Arguments, and the Role of Science Communication." *Qeios* (March 25, 2024), <https://philarchive.org/archive/LACCD5-2> [Accessed November 13, 2024].

³⁶ United Nations Development Programme, "Climate Change is a Matter of Justice – Here's Why," June 30, 2023. <https://climatepromise.undp.org/news-and-stories/climate-change-matter-justice-heres-why> [Accessed November 13, 2024].

The political consequence of water security is the securitization of the water. The securitization theory is an international relations theory that was developed by the Copenhagen School of security studies, mainly associated with Barry Buzan, Ole Wøever and Jaap De Wilde. According to the securitization theory, “the concept of security should be seen as a speech act where the central issue is not if threats are real or not, but the ways in which a certain issue (troop movements, migration, or environmental degradation) can be socially constructed as a threat”.³⁷ The examination of securitization theory is based on five social concentrated sectors: the military, the political, the economic, the environmental, and the societal sectors³⁸.

Water securitization refers to the process of framing water as a security issue, prioritizing military and national security concerns over other aspects of water management. This approach often involves militarizing water resources and using them as a tool of power and control. The consequences of water securitization are many and have a significant impact both to ecosystems and humans.

First, when the issue of water becomes securitized it can lead to escalations and conflicts between countries or even between communities. Traditionally, the political solution to any conflict, when diplomatic routes are no longer an option, are the interventions. As a result, human rights are violated, because their access to water is restricted as a result of the intervention. Last but not least, with prioritizing military and security concerns, the sustainable management of water resources and the corporation between parties are neglected.

Currently the focus of the global community is on nuclear power. Humanity has already experienced the magnitude of a nuclear disaster three times; the first in Hiroshima and Nagasaki, the second is Chernobyl disaster and the third is Fukushima. From the three examples only the first one is a political act against a sovereign country. Chernobyl is the result of human error and Fukushima was a result of natural disaster. For now, water is not considered a political tool in equal scale with nuclear power. Of course, there are numerous examples of how water can become a tool used in terrorism or in the suppression of resistant movement. A recent example of the endangerment of national water supply, is the German Airforce base³⁹ next to Cologne airport, where authorities suspected a water supply sabotage. Some could argue that this is a sign of bioterrorism, an extremely important matter that is either overlooked or seam

³⁷ Rens van Munster, “Securitization,” Danish Institute for International Studies, June 2012. DOI: 10.1093/obo/9780199743292-0091

³⁸ Barry Buzan, Ole Wæver, and Jaap De Wilde, *Security: A New Framework for Analysis*, preface page 7 (Lynne Rienner Publishers, Inc., 1998).

³⁹ Nöstlinger, N., and S. Lau. "German Authorities Suspect Water Supply Sabotage on Military Base." Politico EU, August 14, 2024. <https://www.politico.eu/article/water-supply-sabotage-military-bases-germany-nato-cologne-geilenkirchen/> [Accessed November 13, 2024].

as a science fiction scenario. A bioterrorism attack in Europe should be an expected political move, that can be considered a Black Swan or a Grey Rhino event. Historically, water sources have been used as weapons during war times. From poisoning wells and diverting water supplies, to targeting dams and reservoirs, if someone wants to win a war and cause a destruction of one area and a nation, targeting water supplies is the way to go. It is important to state that targeting water infrastructure is a violation of international humanitarian law⁴⁰. Such actions can have devastating consequences for civilians, leading to water shortages, disease outbreaks, and displacement.

Water-related conflicts: Global examples

Even though conflicts over water resources are increasingly common, water security remains a largely overlooked political issue. Yet, in the COP29- 2024 United Nations Climate Change Conference⁴¹, water related issues were significantly present throughout the conference. The focus of water-related issues is on the impact of climate change on water resources, the connection of water - energy - food and the realization that a global plan must be adapted, in order for total destruction to be avoided.

One of the most affected areas on the planet is Asia, with the effects of climate change being present in the everyday life of the Asian population.⁴² The elements of overpopulation and inappropriate management of water resources can be named as the main factors contributing to the escalation of the problem. Moreover, the unstable political environment in Asia is another contributed factor of the water conflicts. Cultural and religious disputes⁴³ between states are rooted in the period of colonialism, in the resistance movements that lead to the process of decolonization, and the political events that took place in the 19th, the 20th, and the 21st

⁴⁰ Tignino, Mara. 2023. "The Regulation of Crimes against Water in Armed Conflicts and Other Situations of Violence." *Revue Internationale de La Croix-Rouge* 105: 706–34. <https://doi.org/10.1017/S181638312300006> [Accessed November 13, 2024].

⁴¹ Schabus, J. (2024, October 29). Water for Climate in Baku. Stockholm International Water Institute. <https://siwi.org/latest/water-for-climate-in-baku/> [Accessed 09 November 2024].

⁴² World Meteorological Organization. (2023, July 27). Climate change impacts increase in Asia. Press Release. <https://wmo.int/news/media-centre/climate-change-impacts-increase-asia> [Accessed 09 November 2024].

⁴³ Greenbaum, E. (2024, June 21). The Future of Central Asian Water Diplomacy. *Climate Diplomacy*. <https://climate-diplomacy.org/magazine/cooperation/future-central-asian-water-diplomacy> [Accessed 09 November 2024].

centuries. With the growth of the domination of China in the global affairs, the focus of the decision-making will be placed from the Western capitals to Asia⁴⁴.

On the other side of the world, among other disputes, water related conflicts are common amid the United States of America and Mexico. The Rio Grande Basin and the Colorado River Basin are the two rivers that play an extremely important role in covering the water need of many urban and rural areas on both sides of the fence. These rivers are a natural border between the two countries and have caused multiple socio-political conflicts, with the possibility of an armed intervention being higher than ever⁴⁵. Both sides have caused damage in their race of dominating and controlling water sources, with the consequences affecting the environment and the society⁴⁶.

The African continent is the most damaged region of the planet⁴⁷. A place with an enormous number of natural resources has been abused, overlooked and exploited. Due to its colonial history, most of the countries in Africa have not been able to recover and develop, due to the colonial rule. The consequences of the colonial time are much alive in today's Africa, with ongoing genocides and conflicts maintaining the instability in the region. The main water related conflict of Africa with an impact on global affairs is the Nile River Basin. The dispute is between Egypt, Ethiopia and Sudan⁴⁸. The conflict between the state of Israel and Palestine has only suppressed the Nile River dispute, the focus now is elsewhere, the region is not able to handle another major armed conflict.

After the Second World War, and with the creation of multiple international organizations, the main goal of the international community was to do anything possible to avoid the repetition of the events of the first half of the 20th century. More specifically, in Europe, the European Economic Community became the first institution in the European region to connect countries

⁴⁴ Aggarwal, N., & Bharadwaj, A. (2024, June 24). Why Asia's time is now: what's fueling Asian growth and what does it mean for the rest of the world? World Economic Forum. <https://www.weforum.org/stories/2024/06/why-asia-s-time-is-now-whats-fueling-asian-growth-and-what-does-it-mean-for-the-rest-of-the-world/> [Accessed 09 November 2024].

⁴⁵ United Nations Office for Disaster Risk Reduction. (n.d.). The Rio Grande isn't just a border – it's a river in crisis. <https://www.preventionweb.net/news/rio-grande-isnt-just-border-its-river-crisis> [Accessed 09 November 2024].

⁴⁶ Dance, S. (2024, May 16). A water war is brewing between the U.S. and Mexico. Here's why. The Washington Post. <https://www.washingtonpost.com/climate-environment/2024/05/16/texas-mexico-water-shortage-treaty-dispute/> [Accessed 09 November 2024].

⁴⁷ United Nations Economic Commission for Africa. (2023, November 1). Transition to renewable resources for energy and food security in North and West Africa. Concept note for the expert group meeting, Accra. https://www.uneca.org/eca-events/sites/default/files/resources/documents/sro-na/egm-na-wa-energy-food-security-2023/e2301133_eng.pdf [Accessed 09 November 2024].

⁴⁸ United Nations Security Council. (2021, July 8). Egypt, Ethiopia, Sudan Should Negotiate Mutually Beneficial Agreement over Management of Nile Waters, Top Official Tells Security Council. SC/14576. <https://press.un.org/en/2021/sc14576.doc.htm> [Accessed 09 November 2024].

with bilateral and multilateral relations. The EEC was the predecessor of the European Union, and by 2004, when many post-soviet era countries became part of the EU, most of the conflicts on the European soil were solved. Other than the Yugoslavian war in the 1990s and the ongoing conflict between the Russian Federation and the Ukrainian state, there were no conflicts whatsoever in Europe. The one water related conflict that is important to mention is the Dniester River Basin between Moldova and Ukraine. Most probably, after the war interventions of Ukraine and Russia will be resolved, a new geopolitical map, with new borders will appear, thus new conflicts among sovereign states can be expected.

Due to the presence of the European Union, member states typically resolve their disputes through diplomatic channels. Climate change has not impacted Europe as much as other continents, like it has with Asia and Africa. The recent floods in the south, as well as in the Central and Eastern parts of Europe, are signs that there is environmental damage, and environmental damage is occurring and impacting the continent.

The following list is a list of the most important, from a geopolitical point of view, water conflicts in the world (*as of January 3rd, 2025*).

Table.1. Examples of global water related conflicts with information

<i>Name of the conflict</i>	<i>Region</i>	<i>Information</i>
<i>Tigris-Euphrates Basin</i>	<i>Asia</i>	The Tigris-Euphrates River Basin is a vital water resource in Western Asia, flowing across Iran, Iraq, Syria, and Türkiye. It is an important source of agriculture and hydropower, as well as an important socio-economic and geopolitical element. The main factors that are contributing to the river's challenges are pollution, dam constructions, climate change, and water scarcity. ⁴⁹
<i>Jordan River Basin</i>		The Jordan River Basin is in Jordan and is one of the main sources of water for Israel, Jordan, Lebanon, Syria, and the Palestinian West Bank. The river is 251 km long. It is an important geopolitical and environmental factor. It provides water for urban and rural areas; it plays a significant

⁴⁹ Al Jabbari, M., Ricklefs, N., & Tollast, R. (2015, August 23). Rivers of Babylon: Iraq's Water Crisis—And What Turkey Should Do. <https://www.foreignaffairs.com/articles/iraq/2015-08-23/rivers-babylon> [Accessed 03 January 2025].

		role in the agricultural sector. The Jordan River Basin has religious significance as well in Judaism, Christianity, and Islam. ⁵⁰
Helmand River Basin		The Helmand River is in Afghanistan and, with its 1,150 km length, is the longest river in Afghanistan. The river provides water for rural and urban populations and plays an important role in agriculture. In addition to water scarcity, the incorrect management of water resources plays a crucial role in endangering the ecosystem of the region, threatening human security. ⁵¹
Syr Darya Basin and Amu Darya Basin		The Syr Darya Basin and the Amu Darya Basin are both found in Central Asia, and they are spreading across Uzbekistan, Tajikistan, Kazakhstan, Kyrgyzstan in the case of the Syr Darya Basin, and Uzbekistan, Tajikistan, Turkmenistan, and Afghanistan in the case of the Amu Darya Basin. They are both the primary water resources of their regions, influencing the growth of agriculture and industries. The Amu Darya Basin is linked to the Syr Darya Basin, and they face similar challenges. Both are affected by climate change and water scarcity, which has caused geopolitical tensions among the countries of the region.
Indus Water Treaty		The Indus Water Treaty is a water-sharing agreement that was signed in 1960 by India and Pakistan. This treaty was established for conflicts to be avoided, and for the distribution of the waters of the Indus River system to be equality beneficial for both Pakistan and India. This treaty secures the water rights of these two countries; India has control over the Eastern Rivers, while Pakistan has control over the Western Rivers. This is one important treaty that has a peacemaking and peacekeeping role that could benefit other regions as well. Even though this treaty was signed, there were conflicts between the countries, with the Kashmir conflict serving as the primary example. This conflict involves Pakistan, India, and China. ⁵²
Mekong Basin		The Mekong River is a 4.909 km long river, and it flows through six countries in Asia: Cambodia, China, Myanmar, Laos, Thailand, and Vietnam. The Mekong River is the 12th longest river in the world and holds an important and diverse ecosystem, with many endangered species. Hydropower, transportation, and agriculture are some of the main sources that the river provides for the urban population. Climate change, many

⁵⁰ Rosenthal, E., & Sabel, R. (2009). Water and diplomacy in the Jordan River Basin. *Water International*, 34(3), 95-115. <https://doi.org/10.1080/23739770.2009.11446373>

⁵¹ Nabavi, S. A. (2024). Fundamental Problems of Water Resources Management in the Helmand River Basin, Afghanistan. *Randwick International of Social Science Journal*, 5(2), 263-274. <https://doi.org/10.47175/rissj.v5i2.963>

⁵² The Indus Waters Treaty 1960 (with annexes). Signed at Karachi, on 19 September 1960 <https://treaties.un.org/doc/Publication/UNTs/Volume%20419/volume-419-I-6032-English.pdf> [Accessed 03 January 2025].

		dam constructions, pollution, and overfishing are impacting on the survival of the river and its biodiversity. ⁵³
Colorado River Basin	North America	The Colorado River Basin is a complex system that provides water to the southwestern United States and northern Mexico. It's about 2,330 km long and crosses seven U.S. states (Arizona, California, Colorado, Nevada, New Mexico, Utah, and Wyoming) and parts of Mexico. It is the main water supply provider for Los Angeles and generates electricity. The biggest challenges for the Colorado River are connected to climate change, with drought and overallocation endangering the ecosystem of the region ⁵⁴ .
Rio Grande Basin		The Rio Grande Basin is a basin that provides water for the southwestern United States and Northern Mexico. Its length is 3,051 km, and it stretches across US states such as Colorado, New Mexico, and Texas, and part of Mexico. It is an important source for agriculture and provides electricity to the cities of El Paso and Albuquerque. Climate change, drought, pollution, and overallocation are just some of the reasons impacting on the challenges that the Rio Grande River is facing. ⁵⁵
Nile River Basin	Africa	The Nile River, with an estimated length of over 6800 km. It is fed by two main river systems: the White Nile, with its sources on the Equatorial Lake Plateau (Burundi, Rwanda, Tanzania, Kenya, Zaire and Uganda), and the Blue Nile, with its sources in the Ethiopian highlands; the arid region starts in Sudan. The total area of the Nile basin represents 10.3% of the area of the continent and spreads over ten countries. ⁵⁶
Zambezi River Basin		The Zambezi basin is the fourth-largest river basin of Africa, after the Congo/Zaire, Nile and Niger basins. Its total area represents about 4.5% of the area of the continent and spreads over eight countries (Map 8 and Table 38). The Zambezi River flows eastwards for about 3000 km from its sources to the Indian Ocean. ⁵⁷
Dniester River Basin	Europe	Conflict between Ukraine and Moldova; the Dniester River is the second largest river in Ukraine and the main water resource for Moldova. It is

⁵³ Mekong River Commission for Sustainable Development <https://www.mrcmekong.org/mekong-river-basin/> [Accessed 03 January 2025].

⁵⁴ Colorado River Basin Focus Area Study. U.S. Geological Survey. <https://www.usgs.gov/mission-areas/water-resources/science/colorado-river-basin-focus-area-study> (October 16, 2018). [Accessed 03 January 2025].

⁵⁵ Sandoval-Solis, S., Paladino, S., Garza-Diaz, L. E., Nava, L. F., Friedman, J. R., Ortiz-Partida, J. P., ... Neeson, T. M. (2022). Environmental flows in the Rio Grande–Rio Bravo basin. *Ecology and Society*, 27(1), <https://doi.org/10.5751/ES-12944-270120>.

⁵⁶ Food and Agriculture Organization of the United Nations. (n.d.). The Nile Basin. <https://www.fao.org/4/w4347E/w4347e0k.htm> [Accessed 03 January 2025].

⁵⁷ Food and Agriculture Organization of the United Nations. (n.d.). The Zambezi Basin. <https://www.fao.org/4/w4347E/w4347e0o.htm> [Accessed 03 January 2025].

		rising in the north of the Carpathian Mountains, and it ends in the Black Sea ⁵⁸
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source: the table was created by the author of this paper. All information was gathered from sources that are referred in the footnotes and, in the bibliography

The above table shows that the main water conflicts can be found in Asia. Other notable water-based conflicts around the world are the Ganges-Brahmaputra-Meghna Basin, the Cauvery River Basin, the Yellow River Basin, the Amur River Basin and the Salween River Basin. An important factor when understanding the water-related conflict is the morphology of the region. Morphological factors are influencing water availability, the distribution of water, as well as the policymaking process.

The following question is raised; what happens when the water source that is at the core of the conflict is transboundary? Water sources, being either a river or a lake or a sea, frequently cross many countries and they function as natural borders. The phenomenon of transboundary conflicts is a worldwide phenomenon in both the developing and developed parts of the world⁵⁹. International Law has addressed this complex issue with the creation of Chapter 18⁶⁰ of Agenda 21, that was adopted by more than 178 Governments during the UN Conference on Environment and Development (UNCED) in 1992. The Agenda 21 addresses cooperation between nations and sustainable water resources management. Even though this treaty was adopted by the majority of countries, it is still not legally binding. This very fact highlights the need for stronger mechanisms and sanctions imposed on states that share a riparian zone.

Water-related catastrophes in Central and Eastern Europe

The Chernobyl disaster remains one of history's most significant manmade ecological catastrophes, with its effects still felt today. This catastrophe has significance in the region, impacting not only human life, but also the delicate balance of the region's ecosystems. Radiation contaminated the soil and water resources, such as rivers and wetlands. The consequences of such a disaster are far reaching and long-term, affecting areas beyond the

⁵⁸Dziubenko, A. (2021, April 22). Moldova and Ukraine implement integrated management plan of the Dniester River basin with OSCE, UN, GEF support. Organization for Security and Co-operation in Europe. <https://www.osce.org/project-coordinator-in-ukraine/484346> [Accessed 03 January 2025].

⁵⁹ Muhammad Mizanur Rahaman, "Principles of international water law: Creating effective transboundary water resources management," 1 International Journal of Sustainable 2 Society 1, no. 3 (August 2009): 207-233. DOI: 10.1504/IJSSOC.2009.027620.

⁶⁰ UN Department of Economic and Social Affairs, Division for Sustainable Development, "Chapter 18: Protection of the Quality and Supply of Freshwater Resources," Agenda 21. <https://www.un.org/esa/sustdev/natlinfo/indicators/indisd/english/chapt18e.htm> [Accessed 11 November 2024].

immediate area of the nuclear plant. This incident has caused the international community to be more aware of the use of nuclear power, implementing restrictions and safety measures.

The example of the Chernobyl disaster is not the only example of an environmental disaster. More water and Central – Eastern Europe related, are the examples of the Oder River environmental crisis, the accident near Baia Mare in Romania and the Ajka alumina plant accident. Next, I am going to present these three cases with their similarities and key differences.

The Oder River ecological disaster took place in Poland, in the summer of 2022. The ecosystem of the Oder River was heavily impacted by the toxic algal, named *Prymnesium parvum*, which caused the mass fish to die. More than 360 tons of fish, mussels, and snails died. This disaster affected Germany as well. According to the EU report⁶¹ regarding the Oder River ecological disaster, there were three main factors contributed to the disaster; high Salinity linked to industrial wastewater discharges, high water temperatures combined with low water levels due to droughts, and high levels of nutrients. All the above caused the *Prymnesium parvum* phenomenon.

Furthermore, the next important water related disaster is the Baia Mare in Romania⁶². It occurred in January 2000 because of the rupture and collapse of a dam at a gold mine. As a result, highly toxic cyanide contaminated wastewater was released into the Someş River, which flowed into the Tisza and Danube River. Due to Danube River's large scale, several Central and Eastern European countries were affected. The Hungarian Government filed a lawsuit against the mining company, demanding pollution damages, but due to the bankruptcy of the mining company, no compensation was made. At the time, the pollution of the Tisza and Danube Rivers was called “worst environmental disaster since the Chernobyl nuclear leak”⁶³.

Moreover, the next example of water related catastrophe is a Hungarian example. The Ajka⁶⁴ alumina plant disaster is a major industrial accident that occurred on October 2, 2010, in the

⁶¹ JRC Technical report. An EU analysis of the ecological disaster in the Oder River of 2022. Free, G., Van de Bund, W., Gawlik, B., Van Wijk, L., Wood, M., Guagnini, E., Koutelos, K., Annunziato, A., Grizzetti, B., Vigiak, O., Gneccchi, M., Poikane, S., Christiansen, T., Whalley, C., Antognazza, F., Zerger, B., Hoeve, R.J. and Stielstra, H. European Commission, 2023 <https://publications.jrc.ec.europa.eu/repository/handle/JRC132271> [Accessed 11 November 2024].

⁶² Greenpeace. The Baia Mare Gold Mine Cyanide Spill: Causes, Impacts and Liability Analysis. 2000. <https://reliefweb.int/report/hungary/baia-mare-gold-mine-cyanide-spill-causes-impacts-and-liability#:~:text=On%20January%2030th%202000%2C%20the,burst%20and%20released%20100%2C000%20cubic> [Accessed 11 November 2024].

⁶³ BBC News. Death of a River. 2000. Archived article <http://news.bbc.co.uk/2/hi/europe/642880.stm> [Accessed 11 November 2024].

⁶⁴ Martin Krottmayer. Chemical Spill: Red Sludge. Technological and Biological (CBRN) Hazards. International Federation of Red Cross and Red Crescent Societies, Geneva, 2020.

town Akja in Hungary. This environmental catastrophe was the result of the collapse of a reservoir that was containing red mud, a highly toxic byproduct of alumina. Approximately, one million cubic meters of this material were released in the waters. This caused a massive environmental disaster with human casualties.

In an attempt to compare these cases, common patterns are found, elements that are repeated, and key differences between the Ajka alumina plant disaster, the Baia Mare cyanide spill, and the Oder River ecological disaster. Next, I am going to present the common elements and the key differences between these cases.

First, the main element that connects these cases is human error. These catastrophes occurred as a result of human activities, focused mainly on the industrial process on the environment. Second, there was a huge impact on the environment and ecosystem, with water pollution and soil contamination. Third, the population was also affected, with concerns over public health. And last but not least, there was a significant financial consequence in the sectors of tourism and agriculture, as well as in the industrial sector.

It is important to highlight the key differences between the three cases.

Table 2. Type of Pollutant Released

Type of Pollutant Released		
Oder River Ecological Disaster	Baia Mare Cyanide Spill	Ajka Alumina Plant Disaster
A toxic algal bloom, specifically <i>Prymnesium parvum</i>	Cyanide-contaminated water, a highly toxic substance	Red mud, a caustic alkaline waste product from alumina production

Immediate Impact		
Oder River Ecological Disaster	Baia Mare Cyanide Spill	Ajka Alumina Plant Disaster
Impact on the river ecosystem, leading to mass fish deaths and environmental damage.	Transboundary impact, affecting multiple countries along the Tisza and Danube Rivers.	Localized impact, primarily affecting nearby communities and waterways.

Long-Term Environmental Consequences		
Oder River Ecological Disaster	Baia Mare Cyanide Spill	Ajka Alumina Plant Disaster
The fish populations and other aquatic organisms were hugely effected by the algal bloom affected	The cyanide pollution had severe impacts on aquatic life and ecosystems.	The red mud contaminated soil and water, affecting biodiversity and agricultural land.

source: the table was created by the author of this paper. All information was gathered from sources that are referred in the footnotes and, in the bibliography

The above-mentioned examples are the main waters related incidents in Central and Eastern Europe. A major reason why these disasters occur is the lack of infrastructure and the maintenance of these infrastructures. Years of financial instability and the political decisions, like the irrigation projects, that were made in the Communist era, have an immediate impact on the environment, next to climate change.

The most important water conflict related case in Central and Eastern Europe, which has not escalated into an armed intervention, is the Gabčíkovo–Nagymaros Dams case (*Hungarian: Bős–Nagymarosi vízlépcső, Slovak: Sústava vodných diel Gabčíkovo – Nagymaros*). The dispute was and still is between Hungary and Slovakia. The roots of this specific conflict trace back to the 1970s, when still both countries were part of the Soviet and were then called People's Republic of Hungary and Czechoslovak Socialist Republic respectively. In 1977, the two

countries co-signed a treaty regarding hydroelectric engineer projects in the Danube River. It is negotiations between the two countries started in the 1950s⁶⁵. These projects were about building barrage- type dams that would help prevent floods and would improve river navigability. The agreement stated that two dams would be built, one on Hungarian and one on Czechoslovakian - Slovakian soil. The disagreement started when Hungary, due to environmental concerns posed mostly by the Danube Circle⁶⁶, expressed concerns over the environmental impact of these projects. Eventually, the Hungarian government suspended the built of the dam on its side in 1989. In the meantime, there was the collapse of the Soviet Union and the Velvet Divorce of Czechoslovakia, and the project was continued by the Slovaks, with an alternative solution called Variant C⁶⁷. This disagreement led both countries to appeal the case to the International Court of Justice (ICJ)⁶⁸ in 1993. Slovakia accused Hungary of breaching the treaty that was signed in 1977. Hungary argued that the project would have had devastating environmental impact on the Danube River and the surrounding ecosystems. Also, the Hungarian side claimed that the project was violating international environmental law. The third point of Hungary's argument was that even though they stopped the construction of the dam, the other side continued building the dam, thus they violated the treaty of 1977⁶⁹.

After the court's investigation and the collection of evidence by the ICJ agents, the ruling was moving forward. The evidence was collected by the visit of the court to the source of the dispute. This historic visit took place from April 1st to April 4th, 1993. After that, on September 25, 1997, the International Court of Justice ruled that both parties had violated the agreement. In the case of Hungary, the court ruled that Hungary was not justified in suspending and abandoning the project in 1989. As for Slovakia, the court said that Slovakia was not justified in unilaterally implementing a modified version of the project (Variant C⁷⁰) in 1992. The court ordered both parties to negotiate to find a solution. This ruling has a symbolic sense; it

⁶⁵ Earle, Anton, Anders Jägerskog, and Joakim Öjendal, eds. **Transboundary Water Management: Principles and Practice**. 2010. 13.13 Gabčíkovo-Nagymaros Project: a test case for international water law? p. 228.

⁶⁶ Global Nonviolent Action Database. "Environmental Groups Prevent the Construction of Danube River Dam, Hungary, 1984-1989." Swarthmore College Peace Collection. <https://nvdatabase.swarthmore.edu/content/environmentalist-groups-prevent-construction-danube-river-dam-hungary-1984-1989> [Accessed 18 November 2024].

⁶⁷ International Court of Justice. **Gabčíkovo-Nagymaros Project (Hungary/Slovakia): Overview of the Case**. Special Agreement, 2 July 1993. <https://www.icj-cij.org/case/92> [Accessed 18 November 2024].

⁶⁸ International Court of Justice. **Gabčíkovo-Nagymaros Project (Hungary/Slovakia) - Judgment**. 25 September 1997. Document Number 092-19970925-PRE-01-00-EN. <https://www.icj-cij.org/node/101335> [Accessed 18 November 2024].

⁶⁹ International Court of Justice. **Gabčíkovo-Nagymaros Project (Hungary/Slovakia): Overview of the Case**. Special Agreement, 2 July 1993. <https://www.icj-cij.org/case/92> [Accessed 18 November 2024].

⁷⁰ International Court of Justice. **Gabčíkovo-Nagymaros Project (Hungary/Slovakia): Overview of the Case**. Special Agreement, 2 July 1993. <https://www.icj-cij.org/case/92> [Accessed 18 November 2024].

emphasizes the importance of international cooperation and the involvement of third parties. In this specific case, the role of the European Union⁷¹ is important as well, since the union used political leverage because both Hungary and Slovakia wanted to join the EU. The case was officially closed in 2017 when Slovakia requested for the case to be discontinued, which Hungary supported. This request was accepted by the ICJ⁷², and it was noted that both countries retained their right to request further legal clarification or decision rulings by the ICJ. This means that there is an open option for further legal action in the future. The significance of this case is extremely important. This was the first time that the International Court of Justice ruled over an environmental dispute⁷³. The Gabčíkovo–Nagymaros Dams Project case is the fundamental base for other environmental rulings of the International Court of Justice.

Law and water: the aftermath

One of the main needs of societies is connection. Human beings are social animals that have had the need to always belong to a group, being part of the collective. Throughout the years, with the mass explosion of the world population, this need remained the same, but its characteristics changed. Globalization is a phenomenon that is present in the life of societies for centuries, from the Silk Road to the colonization of new continents, to the 21st century where trade, financial stability and cooperation are the main elements that shape this connection. In order to guarantee this cohesion, there is a need for the establishment of a framework of enforcing rules, laws and communication, in order to prevent phenomena such as genocides, environmental catastrophes, and, in general, situations that could endanger the entire global population. International law serves this purpose, and I have also used it to support the examples that I am presenting in this paper.

In many cases, International Law is not able to solve the disputes between countries because it has its own limits. The first step in order to understand international law is by categorizing the many branches of International Law; for example, there is the International Criminal Law,

⁷¹ Earle, Anton, Anders Jägerskog, and Joakim Öjendal, eds. *Transboundary Water Management: Principles and Practice*. 2010. 13.13 Gabčíkovo-Nagymaros Project: a test case for international water law? p. 228.

⁷² International Court of Justice. *Gabčíkovo-Nagymaros Project (Hungary/Slovakia): Overview of the Case*. Special Agreement, 2 July 1993. <https://www.icj-cij.org/case/92> [Accessed 18 November 2024].

⁷³ Köböl-Benda, Vivien. "Gabčíkovo-Nagymaros Project Case Judgment – 25 Years On." *Hungarian Yearbook of International Law and European Law*, Issue 1, 2023. https://www.elevenjournals.com/tijdschrift/HYIEL/2023/1/HYIEL_2666-2701_2023_011_001_027/fullscreen [Accessed 18 November 2024].

International Trade Law, Law of the Sea. The topic that this paper addresses is connected for and foremost with International Environmental Law. Water is a transboundary entity, thus there is the need for mechanisms that protects all the parties involved, as well as nature. In simple words international Environmental Law deals with cases of environmental protection and sustainable development. In many cases there is connections between the many branches of International Law; the Erika Oil Spill (1999) or the Prestige Oil Spill (2002) are two cases that the intersection was International Environmental Law and Maritime Law. All the legal cases that I have used in the paper as examples are all based on International Environmental Law.

In the previous chapter I presented the causes and the results of the water-based catastrophes in Central and Eastern Europe. It is important as well to present the aftermath of these cases, how they unfolded and if there was any change after the legal decision making. The Gabčíkovo-Nagymaros Project legal battle ended in 2017 with a mutual agreement between Slovakia and Hungary to end the conflict. The decision of the International Court of Justice was that any time, any of the involved parties, can again bring the case in front of the Court and re-open the decision around the Gabčíkovo-Nagymaros Project. This case serves as a great example for mainly two reasons; the first has to do with the character of the case, being the first rule over International Environmental Law without the two parties being involved in an armed conflict. The second reason is politics. By the decision that the case is closed but can be opened at any given time, this gives the legitimacy to both sides to use the case as a political leverage and pressure point. This case is the basis of my argument and hypothesis that water-related conflicts and issues can be and are going to be used as a political tool. As mentioned before, the region of Central and Eastern Europe is going to be one of the major key players of International Affairs.

From a legal point of view, the Oder River Ecological Disaster is an ongoing investigation of how and why the disaster occurred and there are also legal proceedings. The potential lawsuits are going to be between the affected communities, environmental groups against responsible entities such as the government agencies and industrial polluters. This lawsuit has as well its challenges; it is difficult to determine the exact source of pollution. Gathering the evidence to prove causation is time-consuming. Aside from the ecological impact, the disaster has caused policy changes as well. Many organizations⁷⁴ and public opinion have called for stricter

⁷⁴ European Commission, Directorate-General for Environment, "Zero Pollution: New report draws lessons from the Oder River ecological disaster," European Commission - Energy, Climate change, Environment, February 17, 2023. https://environment.ec.europa.eu/news/oder-river-report-2023-02-17_en [Accessed 18 December 2024].

environmental regulations, the monitoring of water quality and cross-border cooperation in addressing environmental emergencies and possible conflicts.

The Baia Mare Cyanide Spill is perhaps the most complicated case of all four presented in this paper. The parties involved are Hungary and Romania, with the first being directly affected by the environmental disaster. Hungary brought the case before the ICJ and the latter ruled in favor of Hungary, with Romania being ordered to pay compensation to Hungary. The disaster was mainly the responsibility of a mining company that was operating in the region. The operating mine operator was consisted by a gold mining company named Aurul, by the Australian company Esmeralda Exploration and the Romanian company. Hungary also sued the mining company, but the company filed for bankruptcy, and in 2010 the Hungarian government⁷⁵ closed the case. This disaster impacted the mining industry in Romania, and resulted in environmental impact assessments, safety standards and operating mechanisms.

The last case is yet again a Hungarian example. The 2010 Ajka alumina plant disaster in Hungary resulted in significant legal and environmental consequences. The Hungarian Government⁷⁶ reacted quickly and took legal action against the responsible company, demanding fines and compensation. There were also criminal charges, and many actors involved were sentenced to prison. The disaster led to the security of industrial safety standards⁷⁷, inspections and maintenance as well as the creation of emergency response plans.

Furthermore, it is important to keep in mind that International Law and International Courts have their own limits. These limits have their roots in the thought that there is a lack of enforcement. States are participating in their own free will, on a "voluntary" compliance; there is no such thing as global police to enforce the decision of one court. The second important factor is the lack of Universality; not all states participate, acknowledge and follow the international agreements. This automatically leads to the undermine of the effectiveness of

⁷⁵ IX. A Minisztérium és az alá tartozó fejezetek/intézmények folyamatban lévő peres ügyei A peres ügyek részletes iratai az átadás-átvételi dokumentáció 15. számú mellékletét képezi. Eljáró bíróság és az ügyszám: Fővárosi Bíróság 4.P. 23.771/2001/79-I. https://web.archive.org/web/20140407102223/http://www.kvvm.hu/cimg/documents/IX_Perekallas0515_2010.pdf [Accessed 18 December 2024].

⁷⁶ Zeldin, Wendy. "Hungary: Initiation of Criminal Investigation of Chemical Spill Disaster." Global Legal Monitor, October 12, 2010. Law Library of Congress, Washington, D.C. <https://www.loc.gov/item/global-legal-monitor/2010-10-12/hungary-initiation-of-criminal-investigation-of-chemical-spill-disaster/> [Accessed 18 December 2024].

⁷⁷ WWF Europe. "One Year After the Red Mud Disaster: WWF Warns Against Ticking Time Bombs, Calls for Action Plan for Central and Eastern Europe." October 3, 2011. WWF Europe. <https://www.wwf.eu/?201848/One-year-after-the-red-mud-disaster-WWF-warns-against-ticking-time-bombs-calls-for-action-plan-for-Central-and-Eastern-Europe#:~:text=A%20part%20of%20the%20%E2%82%AC,used%20not%20only%20to%20cover> [Accessed 18 December 2024].

international law. The above-mentioned examples regarding water related catastrophes and environmental law suggest that the applying methods of solving these kind of conflicts are based on diplomacy, mutual agreements and cross -border cooperation.

In aqua veritas – Justise for the water; a conclusion

The main purpose of this paper is to introduce the idea of the water as a geopolitical tool and the complexity around it. As mentioned in the Introduction, the hypothesis of this paper is that water related issues in the political field can be considered relatively new and in the near future there are going to be in the focus of the global community. More and more, climate change and its consequences are being taken seriously not because of the consciousness and understanding of the problem, but rather because of the many tangible phenomena that have occurred these last years. Extreme floods, heat waves, rush winters are just a few of the many examples of visible climate change.

Throughout the paper, I tried to introduce the concept of water and the place that water holds in human existence. Next, I explained the reasons why I chose the region of Central and Eastern Europe. Here, I would like to add that my theory is that Central and Eastern Europe will become the epicenter of future global affairs. Also, Hungary as a country plays a significant role in water matters. Furthermore, I focused my research on the environmental challenges of water, by using examples of water related conflicts globally, and specifically focusing on water disasters that have occurred in Central and Eastern Europe. As my hypothesis suggests, I presented all the above under the prism of water security and the securitization theory. The latter was chosen for two reasons; the first one has to do with a new research approach I am aiming to apply in my further research upon the subject of water, and the second one has to do with the securitization theory itself. The theory itself gives many aspects to examine such as how framing water as an existential threat is possible, how water is presented in speech acts, and what are the elements that can lead for water to be a source of conflict. As a result, securitization theory presents how all the above are impacting the International Relations field.

The subject of water is a broad subject that offers unlimited research options. From the socioeconomic impact of the use of clean and drinkable water for everyday use, to the consistency of atmospheric chemicals in rainwater, one can choose and combine any topic related to water and create something completely new. Personally, that is why I chose this research topic. It gives you the opportunity to base your theories on original thinking, without having to strictly follow the canon. In my further research I am going to focus on the politico

economic aspects of water, we well as I am going to examine in depth the geopolitical aspect of it. All this under the prism of the environmental challenges. As the 21st century is going to be the century of the energy race, control over natural resources is going to be the main indication for conflicts. There are notable examples that support this argument. The Taiwanese and the Ukrainian cases are just two of many. In the first case, Taiwan holds the production of more than 90% of microchips, and in the second case, the Ukrainian fields offer good quality and fertile soil which pose as agricultural opportunities. Both of those cases are strongly connected to water security.

The difficulties I am facing and going to face during the research period are many. Due to the flexible borders of my research topic, it is challenging not to be distracted by elements that could potentially be integrated into the research. I would like to use many different approaches with the help of different academic fields. The most challenging part of the research lies in my ability to build my arguments in a way that are logical and easily understood. I am excited and I have the best hopes and intentions regarding the presentation of my findings.

As water demands, one should flow with the flow. In aqua veritas.

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