Institutul de Politici Publice

Why the Ukrainian hydropower infrastructure on Dniester will destroy Moldova and how to prevent such a disaster?

An "awakening" report on the content and implications of the Ukrainian – Moldavian Agreement on the operation of Dniester Hydropower Complex for the understanding of International Donors, Moldovan Government and population of Dniester River Basin

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Chisinau 2018

Acknowledgements

I am grateful for the support offered by Mr Ilya Trombistky during the writing of this report. I am also grateful to a former EU High Level Adviser who peer reviewed it.

Contents

INTRODUCTION

This report serves notice to donors, Governments and the population of the Dniester River Basin of the very significant risks arising from the ***Agreement of the functioning of Dniester hydropower complex*** presently being negotiated between Moldova and Ukraine. The intention of the report's author is to raise awareness and trigger discussions on a roadmap for preventing the potentially catastrophic impacts of the aforementioned Agreement.

The Dniester is one of the most significant rivers in Europe, with a length of 1362 km and a catchment area of 72000 km^2. Half of this length or 652 km (Middle and Lower Dniester) lies within the Republic of Moldova while the remainder crosses the densely populated areas of Western and South Western Ukraine. In total around 8 million people. Up to 4 million people, mostly from Moldova and the Ukrainian city of Odessa, use the water from the Dniester Basin for drinking purposes.

From 1958 the Dniester has been modified by a number of large hydropower dams and reservoirs. Most of these facilities are located in Ukraine through the so called 'Dniester hydropower complex'. The complex was initiated back in the 1970s and is still subject to expansion. As of 2016 the Ukrainian Government plans to build by 2026 an additional cascade of six hydropower plants. The existing and planned new hydroelectric infrastructure is purported to enhance energy security, decarbonize the energy system and solve the peak demand issues of the power system of Ukraine. However a detailed consideration of the impacts to date of the Dniester hydropower complex, its expansion and the incremental impacts of the new facilities reveals a "clean energy" scenario that threatens to trigger:

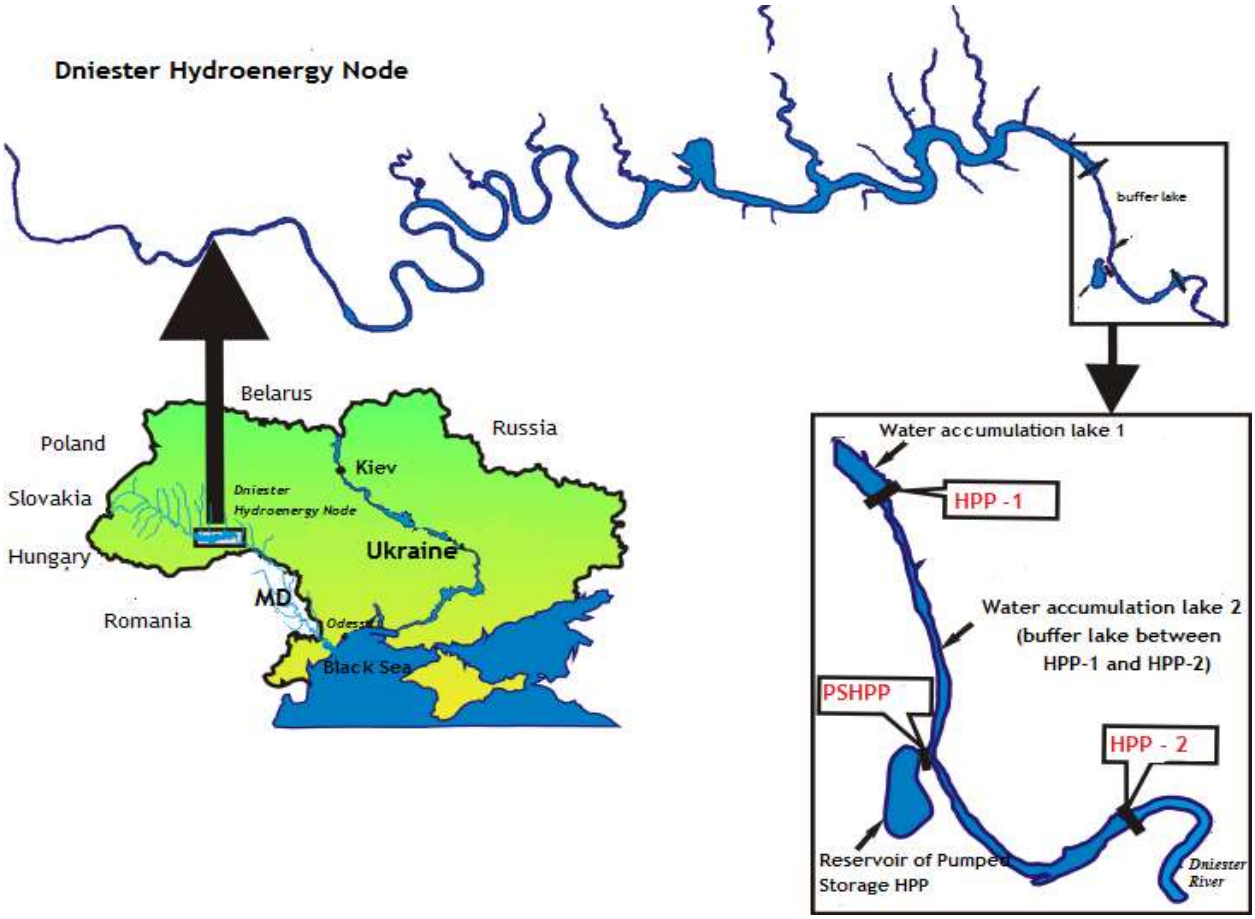
- Permanent water scarcity in Moldova, increasing the risk of civil war
- A significantly more tense relationship between Moldova and Ukraine
- A humanitarian crisis, with massive depopulation resulting from refugees leaving Moldova because of the lack of drinkable water, exacerbated by the difficulty of identifying and the excessive costs associated with clean water solutions
- Food security risks and soil degradation in Moldova
- Enormous pressure on the Moldova's health system
- Slowdown and paralysis of economic activities in Moldova
- Environmental disaster of the Middle and Lower Dniester
- Permanently higher risk of droughts and floods
- An additional cost burden (the bill for which could fall on EU taxpayers) of tens of billions of Euros if the EU and international donors are not taking urgent action

These risks are presently being legitimized and institutionalized through the negotiations between the Moldavian and Ukrainian Governments for concluding an ***Agreement of the functioning of Dniester hydropower complex.*** These negotiations are completely non-transparent, blatantly circumvent environmental legislation of the EU and principles of good practice in the Energy Community, and lack key safeguards for maintaining the ecosystem of Dniester and the right to clean water (UN Resolution 64/292 of 28 July 2010) of 4 million people.

1. Why does Ukraine want an Agreement with Moldova on the operation of the Dniester hydropower complex?

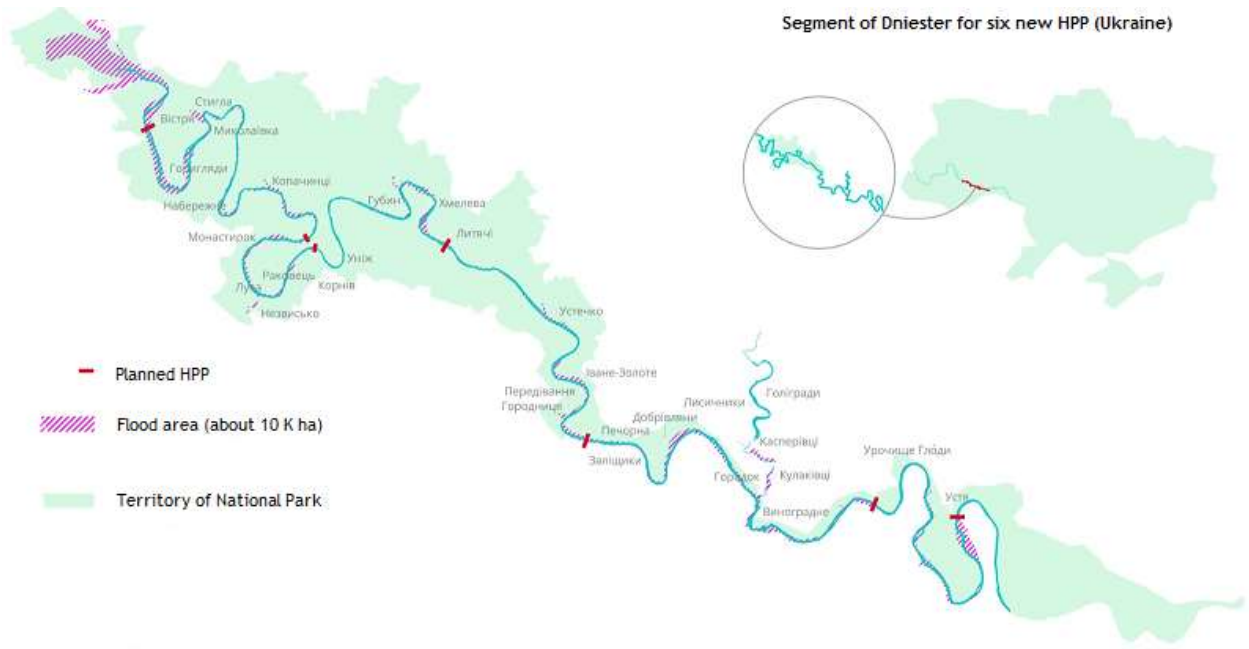
In 2017 Moldova and Ukraine entered into negotiations for concluding an Agreement on the functioning of the Dniester hydropower complex. The energy infrastructure on the Ukrainian segment of the Dniester River dates back to the 1970s. It is continuing to expand to this date and is comprised of several facilities. More specifically this hydropower complex consists of two hydroelectric plants at Novodnestrovsk and Nahoreany, a Hydroelectric Power Plant with Pumped Storage and a buffer reservoir between the first two facilities regulating the flow of water downstream to the Moldavian segment of the Dniester river. Ukraine's existing hydropower facilities on the Dniester produce 4 billion kWh per year, equivalent to the annual electricity consumption of Moldova (See Figure 1). In addition to this infrastructure the Ukrainian authorities announced in 2016 plans for the construction of six new hydropower plants by 2026 (See Figure 2).

Figure 1 The map of existing Dniester Hydropower Complex from Ukraine



Source: adaptation of author based on the infographic of Oxana Gulyaeva

Figure 2 The map of planned six new Power Plants in Ukrainian segment of Dniester



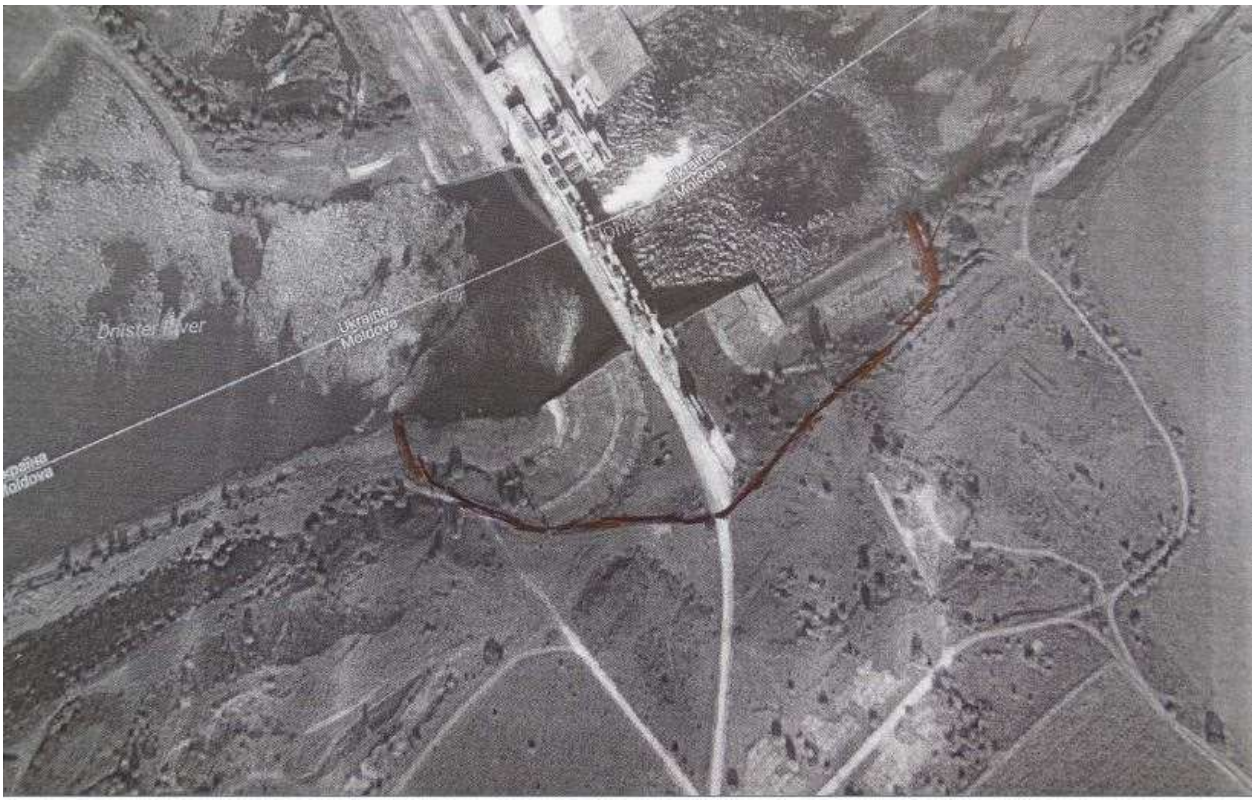
Source: Texty.org.ua

These sources of power generation should allegedly replace the periodic generation deficit of Ukraine, substitute the polluting sources of electricity with the renewable ones (especially coal-fired thermal power plants whose life cycle is expiring) and to add more flexible sources of energy to the local energy mix energy for the integration of the inflexible (wind and solar).

The Ukraine Government desires an Agreement with the Moldovan side for several reasons. The Ukrainian side wants total access to the buffer lake. A part of this passes through the territory of Moldova (see Fig. 3). Unobstructed access to this segment of Dniester would allow the neighbouring country to continue the consolidation and expansion work of this intermediate reservoir so that the Pumped Storage Hydroelectric Power Plant could be used at full capacity. At the same time, signing such an Agreement and finding a non-conflictual solution would allow Ukraine to access financial resources from International Development Banks for the finalisation of this costly infrastructure and the construction of the new 6 planed HPPs, as Ukraine does not have all the need financial means from internal budgetary resources. At the moment, Ukraine has a maximum of 30% of the necessary money (from the budget) to complete the construction of hydroelectric infrastructure on all Ukrainian rivers (not only on the Dniester). Therefore the remaining 70% needs to be secured from other sources (in particular loans). It is well known that donors and International Financial Institutions are sensitive to social and environmental issues, so they want to avoid creating additional problems by solving those related to electricity supply. That is why the development partners call on

states that build facilities on cross-border watercourses to firstly settle all their related disputes with neighbouring countries.

Fig. 3 HPP-2 (red fence marked) and buffer lake on Moldova's territory to be offered in concession to Ukraine



Source: Ilya Trombistky

In any case the obligation to obtain the consent of neighbouring states ("affected parties") for projects with cross-border environmental impact is stipulated in the international agreements signed by Ukraine and Moldova (e.g. ESPOO Convention signed by Ukraine in 1999 and Republic of Moldova in 1994), as well as environmental legislation that is to be compulsorily enforced by the two countries, in line with the commitments of the Association Agreements and the Energy Community Treaty.

2. What provisions are under negotiation?

The existence of such an intergovernmental Agreement is a usual international practice widely accepted for the operation of trans-boundary watercourses. However the provisions being proposed for this Agreement by the Ukrainian side are somehow unusual. As of November 3, 2017 the text under negotiations contained the following key points:

1. The agreement deprives Moldova of the right to use the water from the buffer lake for the entire duration of this intergovernmental agreement. The initial term of this treaty proposed by Ukrainian counterpart was 99 years, then it was reduced to 49, while the latest proposed versions to be negotiated were 30 years and an automatic extension of another 30 years.

2. The Draft Agreement makes no reference to European Union procedures (e.g. Directives) for assessing the impact of such infrastructure with cross-border impact (environmental, social), impact on quality of water aimed for human consumption, impact on wildlife, or consultation with the public from the affected country.

3. There is no compensation mechanism for losses resulting from the operation of the Dniester hydropower complex, known also as compensation of lost ecosystem services (e.g. drinking water, fish, recreation, irrigation, etc.).

4. The draft under negotiation does not define the minimum water flows insured on the Dniester at different times of the year. Neither the minimum flow (debit) nor the ecological flow (spring debit) are established. In other words the document fails to define and specify key technical parameters of the water flow. These parameters are crucial for the preservation of the whole river corridor ecosystem of the Dniester downstream of Moldova's territory. Keeping these technical parameters within acceptable limits should be mandatory.

5. The negotiated draft of the Agreement does not make any reference to the 6 additional hydropower plants planned by the Ukrainian side on the upstream segment of Dniester. The text of the Agreement does not mention at all the six new power plants on Dniester, despite the fact that they will be basically a part of the same ecosystem and hydropower complex. In this respect it fails to recognise essential principles of river basin management and integrated water resources management. Nor does it mention the need to take environmental, economic, and social and health impact assessments for this new infrastructure. This omission (whether intentional or otherwise) should be rectified.

6. The draft Agreement does not make any reference to the need to undertake studies in line with current environmental impact, social impact and economic impacts on expanding the existing infrastructure (e.g. particularly the buffer lake and the Pumped Storage Power Station). Without such studies it is not clear which is the basis of this Inter-State Treaty under negotiations? Laws on environmental impact assessment exist

both in Ukraine and Moldova. Alignment of these laws with the corresponding EU Directives is necessary pursuant to agreements in force between both countries and the European Union.

7. The final text of the Agreement will be signed only in three languages: Russian, Ukrainian and Romanian. In the event of disputes, the proposed text of the Agreement indicates Russian language as the only language for such proceedings. The Court of Arbitration named in the Agreement for such purposes is The Hague International Court, whose proceedings are normally conducted in English. The language limitation restricts from the very outset the choice of judges and referees to the Hague tribunal. At the same time, such a limitation will create difficulties for development partners who will want to be involved in monitoring of how this Agreement is applied.[1]. Consequently, it appears to be strange and unacceptable the exclusion of the English version of the Agreement which also should be the language of arbitral disputes.

As it was stated in a public appeal the Moldovan Civil Society of 21 November 2017[2], the lack of these key elements risks to creating disastrous consequences for the supply of water to 3 million people from the Republic of Moldova including the Transnistrian region, over 1 million of the population of the region Odessa, the degradation and destruction of the ecosystems from lower Dniester and enormous economic costs for identifying alternative sources of water aimed for human consumption. In fact, the figure of 4 million people is the minimum figure. The opinion of other specialists estimates that figure for 8 million people. The additional 4 million representing the population of the Dniester River Basin in the western regions of Ukraine, which will also be affected on the long term by the planned 6 new HPPs and will see the transformation of the river into a chain of six swamps stretched over 300 km.[3]

The consequences are especially dramatic for the Republic of Moldova, because Dniester is the country's key source of drinking water. Cities like Chisinau (700000 inhabitants), Balti (close to 150000) and smaller towns such as Rezina, Soroca, Criuleni, Orhei use this source of daily drinking water directly from the Dniester. Considering the content of the Agreement under negotiation and lack of any environmental guarantees, almost certainly issues such as desertification, soil erosion and lack of fresh water risk to becoming a permanent phenomenon

[1] SIC.MD (2017) "Why the Government took water in the mouth on Dniester issue?" ("De ce guvernul a luat apă în gură privind problema Nistrului?"), 5 December 2017, http://sic.md/de-ce-guvernul-a-luat-apa-in-gura-privind-problema-nistrului/

[2] POSITION PAPER on the negotiation of Agreement concerning the functioning of the Dniester Hydropower Complex and its impact on the Dniester River basin, 22 November 2017, http://ipp.md/wp-content/uploads/2017/11/position-paper.pdf

[3] The figure of 8 million is estimated by Mr Alecu Reniță, the President of Ecological Movement from Moldova.

that can trigger a humanitarian crisis, depopulate the territory of Moldova, and cause a permanent conflict with Ukraine due to water scarcity. From this point of view, estimating that at least 500,000 Moldovans may be forced in the medium term to leave their country because of the lack of the primary source of life does not appear to be an exaggeration.

In summary, therefore, it is concluded that the Agreement as it stands is not only in breach of applicable environmental law and hence a risk to the quality of life for people in both Moldova and Ukraine but also unacceptably one-sided in its treatment of a shared trans-boundary resource.

3. What impact had so far on Lower Dniester River the Dniester hydropower complex from the Ukrainian territory?

With the gradual commissioning the Dniester hydropower complex that started in 1980's, the water flow that is released to the Moldovan side of Dniester is fully regulated. How exactly this process is working? Water is discharged from a large reservoir at Novodnestrovsk and reaches the turbines of HPP-1. In the Novodnestrovsk reservoir the bottom level water has a constant temperature reaching an average of 6 °C-8 °C. This temperature in spring and summer is 10 to 12 °C lower than the surface temperatures. This cold water transits a 19.8 km buffer (lake) water reservoir, which starts immediately after HPP-1 before reaching the dam of HPP-2.[4] In between these two HPPs the water is pumped into what is planned to be the largest Pumped Storage Reservoir from Europe, which is actually a Pumped Storage Hydropower Station (also known as *Dniester HAPP or Dniester PSPS)* with 7 large turbines having an installed capacity of 2268 MW in generating mode and 2948 MW in pumping mode.[5] Ultimately the water flow enters Moldova's territory at Naslavcea (Naslavcha). Here the water does not have time to warm up or cool down to natural temperature indicators. The water here is also characterized by high transparency and velocity and reaches a speed of 2.5 m3/s. The speed and temperature is causing the thermal pollution of the downstream Dniester waters, which can be traced to the Dubăsari (Dubossary) reservoir on Moldovan territory.[6]

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[4] Goreacheva et al (2016) "THERMAL REGIME OF WATER ON TRANS-BORDER LEVEL OF DNISTER", *Studia Universitatis Moldaviae*, 2016, Nr. 6 (96), p. 126. ("ТЕРМИЧЕСКИЙ РЕЖИМ ВОД ТРАНСГРАНИЧНОГО УЧАСТКА ДНЕСТРА", *Studia Universitatis Moldaviae*, 2016, Nr. 6 (96), p. 126.)

[5] Since 2009 the Dniester Pumped Storage Power Station has commissioned 3 generators having an installed capacity of 972 MW, the forth generator with 324 MW will be commissioned in 2017 – 2019, while the remaining three blocks of 972 MW will follow. For details see the ORDER CABINET OF MINISTERS OF UKRAINE No. 552 dated 13 July 2016 "On approval of the Program of hydropower development for the period till 2026", p. 4-5, http://d2ouvy59p0dg6k.cloudfront.net/downloads/program_of_hydropower_development_in_ua_till_2026.pdf

[6] Goreacheva et al (2016) "THERMAL REGIME OF WATER ON TRANS-BORDER LEVEL OF DNISTER", *Studia Universitatis Moldaviae*, 2016, Nr. 6 (96), p. 126. ("ТЕРМИЧЕСКИЙ РЕЖИМ ВОД ТРАНСГРАНИЧНОГО УЧАСТКА ДНЕСТРА", *Studia Universitatis Moldaviae*, 2016, Nr. 6 (96), p. 126.)

A paper of Academy of Sciences of Moldova presented at a recent conference dedicated to Dniester presents the following diagnostic: "*The key impacts of the Dniester hydropower complex (Dniester HPP-1, Dniester HAPP, Dniester HPP-2) on the Middle Dniester ecosystem are as follows: modification of seasonal and daily river flow fluctuations; changes in turbidity levels; modification of temperature and oxygen regime. According to the long-term data of the Laboratory of Hydrobiology and Ecotoxicology (Institute of Zoology, Academy of Sciences of Moldova), the annual range of temperature fluctuations at the sector Naslavcea – Valcinet (downstream the Buffer Reservoir) is 3 – 18°C. Such a low water temperature cause a significant decline in productivity of phyto- and bacterioplankton than it is typical for this climatic region. All these impacts are factors affecting ecological state of the river ecosystem."*[7] As we will describe later on in this section these are not the only issues of Dniester hydropower complex.

Insufficient water debits. These and other serious problems affecting Dniester are caused by two key factors: lack of oxygen in the water released from the Ukrainian territory and lack of sufficient quantity of water discharged on Moldova's territory. Key in this regard are indicators such as the ecological debit and normal (constant minimum) debit of water. The former occurs usually in spring and the scientists determined that in order to maintain a healthy ecosystem of Lower Dniester there would be needed 700-800m3/s downstream of Novodnestrovsk Lake.[8] The latter is for the rest of the year and the scientists concluded that the permanent minimum daily water release from the Ukrainian territory should be 130 m3/s.[9]

The data for the last years on ecological debits shows that these minimum requirements are totally ignored. The analysis illustrated in the Figure 4 shows that the regimes of ecological (reproductive) water discharges from Ukraine territory for the period 2010 to 2017 are close to the minimum ecological debits only for 2010 and 2013 and ranged between to 493.5 - 565.2 m3/s as a result of rainfall. The regimes of the remaining years failed to provide water needed

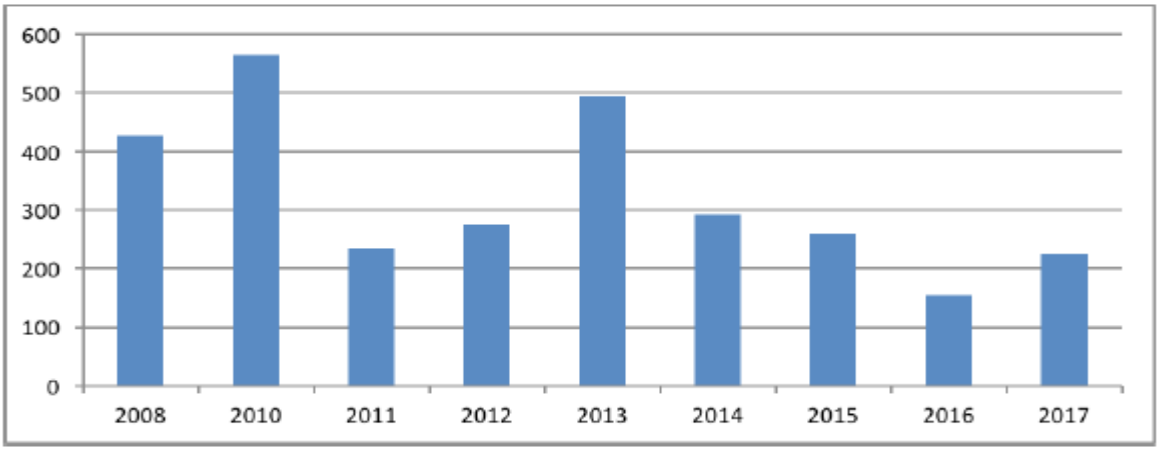
[7] Jurminskaia, O. (2017) "Assesment of the potential of the Dniester River and its tributary to recover the oxygen concentration" Institute of Zoology, Academy of Sciences of Moldova in *Transboundary Dniester River Basin Management*: *Platform for Cooperation and Current Challenges*, Proceedings of International Conference, Tiraspol, October 26-27, 2017, p. 109

[8] Dumitru Bulat (2017) *Ichtiofauna of the Republic of Moldova: threats, tendencies and recommendations for rehabilitation,* Doctor Habilitatus Thesis, Institute of Zoology, Academy of Sciences of Moldova, 2017, p. 71 ("Ihtiofauna Republicii Moldova: amenințări, tendințe și recomandări de reabilitate", http://zoology.asm.md/uploades/File/Publicatii/BULAT%20MONOG%20II.pdf

[9] Elena Zubcova et al (2017) "THE DYNAMICS OF PHYSICAL-CHEMICAL PARAMETERS IN THE WATERS OF DNIESTER RIVER", Review of the Academy of Sciences of Moldova *Akademos*, Issue 1, p. 53, ("DINAMICA PARAMETRILOR FIZICO-CHIMICI ÎN APELE FLUVIULUI NISTRU"). http://www.akademos.asm.md/files/48_53_Dinamica%20parametrilor%20fizico-chimici%20%D0%BEn%20apele%20fluviului%20Nistru.pdf

for ecological and spring discharges. The average volume of discharges from the Dniester reservoir for 2010 to 2017, during the period of (April-June), fluctuated in low-water years (2011, 2012, 2015-2017) within 154.6 - 273.9 m3/s.[10]

Figure 4 Average volumes of discharges from the Dniester reservoirs m3/s on Moldova's territory for the period April-May-June from 2008 to 2017



Source: Gubanov, V.V., Stepanok, N.A., 2017

This shortage of water affects also Ukraine. It directly affects spawning fish, reproductive cycles of amphibiotic insects and birds in the most productive part of the Dniester delta and estuary which is on Ukraine's territory and covers an area of about 13 thousand hectares. In addition it is estimated that the planned six new HPP will savagely reduce bellow 20 thousands the number of bird species.[11]

Data for the normal (constant minimum) debits are also discouraging. During the first half of 2017 and in the first half of 2016, according to the materials of the Ukrainian researchers, the water discharge from HPP-2 on Moldovan territory was more than 200 m3/s for only 16 days (in the spring during spawning period), 150-200 m3/s for 11 days, 120-130 m3/s -52 days and - about 100 m3/s - 103 days. At the same the idle flow (past turbines) was 0 m3/s for about 120 days, for 79 days was 2-54 m3/s, and only 1 day - 100 m3/s. This indicates that the water near the Naslavcea does not enter the Dniester constantly and sufficiently, which is inconsistent with

[10] Gubanov, V.V., Stepanok, N.A., (2017) "Influence of ecological flows from Dniester water reservoir in the period 2010 – 2017 on the flooding of Dniester delta" in *Transboundary Dniester River Basin Management*: *Platform for Cooperation and Current Challenges*, Proceedings of International Conference, Tiraspol, Eco-Tiras, October 26-27, 2017, p. 81 ("ВЛИЯНИЕ ЭКОЛОГИЧЕСКИХ ПОПУСКОВ ИЗ ДНЕСТРОВСКОГО ВОДОХРАНИЛИЩА 2010–2017 ГОДОВ НА ОБВОДНЕНИЕ ДЕЛЬТЫ ДНЕСТРА").

[11] Idem, p. 84

the design documents of this dam, according to which the minimum permanent sanitary (or critical) release should be at least 75 m3/s even in period of abnormally high drought.[12]

Temperature disrupting ecosystem life. High variation in volume and temperature of water that is discharged by the Dniester hydropower complex negatively affects the development of flora, fauna, and bacteria in the Lower Dniester. This causes a decrease in its diversity and predetermines the delay of spawning and the development of fish. For example in the area of the Naslavcea – Otaci (Moldovan side of Dniester immediately after HPP-2) the temperature water in the River varies within the range of 11-14 °C, without rising above 15-16 °C. Only in August 2017 at an air temperature of 37-38 °C and a very low water level, the water temperature reached 19 °C in village Unguri. By contrast during the winter months the warm water from the lower bottom layers of the HPP-1 with a temperature of 6 °C enters the lower segments of Dniester and prevents freezing of a large section of Dniester. During the warm period of the year the water from Dniester reservoir enters the lower tail with low temperatures that are below the natural level, which causes a delay of 1.5-2 months for the spawning of native fish species and changes the species composition of dominant fish in favour of cold water species.[13] As a result from Dniester disappeared expensive species of fish such as sturgeon, trout, etc. At the same time, zooplankton production has decreased by 4.6-7.2 times, and zoobenthos (organisms living at the bottom of the water) decreased by 2-3 times. [14]

Naslavcea village is among the poorest Moldovan segment of Dniester in terms of specific diversity of fish (e.g. spring - 5 species, summer - 6 species and autumn - 9 species of fish). Key factors for this are the above mentioned dams that have altered hydrological, thermal and hydrobiological downstream regimes of Dniester.[15]

[12] Elena Zubcova et al (2017) "ASSESSMENT OF HYDROPOWER IMPACT ON AQUATIC ECOSYSTEMS OF THE DNIESTER RIVER BASIN", in *Transboundary Dniester River Basin Management*: *Platform for Cooperation and Current Challenges*, Proceedings of International Conference, Tiraspol, October 26-27, 2017, p. 135. ("ОЦЕНКА ВОЗДЕЙСТВИЯ ЭНЕРГЕТИКИ НА ВОДНЫЕ ЭКОСИСТЕМЫ БАССЕЙНА РЕКИ ДНЕСТР", *Интегрированное управление трансграничным бассейном Днестра*:*платформа для сотрудничества и современные вызовы*), http://www.eco-tiras.org/books/dniester_web.pdf

[13] Corobov, R. et al (2017) "Water Security under conditions of climate change"("Водная безопасность в условиях изменения климата"), p. 40, Eco-Tiras, http://www.eco-tiras.org/books/Vodnaia%20bezopasnosti_WEB.pdf

[14] Zubcova, E. (2012) "The current state of play of Dniester", Review of the Academy of Sciences of Moldova, *Akademos*, Nr. 4 (27) December 2012, p. 101 ("STAREA ACTUALĂ A FLUVIULUI NISTRU", Akademos, Nr. 4 (27) December 2012, p. 101), http://www.akademos.asm.md/files/Starea%20actuala%20a%20fluviului%20Nistru.pdf

[15] Dumitru Bulat (2017) *Ihtiofauna of the Republic of Moldova: threats, tendencies and recommendations for rehabilitation,* Doctor Habilitatus Thesis, Institute of Zoology, Academy of Sciences of Moldova, 2017, p. 74 ("Ihtiofauna Republicii Moldova: amenințări, tendințe și recomandări de reabilitate", http://zoology.asm.md/uploades/File/Publicatii/BULAT%20MONOG%20II.pdf

It should be mentioned that the majority of the debit on the Moldovan segment of Dniester comes from Ukrainian side and accounts for 80% of the quantity of water. The remaining 20% comes from the tributaries of Dniester and ground water from Moldovan territory.[16] Construction of Ukrainian hydroelectricity infrastructure on Dniester lead to a change in the proportions of water in Lower Dniester: from fresh mountain water to an increasing share of ground water (highly mineralised) and internal tributaries of Moldova (that are highly polluted). This disrupts the classical correlation for the rivers between the dynamics of mineralization of water and magnitude of water consumption.[17]

Consequences. This change in the balance of the sources of water in the Lower Dniester River will have three consequences. *The first* one is that due to lower temperatures and high water transparency which is not natural for plain sectors of rivers, the microorganisms, fish and vegetation that are typical of rivers like Dniester will continuously deteriorate, thus worsening the ecological state of play of the whole Lower Dniester Basin[18]. *The second* consequence is that climate change will seriously hit Moldova, by producing water scarcity in the country, because of higher degrees of evaporation and less precipitations, thus resulting in less accumulation of water in the surface water bodies and deep underground and ultimately in an increasingly diminished volume discharged in Dniester[19]. For example, according to an international project concluded in 2014 the annual average stream flow in Lower Dniester (Moldovan segment) will decrease by 25% in the next 30 years (2021 – 2050) compared to the previous 30 years (1971 – 2000)[20], an extremely high loss considering the importance of Dniester in terms of potable surface water supply for the country. *The third* consequence is the reverse to the second. Less water in Dniester released from the Ukrainian territory means less water in the underground sources from Moldovan territory. This happens because of the so

[16] Figures of the former Minister of Environment of Moldova, Mr. Valeriu Munteanu disclosed during TV show "WatchDog" from 20 december 2017, https://www.youtube.com/watch?v=Pg2ERN0ruug

[17] See Elena Zubcova et al (2010) "Assessment of chemical compositions of water and ecological situation in Dniester River", *Journal of Science and Arts*, Year 10, No. 1 (12), pp. 47-52, 2010, https://www.researchgate.net/publication/237049731_Assessment_of_chemical_compositions_of_water_and_ecological_situation_in_Dniester_river; Elena Zubcova (2007) "The impact of hydropower infrastructure on the ecological state of River Dniester", Akademos, September 2007. Nr. 2-3 (7), p. 55, ("Влияние гидростроительства на экологическое состояние реки"); Elena Zubcova et al (2017) "ASSESSMENT OF HYDROPOWER IMPACT ON AQUATIC ECOSYSTEMS OF THE DNIESTER RIVER BASIN", p. 137

[18] Elena Zubcova et al (2017) "The dynamics of the physical-chemical parameters in the waters of Dniester River", p. 51 – 52

[19] R. Corobov et al (2017) "Water Security under conditions of climate change" ("Водная безопасность в условиях изменения климата"), p. 40, Eco-Tiras, http://www.eco-tiras.org/books/Vodnaia%20bezopasnosti_WEB.pdf

[20] UNECE/OSCE/UNEP (2014) "DNIESTER WITHOUT BORDERS. Project results. Transboundary cooperation and sustainable management in the Dniester River basin: PHASE III – Implementation of the Action Programme (DNIESTER-III)", p. 21, http://www.osce.org/ukraine/110666?download=true

called rule of "communicating vessels". As it will be explained in the next section, Dniester has a regulating function for 68% of the ground (underground) water of Moldova's territory.

Self-purification capacity severely damaged. Construction of Dniester hydropower complex had also severely damaged the self-purification capacity of Dniester in the downstream segment. It is well known that the self-purification capacity is a property of an aquatic environment with run-off (not stagnant) water that needs a stable and sufficient water flow. In periods of high water flow the natural aeration processes are enhanced by the increased turbulence thus facilitating self-purification. By contrast during low flow periods the dilution of pollutants is reduced, self-purification processes are constrained by relative lack of oxygen and sediments settle on the river bottom together with adsorbed pollutant matter. In addition intensive rain following periods of low flow also creates problems by increasing stream velocity and scouring of oxygen-demanding organic matter from the river bed.[21]

The key role in the self-purification of a river is played by the so-called "suspended matter". If the average annual values of concentrations of suspended matter in the Dniester used to be in the range of 70-100 mg/l, and in the period of spring floods - up to 250-300 mg/l, now in more than 80% of cases, their amount does not exceed 10 mg/l, with fluctuations in range of 0.8-32 mg/l.[22] Overall the self-purification capacity of the Dniester decreased by tens of times, and secondary pollution processes have intensified. As it was concluded by scientists in order to have a workable self-purification process the share of biodegradable substance should be at least 25%. In 2017 the waters of Lower Dniester had only an average of 10%.[23] In some segments of Dniester (e.g.in Soroca) the River became an area of environmental disaster (V grade quality of waters or extremely polluted) while on an extensive area of Lower Dniester (e.g. Varniţa-Palanca sector) the zone is considered an area of high environmental risk in the summer season.[24] With an increased degree of pollution the cost for purification of water needed for alimentation of Moldova's population increase exponentially. The ultimate effect would be an increase in tariff for the water used by the population to drink and by the agricultural sector for production purposes.

Drinking water supply affected. As it was revealed above the water directly taken from Dniester is used by large urban areas in Moldova for drinking purposes (after appropriate treatment).

[21] UNESCO (1982) "Dispersion and self-purification of pollutants in surface water systems. A contribution to the International Hydrological Programme", *Technical Papers in hydrology* , p. 44, https://hydrologie.org/BIB/Publ_UNESCO/TP_023_E.pdf

[22] R. Corobov et al (2017) "Water Security under conditions of climate change", p. 40

[23] E. Zubcova et al (2017) ""The dynamics of the physical-chemical parameters in the waters of Dniester River" , p. 50

[24] Idem, p. 48

The accumulation of this water in the buffer lake of Dniester reservoir and in the Pumped Storage Hydropower Plant already created water shortcomings in Dniester that threatened to leave without water around 700000 inhabitants of Chisinau during summer times. The most recent force majeure events by this type occurred in the summers of 2015 and 2016. As it was reported by *Apa Canal,* the utility company supplying potable water to Chisinau consumers, in addition to the fact that Ukrainian authorities did not coordinate their actions with Moldovan counterpart, there is a high risk that with the planned six new HPPs on Dniester the water that will be released on Moldovan segment on Dniester will be technical water (thermic treated water), thus not suitable for drinking purposes.[25] Similar events can occur anytime in the future. And this fear has real grounds. According to the Ukraine's *Program of hydropower development for the period till 2026*, Ukraine intends to commission all 7 generating blocks of the Dniester Pumped Storage Hydropower Plant by 2026. So far this Plant has commissioned three generating units (blocks) of 972 MW and by the end of the mentioned period it will total 2268 MW, making it the largest accumulation reservoir from Europe[26], **on a River that is not the largest one in Europe**. It should be expected to have more often risks of supply disruptions when the Dniester PSPS will work at full capacity. It would be sufficient to leave Chisinau without water for one week in a summer with 35°C to trigger an epidemic outbreak on a scale more usually associated with war.

Droughts. Large water accumulation reservoirs located on trans-boundary waterways could also generate droughts and floods downstream on the watercourses. Actually events of this nature have already happened in Moldova. As it was revealed by specialists the floods of 2010 and 2008 from Moldova are related as well to the mismanagement of Dniester hydropower complex from Ukraine that flooded the country. Further on the hydrological draught from 2012 in the Lower Dniester, by contrary, was influenced by the lack of releasing sufficient water from the reservoirs of Dniester hydropower complex.[27] In this context it should be outlined that drought is periodically affecting Moldova. It has been established that the frequency of drought on the territory of the country on average is as follows: 1 – 2 droughts in 10 years in the north of the country; 2 – 3 droughts in the central part and 5 – 6 droughts in the south of the country.

[25] See "Drumul apei spre Chişinău este plin de provocări şi pericole", Press Release of *Apa Canal* , 14.03.2017 http://ns2.acc.md/?m=p28 ;and "Ucraina vrea să construiască 6 Hidrocentrale pe Nistru! Apă-Canal Chișinău: Acest lucru va face dificilă asigurarea cu apă a municipiului", *Realitatea.md*, 26 January 2017, http://www.realitatea.md/ucraina-vrea-sa-construiasca-6-hidrocentrale-pe-nistru--apa-canal-chisinau--acest-lucru-va-face-dificila-asigurarea-cu-apa-a-municipiului_51587.html

[26] "Program of hydropower development for the period till 2026", approved by the Order of the Cabinet of Ministers of Ukraine dated July 13, 2016, http://zakon2.rada.gov.ua/laws/show/552-2016-%D1%80

[27] "BUILDING OF NEW HYDROELECTRIC POWER PLANTS ON DNIESTER WILL CAUSE INTERRUPTIONS IN WATER SUPPLY" *Infotag*, 27 January 2017, http://www.infotag.md/economics-en/238960/; and Corobov et al (2017) "Water Security under conditions of climate change", p. 19.

Estimations show that the rainfall deficit is more or less characteristic of the entire territory of the country, belonging to the sub-humid and semi-arid regions with a high probability of drought and of desertification processes.[28] Costs of these phenomena are very high taking into account Moldova's small economy. For example one of the most severe droughts in Moldova's post World War II history took place in 2007 and created losses of 1 billion USD.[29] Roughly speaking that is half of the annual budget of Republic of Moldova. At that year 80% of farmland suffered from lack of moisture and the lowest production level in agriculture was registered in the past 60 years.[30] Overall the probability of the emergence of very strong droughts (≤ 50% of the standard rainfall) with catastrophic consequences in some months of the vegetation period throughout the country represents 11 - 41%.[31] Dniester hydropower complex and the planned six new HPP would only exacerbate the droughts phenomena of Moldova with its devastating effects for the country.

Seismic activity. The area of Dniester Pumped Storage Plant is also characterized by high seismic activity. It was determined that seismic activity in the area of the reservoir can be both natural and induced, can reach a magnitude of up 6-8 points on the Richter scale and can result in the destruction of external and underground hydraulic structures of this reservoir. More specifically an earthquake could lead to the displacement of water conduits and the destruction of the bed of the upper technical reservoir of the Dniester PSPS.[32] It may also have a catastrophic impact on the population downstream on the River. Usually seismic activity takes place near large dam sites or in reservoir areas, and may have been triggered by changes in the physical environment as a result of impounding and operation of reservoirs.[33] Globally, there are over 100 identified cases of earthquakes that scientists believe were triggered by reservoirs. The most serious case may be the 7.9 Richter scale magnitude Sichuan earthquakes in May 2008, which killed an estimated 80,000 people and has been linked to the construction of

[28] European Commission (2013) "Assessing the impact of climate change on water supply sources and WSS systems in Moldova and inventory possible adaptation measures (Task 1)", *Final Report* (January 2013), p. 22, http://ec.europa.eu/environment/marine/internationalcooperation/pdf/Moldova_Task%201_Final_EN_26%20Feb.pdf.pdf

[29] Prepelita, N (2008) "Drought in the Republic of Moldova. Regional scientific and technical conference on the role of the NMHSs in prevention and mitigation of natural hazards impact, 9-10 October 2008, Chisinau, Republic of Moldova", http://www.un.org/esa/sustdev/sdissues/desertification/beijing2008/presentations/prepelita.pdf

[30] European Commission (2013) "Assessing the impact of climate change on water supply sources and WSS systems in Moldova and inventory possible adaptation measures (Task 1)", *Final Report* (January 2013), p. 64.

[31] Idem, p. 22

[32] Shevcenko, N. et al (2006) "Dniester Pump Storage Plant: project risks December 2006", National Ecological Centre of Ukraine/ CEE Bankwatch Network, p. 17, https://bankwatch.org/documents/DPSP_study_final.pdf

[33] Houqun, Chen; Zeping, Xu; Ming, Li (2010) "The relationship between large reservoirs and seismicity", 8 Feb 2010, http://www.waterpowermagazine.com/features/featurethe-relationship-between-large-reservoirs-and-seismicity

the Zipingpu Dam.[34] Up to this moment there are no detailed geological study of the region of Dniester PSP to identify the risks and impacts of a large magnitude earthquake. This makes the attempts of Ukraine Government to continue works of enlargement of Dniester hydropower complex suicidal.

It is not entirely clear how Ukrainian authorities are planning to mitigate an imminent catastrophe and which will be the financial sources to compensate Moldova for the life toll, destruction of recreational, industrial assets and other physical infrastructure downstream on the Dniester or the contamination of agricultural land that will be side-lined from the economic circuit as a result of floods.

Karst formations. In addition the risk of flooding and water insufficiency in Moldova is particularly high since the geology of Dniester Basin is known for its karst formations.[35] Karst formations are soluble rocks such as limestone, dolomite, and gypsum characterized by underground drainage systems with sinkholes and caves. Limestone and gypsum is widespread across the whole area Dniester hydropower complex. Moreover, one of the tectonic-karst caverns leads exactly under the pit of the reservoir of Dniester Pumped Storage Plant. **According to a Final report from 1997 of the Ukraine State commission for environment the safety margin of the walls and the bottom of the reservoir is not too high but their ability to filter water is high**.[36] This means that there is a high risk for the water collected in this reservoir to be lost through these caverns, soften them and ultimately collapsing the walls of this technical reservoir. The Ukrainian side intends to further expand the works on the buffer reservoir (between HPP1 and HPP2) on the 19,2 ha of land it currently negotiates to lease from Moldova. The aim is to raise the level of water in this buffer reservoir by another 8 meters in order to supply easier the Pumped Storage Plant. Such a step may weaken the whole Dniester hydropower complex and increase the risk of collapse of karst caverns that would not be limited only to the Pumped Storage Plant but to a much larger area. The similar, even higher risks belong to six HPP to be constructed.

In should be also reminded that in 1993 Ukrainian scientist V.N. Gontarenko concluded that annually Dniester is losing between 1,3 – 2,2 cubic kilometers of water. According to him the

[34] International Rivers (Organization). (2013) "Earthquakes Triggered by Dams. International Rivers. Organization", November 23, 2013, http://www.internationalrivers.org/earthquakes-triggered-by-dams

[35] OSCE/UNECE (2005) "TRANSBOUNDARY DIAGNOSTIC STUDY FOR THE DNIESTER RIVER BASIN", *OSCE/UNECE Project: Transboundary Co-operation and Sustainable Management of the Dniester River*, p.11, http://www.osce.org/eea/38320?download=true

[36] Shevcenko, N. et al (2006) "Dniester Pump Storage Plant: project risks December 2006", National Ecological Centre of Ukraine/ CEE Bankwatch Network, p. 17, https://bankwatch.org/documents/DPSP_study_final.pdf

reservoir of HPP-1 from Novodnestrovsk is losing this volume of water that gets infiltrated in karst formations. [37]

Methane production is another caveat of the dam reservoirs. It has multiple causes. We mention two that are relevant to Dniester hydropower complex. On the one side the vegetation, sediment, soil and chemicals flow from rivers and external sources into the accumulation lakes of this infrastructure. They mix with reservoir stagnant water and decompose, emitting methane and carbon dioxide. The enlargement of the area of floodings of the planed six hydropower plants will accelerate these methane emissions. On the other side, it is scientifically proved that the water that is preserved in reservoirs and passing through turbines to generate electricity is extremely transparent. The high degree of transparency, that is improper for natural rivers, attracts solar light that penetrates the water stream to the bottom of the river and resulting in a fast increase of vegetation. When this vegetation dies it creates the mud which is the optimal raw material for the methane production. High transparency of water on the Lower Dniester emerged after the commissioning of Dniester hydropower complex and particularly after transforming the dam from Naslavcea into HPP-2. Transparency of water is also augmented with gradual commissioning of the generation blocks of Dniester Pumped Storage Plant.

To sum up, methane emissions more belongs to the Novodnestrovsk and the planned six HPP, rather than the buffer reservoir because the water there will be changed every day.

Methane emissions issue is also relevant to Dubasari reservoir in Moldova. The country is actually hosting a “methane bomb” at the accumulation reservoir from Dubasari that was commissioned in 1954. Different experts estimate that the layer of sludge at this reservoir has a thickness 12 meters deep because the lake was not cleaned for many years. Consequently it should be expected that the concentration of this toxic gas will increase with higher intensity when the buffer lake would be expanded, when the DPSP will work at full capacity, and when six new dams and reservoirs will be commissioned Upstream on Dniester. All of them will produce more damage to Lower Dniester and pushing the River into an “ecological coma”.

Infrastructure with changed destination. Last it should be outlined that only HPP-1 (from Novodnestrovsk) and its reservoir correspond to their initial project documents. It should be noted in this context that one the primary purpose of damming the Upper Dniester back in Soviet times was to prevent floods, but also to use the reservoirs for irrigation purposes.

[37] Gontarenco, V. N. (1993) “Impact of the Novodnestrovsk HPP on the water regime on the estuary of the Dniester River”, International Ecological Conference on protection and revival of the Dniester River, "Dniester-SOS", 1993, part 1, pages 39 – 43 (”Гонтаренко В.Н. Влияние Новоднестровской ГЭС на водный режим устьевой области реки Днестр // Междунар. экол. конф. по защите и возрождению реки Днестр, «Днестр-СОС». - 1993. - Ч.1. - С. 39-43).

Electricity production was of secondary importance. The past 20 years show that Ukrainian authorities changed the purpose of this infrastructure with the primary aim of producing electricity. The buffer lake (between HPP-1 and HPP-2) erected also on the territory of Moldova had the primary scope the balancing the water level leaps on the territory of Moldova and for diminishing the negative effect of cold waters. This lake was both deepened and enlarged transforming this segment of Upper Dniester from a typical mountainous River into a flat river with stagnant water and with all associated consequences. Further on, the HPP-2 was envisaged to be from the very beginning of the project only a dam, with no purposes for becoming a Power Plant. It lost this purpose due to the installation of the three power producing turbines in the 1990s. Last but not least, the Dniester Pumped Storage Station was exposed to a so-called state ecological expertise from the Ukrainian Ministry of Environment. The report of this expertise dated 15.11.97 formulated "**17 substantial deficiencies on various aspects of the project**".[38] It is not entirely clear how these observations were addressed. Moreover the HPP-1 and HPP-2 were not exposed to any ecological expertise although according to Ukrainian legal framework they had to. There was not undertaken as well any geological expertise of the site of Dniester PSPS.[39] In addition, no public hearings with the participation of affected parties (Republic of Moldova and Transnitrian region) were organised in regard to Dniester PSPS although Ukraine was already part of Aarhus Convention (on Public Participation). [40]

This could be the main counterargument to be used by Moldovan authorities in the current negotiations as well as by the European Commission and development partners at the claim of Ukraine that the existing infrastructure of Dniester hydropower complex was complying with the legal framework of the past and cannot be assessed within the recent EU and Energy Community regulatory framework. We will discuss this latter framework later on in the text.

In conclusion, any construction on the Dniester, from Carpathian Mountains down to the discharge into the Black Sea, would urgently need a moratorium in order to conduct a thorough assessment to understand if the River can survive the enlargement of its bed, expansion and upgrading of existing HPP or construction of new Hydroelectric Power Plants.

4. Does Moldova have enough drinking water resources?

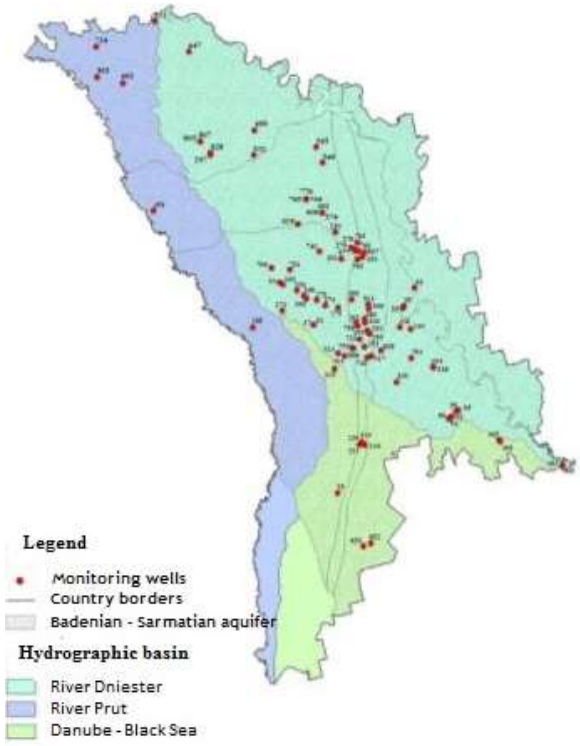
The short answer is "no"! The Strategy for water supply and sanitation of the Republic of Moldova for the period 2014-2028 specifies that *"Recommended international thresholds*

[38] Shevcenko, N. et al (2006) "Dniester Pump Storage Plant: project risks December 2006", National Ecological Centre of Ukraine/ CEE Bankwatch Network, p. 12, https://bankwatch.org/documents/DPSP_study_final.pdf
[39] Idem, p.13
[40] Idem, p.14, 15

define the volume of 1700 m3/inhabitant/year as the safe level of availability of renewable fresh water. If the available water volume is less than 1000 m3/inhabitant/year, the lack of water can hinder economic development and may affect the health and standard of living of the population"[41]. **In this context a natural question arises: what is the amount of freshwater water per capita available in Moldova at this moment?** The Dniester River Basin District Management Plan approved on 17 October 2017 estimates this figure at **only 500 m3/inhabitant/year!**[42]

The endowments of surface waters in Moldova are limited due to the low level of annual precipitations, hilly relief that causes water drainage, high level of evaporation and climate change factors. The Dniester is the country's key source of both surface and drinking water for over 80% of population. At the same time Dniester has a regulating role for the ground and underground water. Decreasing the water in the Dniester will seriously hit the population as it will decrease the ground/underground water on 67% of the territory of Moldova. (See Figure 4)

Figure 4 Map of hydrographic basins of Moldova



Source: Hydrogeological expedition of Moldova

[41] See the Government Decision nr. 199 from 20 March 2014 concerning the *Strategy for water supply and sanitation (2014 – 2028),* lex.justice.md/UserFiles/File/2014/mo72-77md/anexa_1_199.docx

[42] See the Government Decision nr. 814 from 17 October 2017 concerning *the Plan of Management of Dniester hydrographic Basin,* lex.justice.md/UserFiles/File/2017/mo371-382md/plan_814.doc

Why is this happening? The hydrological regime of Dniester is operating according to the principle of "communicating vessels", so that this river has a regulation function for 2/3 of the ground waters of the Republic of Moldova. In other words, with the lifting or diminishing of water flow in Dniester, the ground water quantity from 67% of the country's territory follows a similar pattern.

The direct impact of the decrease in the volume of water in the Dniester will be that the agricultural sector and other water intensive sectors, which normally use surface water, will have a legal argument to use groundwater. At present, the ground waters that feed the springs, the wells and the fountains, together with the deep underground waters represent the primary source of drinking water in the proportion of only 15% of Moldova's consumption. Normally the drinking groundwater is prohibited for other purposes in Moldova. However, the use of these waters for economic activities is also possible. This legal outlet was opened by the Moldovan Water Law of 2013. More specifically, the Article 45 (2) of this Law opens the possibility of using drinking water for other purposes where there is no surface water[43]. Once the drought will become a permanent phenomenon in Moldova, there will be sufficient legal grounds to exploit the underground freshwater for economic purposes (irrigation, industrial processes, and even shale gas if to believe the Government's intentions). All these activities use water intensively.

The key problem for Moldova is that up to this moment, the groundwater resources available to the country are not exactly known. What is known, however, is that the rate of water accumulation in the underground reservoirs (aquifers) is much slower than its consumption rate. From this point of view by entering into negotiations with Ukraine without first having established the exact amount of Moldova's strategic water resources or having in place a coherent plan to identify alternative sources, the Moldovan Government is taking a gamble that carries a significant risk of critical depletion of available resources.

Using ground water will have also a side effect on the quality of agricultural land. It is well documented that ground water in Moldova contains sodium and salts that may harm the soil, diminishing the humus layer and destroying soil structure, compacting it, and resulting in ponding, and in some instances marsh-type conditions. According to some estimates, out of 2,682m hectares of arable lands, only 1,237m are suitable for irrigation. In the north of the country, waters have a lower salt content, while in the centre and south of the country water used for irrigation has a higher degree of mineralisation.[44] Contrary to this the water from the Dniester River meets quality indicators and its use for irrigation does not contribute to soil

[43] See the *Law on waters of Republic of Moldova* that is in force as of October 2013, http://lex.justice.md/md/342978/

[44] UNDP (2010) "2009/2010 National Human Development Report. Climate Change in Moldova Socio-Economic Impact and Policy Options for Adaptation", p. 95, http://hdr.undp.org/sites/default/files/nhdr_moldova_2009-10_en.pdf

degradation. There is also high salt content in lakes (the mineralisation degree ranges between 1,0 and 3,0 g/l) as well as other chemically dangerous contents. Using such water in irrigation may lead to the soil becoming over-saturated with salt. There are only 3 national water basins (Costesti, Ulmul and Cahul) which store good quality water for irrigation.[45] It clearly appears therefore that the use of ground water in the agricultural sector poses a major risk that could kick out from the economic circuit fertile agricultural land.

There will be two main consequences of the use of underground water resources, both extremely negative: (1) the rapid depletion of water that must be left to supply the population with water for food purposes, and (2) the salinisation of soils that will make it unusable for crop production and food security and employability of the population. The direct impact will be felt by at least 34.7%[46] of the active population of the country that is involved in the agricultural sector and an up to 80% of Moldova's total population that uses this water for food purposes.

Summarizing, the limited resources of fresh water pose a great risk for Moldova affecting the sustainable development of its population and economy even without the planned 6 hydropower plant on the Ukrainian side of Dniester or the 4 additional generating blocks of the Pumped Storage Hydroelectric Power Plant on Dniester to be commissioned in the near future.

5. Health, disease, water contamination resulting from hydropower dams on Dniester

Recent research on water quality in hydroelectric sites indicates that water eutrophication (insufficiency of dispersed oxygen in water) affects lake ecosystems and lead to the appearance of toxic substances in this water by some species of bacteria called *Cyanophyceae* (e.g. *Microcystis* and *Anabaena flos-aquae aeroginosa*). These bacteria are known for causing human gastrointestinal disease.[47] In addition it is well documented that Cyanobacteria produce hepatotoxins, neurotoxins, cytotoxins, dermatotoxins, and irritant toxins called cyanotoxins.[48]

These bacteria and parasites they produce are not foreign to European countries. Human health problems produced by Cyanobacteria and/or cyanotoxins were encountered in 8

[45] Idem

[46] Data of the Moldovan Bureau of Statistics as of 2017

[47] Bunea Florenina et al. (2012) "Water Quality in Hydroelectric Sites", p. 397 in Kostas Voudouri (ed.) (2012) *Ecological Water Quality - Water Treatment and Reuse, Chapter: Water quality in hydroelectric sites,* https://www.researchgate.net/publication/255816859_Water_Quality_in_Hydroelectric_Sites

[48] C.Wiegand, S.Pflugmacher (2005)"Ecotoxicological effects of selected cyanobacterial secondary metabolites a short review", *Toxicology and Applied Pharmacology,* Volume 203, Issue 3, 15 March 2005, Pages 201-218

European states (the Czech Republic, Estonia, Hungary, Poland, Portugal, Serbia, Sweden and the United Kingdom) and included **skin and mucosal membrane irritation, fever, gastrointestinal illness, respiratory distress and pulmonary consolidation**. Incidents involving skin irritation and gastrointestinal upset have been the most often reported, while a possible association between an elevated incidence of human **primary liver cancer** was identified in Serbia. Exposure to cyanobacterial cells and/or cyanotoxins has been taking place via drinking water, and during recreational activities (bathing, swimming, paddling, sailboarding and canoeing). At the same time more examples are available in Europe of animal illnesses and deaths associated with cyanobacterial populations and cyanotoxins, with reports from at least 17 countries. Animal deaths included fish and birds, young and adult cattle, sheep, horses and dogs.[49] **Ukraine (Dnieper water reservoirs)** is also among the countries where cyanobacteria are widespread.[50]

There is evidence that clearly illustrates that the construction of a cascade of 6 large hydropower plants on the Dnieper in the past century became the cause of uncontrolled development of cyanobacteria. How exactly this process is happening? The erection of a chain of large hydropower plants on Dnieper starting with 1930s lead to the building and expansion of artificial accumulation reservoirs, with small velocity and basically stagnant water. Masses of municipal and industrial wastewater, contaminated rainwater and melted snow water run into the Dnieper. Coastal zone unlike reed beds of the Dnieper River historically was included into intense field technology, whereby the surface water (which later falls into the Dnieper) saturated with mineral and organic fertilizers. Depending on hydrodynamic conditions, shape of the coastline, the strength and direction of the wind, blue-green algae (hosts of cyanobacteria and cyanotoxins) concentrated in different parts of the Dnieper reservoirs. This led to a loss of the Dnieper river ability to cleanse itself.[51] Research shows that due to fluctuations in the level of water in artificial reservoirs the coastal strips of the Dnieper are often flooded (marshes, lakes, sleeves and oxbows of the Dnieper) and cyanobacteria is getting spread. The research concluded that Dnieper that once was well-known for its recreational services and boating tourism became a dangerous source of microbiological contamination.[52]

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[49] G.A. Codd et al. (2005) "CYANONET - A Global Network for Cyanobacterial Bloom and Toxin Risk Management. Initial Situation Assessment and Recommendations", UNESCO INTERNATIONAL HYDROLOGICAL PROGRAMME, IHP-VI Technical Document in Hydrology N°76, p. 78, http://unesdoc.unesco.org/images/0014/001425/142557e.pdf

[50] Idem, p. 74, 83.

[51] Myroslav Malovanyy et al (2016) "Reduction of the environmental threat from uncontrolled development of cyanobacteria in the waters of the Dnieper reservoirs", *Environmental problems.* - 2016. - Vol. 1, N. 1., p. 61, http://science.lpnu.ua/sites/default/files/journal-paper/2017/jun/3549/fulltext670.pdf

[52] Idem

Giving the experience of Ukraine with the contamination of Dnieper, the main source of potable water for at least 35 million Ukrainians, it is not hard to anticipate the health risks that will affect Moldovan consumers as a result of expanding of the existing hydroelectric infrastructure on Dniester, the main source of drinkable water in Moldova, and without exaggeration the catastrophic effects of the additional chain of building six new reservoirs of the Upper segment Dniester. Actually a report from December 2006 on the project risks of Dniester Pump Storage Plant is bluntly stating that cyanobacteria already exists in the Basin of Dniester *"The drying up of the delta of the River Dniester is a result of* ***the construction of the Dniester HPP in 1986; it led to cyanobacteria blooming in all reservoirs of the delta, including the Dniester Estuary and internal lakes****, and entailed mass extinction of molluscs and other species."*[53] This conclusion was reached already 11 years ago. Twelve years after this report should alarm both Moldovan authorities and international donors.

It would be worth to add that studies documenting *Microcystis* in the Klamath River (California) concluded that they can survive through hydroelectric turbines and transport over distances exceeding 300 km. Health issues include **liver damage, rashes, gastrointestinal illness**, and other concerns. The toxin is not destroyed by boiling, making it unique from many other biological drinking water contaminants.[54] Taking into account that Dniester hydropower complex is located at the Moldovan border there is a very high certainty that *Microcystis* will contaminate as well Moldovan segment of Dniester if not already it did.

Concluding, an in-depth health impact assessment would be needed to find out if the above mentioned type of cyanobacteria are present in Moldova, if not which is the probability of their emergence and what other health related risks could be triggered by the aggressive damming of Dniester. The study will have to estimate the costs of such contamination, which Government or Donor will pay the bill and if Moldovan medical system and its low income citizens have the capacity de cope with it. For the moment what is well-known is that the slack water produced by hydroelectric dams is responsible for **hepatitis, dihareea, toxicosis and other allergies**. Eutrophication of water also produces **helminthoses** (parasitic worms) that can infect fish and subsequently contaminate humans. These diseases have a cost that will have to be taken into account as well in the health impact assessment showing the impact of building new reservoirs and hydroelectric blocks on the Upper Dniester as well as the expansion of the existing ones.

[53] Shevcenko, N. et al (2006) "Dniester Pump Storage Plant: project risks December 2006", National Ecological Centre of Ukraine/ CEE Bankwatch Network, p. 19, https://bankwatch.org/documents/DPSP_study_final.pdf

[54] Oregon State University "Toxic algal blooms behind Klamath River dams create health risks far downstream", *Science Daily*, 16 June 2015, https://www.sciencedaily.com/releases/2015/06/150616123919.htm

6. What are the European rules deliberately omitted by the Moldovan and Ukrainian Governments in the current negotiations and why?

The draft Agreement under negotiations does not make any reference to the Energy Community Treaty or to the Association Agreements signed by the European Union with Ukraine and the Republic of Moldova. This implies that the Republic of Moldova voluntarily gives up to much powerful international protection mechanisms relative to those existing between Ukraine and the Republic of Moldova, which could better protect its economic interests, the population, the prevention of an ecological disaster and even the escalation of a civil conflict.

The Energy Community Treaty contains at least four Environmental Directives that are directly related to the existing and planned hydropower infrastructure of Ukraine on the upper watercourse of Dniester. We briefly discuss the relevance of each these Directives for the Moldovan-Ukrainian negotiations:

i. **Directive 85/337 / EC on the assessment of the environmental impact of public and private projects**.[55] So far a study on environmental and social impact assessment has not been made public by the Ukrainian side nor has it been presented to the Moldovan counterpart. Without a reliable environmental impact assessment study conducted by an international company with the necessary expertise (and no business interests in Ukraine), the construction of the 6 new hydropower plants and the commissioning of four new blocks of additional generation on the Pumped Storage Hydropower Plant should be firmly prohibited. This Directive, which was to be implemented by Moldova by 31 December 2010 and by Ukraine until 1 January 2013, clearly indicates in Annex 2 (point 3, letter "h") that hydroelectric plants fall under the scope of the environmental impact assessment. Moreover this Directive was included in the accession package of Moldova and Ukraine to the Energy Community, thus long before Ukraine expanded its existing infrastructure (first block of Dniester PSPS was commissioned only in 2009) and planned the construction of the new one. Consequently, both Moldova and Ukraine should have been taking into account the provisions of these Directives since 2006-2007 when they set out their intention to joining this Treaty. At that time there was no electricity production block installed on the Pumped Storage Hydropower Plant on Dniester. By 2015, or five years after Ukraine and Moldova joined the Energy Community Treaty, there were already three generating units. The Ukrainian government which is owned by

[55] Council Directive 85/337/EEC of 27 June 1985 on the assessment of the effects of certain public and private projects on the environment, http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A31985L0337

Ukrhydroenergo, the developer of this hydropower complex, has not produced any impact study, and if it has produced such a study, it did not publish or share it with Moldovan counterpart, although its publication is obligatory. Taking into account the stake of this infrastructure and its disastrous potential impact on Moldova's population, economy, water supply, arable land and food security, such a study (studies) concerning the environmental, social, economic and health impacts should be spent by a neutral international company with no interests in Ukraine and in the absence of which there can be no inter-state agreement signed by Moldova!

ii. **Directive 79/409 / EEC on the conservation of wild birds**.[56] The Dniester Delta is an area with a fragile ecosystem. The construction of hydroelectric power plants and the reduction of the water flow in the Dniester River can also affect the number of bird species in this area, particularly as a result of insufficient ecological water flows during the spawning of birds. Article 4 (2) of this Directive was to be implemented enforced in Moldova by 31 December 2010 and by Ukraine by 1 January 2015. As in the case of the previous Directive, this Directive entered into the package of conditions to joining the Community Treaty energy. So, it should have been seriously considered by the Ukrainian side long time before the expansion of its existing infrastructure and planned new hydropower facilities. It should be outlined that the route of migratory birds is usually passing through wetlands. The Lower Dniester is such a wetland, being the richest protected area in Moldova (approximately 60000 ha) that is inhabited by different plants and animal species.[57] Limiting the water flow in the Dniester is already affecting these plants and animal species. In the past years around 170 of these species already disappeared. Concerning specifically the Birds Directive, there are 12 species of birds mentioned by the Directive 79/409/EEC that are registered in the Red Book of Moldova which are under threat of disappearing.[58] Population of wetlands with wild birds is also an indicator of water quality and health of an ecosystem. Key functions of a wetland are to improving the fresh water supply, water purification, floods protection, soil fertilization, carbon storage. There is a real risk of more severe damage and even disappearance of these ecosystem services in the Republic of Moldova because of Ukrainian hydropower infrastructure on the Upper Dniester River.

[56] Council Directive 79/409/EEC of 2 April 1979 on the conservation of wild birds, http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:31979L0409

[57] Biotica Ecological Society (2014) "Guide on assessment of core areas of the ecological network", Chisinau 2014, http://www.biotica-moldova.org/lib_bio.htm

[58] R. Corobov et all (2014) *Climate change vulnerability: Moldavian part of the Dniester River basin*, p.102, http://eco-tiras.org/docs/ecotirasFinal-small.pdf

iii. **Directive 2001/42/EC on the assessment of the effects of certain plans and programs on the environment**.[59] Article 7 of this Directive clearly explains that cross-border plans and programs involve the consultation of the affected party, including the public in the affected country. The Program of hydropower development for the period till 2026, as well as the Energy Strategy of Ukraine till 2035 both envisage the construction of hydroelectric power plants on Dniester River. However, none of these documents were consulted with the Moldavian Government, with Moldova's affected public or with its civil society organizations. Neither were consulted the previous energy strategies of Ukraine that conducted to the gradual commissioning of Dniester Pumped Storage Station, expansion and deepening of the buffer lake or for transforming the dam from Nahoreany (Naslavcha) into HPP-2. Ukraine might decide not to comply with this procedure (and Directive) in regard to its internal rivers with no cross border impact and to individually bear the consequences of such a decision. However when such Plans and Programs have trans-boundary impacts, the problem cannot be isolated anymore to Ukraine and consultation with the affected country - Government, civil society, population - is mandatory.

iv. **Directive 2004/35/EC on environmental liability in regard to the prevention and remedying of environmental damage**.[60] This Directive establishes the penalties imposed on the party causing environmental damage. The Draft Agreement between the Government of Ukraine and Moldova does not specify in any way the mechanism of liability and recovery of environmental damage as a result of hydroelectric infrastructure on the on Upper side of Dniester River. The Moldova's Government prompt signing of an Agreement without defining from the very beginning and without ambiguity the compensation mechanism for damages brought by the Dniester hydropower complex, deprives the Moldovan Government from the protection instruments proportionate to the immense damage that could be caused by the impact of this infrastructure. Without such a mechanism, it is not clear how will be recovered the recreational services, fish stocks, loss of self-cleaning ability of the river, drinking water supply and limitation of irrigation capacity that

[59] Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment, http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32001L0042

[60] Directive 2004/35/CE of the European Parliament and of the Council of 21 April 2004 on environmental liability with regard to the prevention and remedying of environmental damage, http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32004L0035

were lost and that will further be affected? **The cost of these damages could reach billions of dollars without any liability to be borne by the polluting country!**

In addition to the Energy Community Treaty, there are also the Association Agreements of Ukraine and Moldova to the EU that contain four additional Directives which are not mentioned at all in the proposed Agreement of the Dniester hydropower complex:

v. **Directive 2000/60/EC on the Community framework for water policy**.[61] Hydroelectric constructions can significantly affect the water quality. As it has already been seen with other hydropower plants in the European Union, this Directive must become mandatory to prevent the degradation of water quality in the lower Dniester River.

vi. **Directive 98/83/EC on the quality of water intended for human consumption**.[62] As it was mentioned the water of Dniester and its basin is the source of 80% of the waters used for drinking in Moldova. The construction of dams and hydropower plants on the upper Dniester River can affect the quality and quantity of this water, including the hydrological changes and the drainage of the wells. For this reason, an analysis of local and international technical expertise is required to show the degree of change in the chemical composition of water and its hydrology as a result of these energy facilities. Such a study should also indicate the costs that the Moldovan health system would incur as a result of the degradation of water quality used for food purposes.

vii. **Directive 2003/35/EC of the European Parliament and of the Council of 26 May 2003 providing for public participation in respect of the drawing up of certain plans and programmes relating to the environment**.[63] This Directive clearly states that public affected by the Plans and Programmes having a cross-border impact must participate in their development. The elaboration of Ukraine's Program for the development of electricity from hydro sources till 2026, which also provides for the construction of hydropower plants on the Dniester River, was not consulted with the

[61] Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy, http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=celex:32000L0060

[62] Council Directive 98/83/EC of 3 November 1998 on the quality of water intended for human consumption, http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A31998L0083

[63] Directive 2003/35/EC of the European Parliament and of the Council of 26 May 2003 providing for public participation in respect of the drawing up of certain plans and programmes relating to the environment, http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=celex:32003L0035

Moldovan Government. Similarly, Ukraine's Energy Strategy by 2035, which has similar objectives, has not been consulted with the Moldovan Government.

viii. **Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment**.[64] This Directive improves the Directive 85/337/EEC mentioned above and is crucial to be considered.

As it was mentioned in the Moldovan Civil Society Appeal from 21 November 2017, the lack of mentioning of the Association Agreements and the Energy Community Treaty in the draft of proposed Moldovan-Ukrainian Agreement on an issue with clear cross-border impact is difficult to understand for the two states that have committed themselves through these Agreements, to modernize, reform and integrate into European legal, economic and European spiritual space[65]. The living conditions on both sides of the Dniester due to the poor content and hasty signing of such a deal could cause drought, soil degradation, depopulation and even a humanitarian crisis.

Unlike the UN Multilateral Treaties that suffer from an "implementation deficit," the Environmental Directives of the Association Agreement and the Energy Community Treaty may be imposed by conditionalities. Both Moldova and Ukraine are dependent on budgetary support, grants and preferential credits provided by European partners and institutions. These obligations cannot be as easily outmaneuvered as are the environmental agreements signed within the multilateral framework of UN.

In addition, European environmental legislation is much more detailed and stricter, providing a higher degree of protection compared to the United Nations Treaties, Conventions and Protocols. For example, UN Conventions such as the Espoo Convention on Environmental Impact Assessment in a Transboundary Context has been included in the EU Environmental Impact Assessment (EIA) Directive of 1997, while the Aarhus Convention on Public Participation in the Process environmental decision-making has also been included in the updated EU EIA Directive from 2003.

7. How can the Treaty of the Energy Community and the European Union help and why they should have a clearer position on these negotiations?

[64] Directive 2011/92/EU of the European Parliament and of the Council of 13 December 2011 on the assessment of the effects of certain public and private projects on the environment Text with EEA relevance, http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32011L0092

[65] POSITION PAPER on the negotiation of Agreement concerning the functioning of the Dniester Hydro Power Complex and its impact on the Dniester River basin, 22 November 2017, http://ipp.md/wp-content/uploads/2017/11/position-paper.pdf

The reasons why these directives should be included in the draft agreement are clear and convincing: the European integration course of Moldova and Ukraine; the higher degree of protection of the environment, water and population compared to UN mechanisms; investments and support for reforms that coming largely from the European Union and its Member States; the conditionality of EU grants and the loans of EBRD, EIB by the implementation of the EU aqcuis; and even conditionalities imposed by non-EU financial institutions such as the IMF and the World Bank for applying the EU acquis (e.g. in the energy field).

Moldova may request direct involvement of these two institutions in the negotiations process with Ukraine if the Government of this country refuses to accept the reference to the European legal and regulatory environmental framework.

There are a few procedures that apply to non-compliance with the Energy Community Directives that may culminate in the application of Article 92 of the Treaty, that is, the suspension of a country's voting rights and its exclusion from meetings and other mechanisms provided by the Treaty. Even if it does not have a Court of Justice and ways to impose financial penalties, the decisions of the Secretariat are taken seriously by both the European Commission and European and trans-Atlantic donors when they decide to allocate financial support to the members of the Energy Community. Once the reference is made to the EU acquis, the Energy Community Secretariat may monitor how the four Directives are implemented in the light of the planned Agreement for the functioning of Dniester hydropower complex.

The same path could be followed by the European Commission once the Directives signed under the deal on Dniester are invoked. Unfortunately, the Court of Justice of the European Union in Luxembourg has no jurisdiction over the associated countries of the EU or the member countries of the Energy Community. The penalties imposed by this Court are sufficiently high, ranging from hundreds thousands to dozens of millions and even billions of Euros to states and companies in the EU (or working within its legal space) that fail to comply, so that their violation becomes a strong deterrent. Even without the jurisdiction of this Court on Moldova and Ukraine, the European Commission (like the European Parliament or the Council of Ministers) has enough mechanisms to discourage the abusive construction of an infrastructure that is in breach with the provisions of the Association Agreements, can cause chaos and disaster, and displace hundreds of thousands of people right on the immediate neighborhood of the Eastern border of the EU. Suspension of the visa regime, blocking the accounts of individuals, limiting the financial assistance, an EU travel ban on key figures involved in these negotiations would not be over-responsive measures, considering that the safety and lives of at least four million people is at risk.

The reasons why Ukraine does not want to make any reference to the Association Agreements and the Energy Community Treaty in negotiations with Moldova are clear: the Ukrainian Government wants lean rules and no serious obligations in order to avoid to be responsible for the consequences that already produced by its hydroelectric infrastructure on Dniester and for those that will continue to produce with the planned six new HPPs.

What is not clear is why Moldova is giving up so easily on the protection mechanisms available to it and that can be used in these negotiations? Officially, negotiations on the Dniester Agreement are carried out at two levels: at the level of the expert groups of the two countries and at the level of contacts between prime ministers. We cannot exclude, however, that there is also a third level, that of private interests that has nothing to do with the public interest of Moldovan and Ukrainian people.

Intervention of EU into the current negotiations would be also justified considering that some actions of the EU - Ukraine relationship, affect (will affect) Moldova in an extremely negative way. For example EU was conditioning in 2017 a package of EUR 600 million of macro-financial assistance to Ukraine by forcing the latter to lift the ban on timber exports.[66] This raw material is increasingly exported to EU. In the defence of its position the EU is invoking the breach of WTO norms, the Association Agreement and free trade agreements signed with EU.[67] Ukraine's arguments for prohibiting unprocessed wood exports relate to the attempts to curb illegal deforestation and to stimulate the development of its own sawmill industry and creation of local jobs.[68] The EU should be aware that by exercising pressure on Ukraine to revise its decision will affect Moldova in the following two ways:

a. First, it is well known that forests from the Carpathian region are an important source of moisture. The Carpathian region of Ukraine, which is also the key source of water for the Dniester tributaries, is the region where massive illegal deforestation is taking place. Flooding in the mountain areas is the result of inability of deforested lands to absorb and keep moisture and damming of rivers with unmarketable wood. In other words deforestation in the mountain areas led to intensification of erosion and floods.[69] In

[66] European Commission "EU Commission approves disbursement of €600 million in assistance to Ukraine", 16 March 2016, http://europa.eu/rapid/press-release_IP-17-643_en.htm

[67] European External Action Service "All you need to know about the EU´s stance on the wood export ban", 6 dec. 2016, https://eeas.europa.eu/delegations/council-europe/16584/all-you-need-know-about-eu%C2%B4s-stance-wood-export-ban_en

[68] Josh Kovensky "EU presses Ukraine to end lumber export ban", *Kyiv Post*, 9 dec 2016, https://www.kyivpost.com/business/eu-presses-ukraine-end-lumber-export-ban.html

[69] Regional Environmental Centre (2010) "Illegal Logging in Ukraine" Fact finding study, June 2010, p. 36, http://illegallogging.rec.org/publications/Fact-finding_English.pdf

addition floods that once used to be sucked by the trees are now destroying the local rivers, polluting them with mud.[70] There might be the risk that these floods will also affect the Moldovan territory.

b. Second, cutting off trees eliminates the absorption capacity of the forests that is causing faster drainage of water. In turn this is triggering droughts during periods of low rain and low snow. In other words, there will be less water in Dniester as a result of deforestation.

Summing up, the EU – Ukraine timber trade relations risk to have a butterfly effect on Moldova, and could represent an additional factor for drought and floodings in this country. In this sense EU must carefully think what policies it is pushing in relation to Ukraine and start considering that such policies may have extremely painful consequences on Moldova. This is obliging the EU to be more active in the current negotiations between Moldova and Ukraine as the Agreement on Dniester hydropower complex would produce additional damage to the Dniester River.

By contrary, if the choice of the EU will be to turn a blind eye on Moldova – Ukraine negotiations, avoiding to insist on the inclusion in the *Agreement* the relevant EU environmental Directives of the Association Agreements and Energy Community Treaty or by considering that it is up to these countries to include or not such Directives, then the EU soft power narrative and its neighbourhood policy send an extremely discouraging message to the region: that EU is very selective in applying its own established norms.

More disappointing, this policy of realpolitik in the Eastern Partnership, of cherry picking its "stealth interventions" in the region, will only fuel the perception that the interests of larger and more powerful countries are "first" while those of small and weaker are "second". Is this the message that EU wants to send to the world?

8. Why is the Espoo Convention a weak and insufficient protection mechanism for Moldova?

It is well known that the legal mechanisms for the implementation of multilateral agreements remain ineffective. Relevant to the Dniester issue is the Espoo Convention on Environmental Impact Assessment in a Transboundary Context.

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[70] Josh Kovensky "Corruption fuels illegal logging, destroying Ukraine's forestland", *Kyiv Post*, 6 October 2016m https://www.kyivpost.com/business/corruption-fuels-illegal-logging-destroying-ukraines-forestland.html

The possibilities of the Espoo Convention are limited to "soft law" recommendations without an effective mechanism of coercion and application of recommendations made by the Commission of Investigation for the emerging problems. More importantly, there is no Court of Justice of this Convention that would enforce and impose sufficiently prohibitive financial penalties to countries whose projects have a serious cross-border impact.

The recent history of this mechanism shows is major weaknesses. Perhaps the best illustration in this sense is the dispute between Romania and Ukraine in regard to Bystroye Canal. For example, although the violations on this Convention were invoked in the dispute between Romania and Ukraine during the construction of this Canal on the Ukrainian side of Danube River, the recommendations of the Inquiry Committee for this problem were only partially and lately applied.[71] Moreover, the Bystroe Canal was inaugurated on 2 May 2007, despite the fact that the proceedings for implementing this Convention on this Canal were not yet finalized.

The recent complaints filled by the Contracting Parties within the Secretariat of this Convention suggests that neighbouring states do not hesitate to use this international Convention to stifle their neighbours because of bilateral political disputes or as a response with the same coin to the same neighbours who have previously filed complaints on environmental issues.[72] For example, Ukraine filled a complaint against Romania on the grounds of pollution with large scale vessels of the Danube Delta after Romania initiated the complaint on Bystroe Canal. Similarly, Armenia and Azerbaijan complained against each other on the environmental impact of building a nuclear power plant or operating on oil and gas fields.

The reference to the Espoo Convention, which the Government of Ukraine proposes in the text of the Agreement under negotiation with Moldova, is made intentionally being aware of the gaps of this Convention and essentially about the null financial costs to be borne by Ukraine failure to implement and enforce its provisions through appropriate national regulatory structures for non-compliance with its provisions.

Given the recent track record of Ukraine's in failing to comply with the recommendations of the Bystroe Canal Investigation Commission, by delaying and neglecting what it had to apply

[71] Decision V/4 Adopted by the Meeting of the Parties to the Convention on Environmental Impact Assessment in a Transboundary Context at its fifth session, p. 5 – 6, https://www.unece.org/fileadmin/DAM/env/documents/2011/eia/decision.V.4.e.pdf

[72] See the most recent complaints on the website of the UNECE based Secretariat of this Convention, https://www.unece.org/env/eia/implementation/implementation_committee_matters.html

unconditionally[73], Ukraine's reference to this Convention in the Draft Agreement on the Dniester hydropower complex does not offer any single guarantees that she will apply the provisions of this Convention in its relationship with Moldova. Actually, this Convention may already be compromised on numerous points related to the construction and extension of the hydroelectric infrastructure on the Ukrainian segment of Dniester River.

Moldovan Government should not withdraw the references to Espoo Convention in its negotiations with Ukraine. However, relying only on this Convention to protect its citizens is an almost guaranteed way to offering them a poor or no protection at all.

9. Why the UN International Court of Justice does not save Moldova from a bad deal with Ukraine and what could be learned from "Gabcicovo-Nagymaros" case?

The draft Agreement under negotiation between Moldova and Ukraine states that the disputes that could arise from its interpretation and application will be settled by the UN International Court of Justice in The Hague (ICJ) if a negotiated solution cannot be identified. So far there is only one well-known dispute on the European continent on an interstate agreement for the construction of hydropower plants with cross-border impact that was settled by ICJ. This is the "Gabcikovo - Nagymaros" case related to the construction of dams on the Danube by Czechoslovakia and Hungary for the purpose of producing electricity. What exactly is this case about?

In 1977, Hungary and Czechoslovakia signed a Treaty for the Construction of additional dams and Infrastructure on the Danube. Danube is a river crossing both countries. Czechoslovakia initiated the barrage of the River on its territory when Hungary stopped such works on its own territory. Hungary motivated the halt of the works based on social, economic and ecological concerns. As the bilateral negotiations on these constructions did not produce any results, Hungary denounced the treaty in 1989 and subsequently called together with Slovakia the intervention of ICJ. In this process, Hungary was a plaintiff and Slovakia was the defendant.

Why is this case interesting to study? Similarly to Hungary which is on the lower course of the Danube relative to Slovakia, Moldova is on the lower course of Dniester in relation Ukraine. More relevant however is the resolution of ICJ on the "Gabcikovo – Nagymaros" case. Specifically, this case brings clear signals to the Government of Moldova that she will most certainly loose the case at the ICJ against Ukraine if major changes in the current draft of the Agreement proposed by Ukrainian Government won't be operated.

[73] Victoria Rachynska (2014) "Selected problems of implementation of the Espoo Convention in Ukraine (on the example of Bystroe Canal case", p. 405 – 406, https://repository.mruni.eu/bitstream/handle/007/11792/2260-4830-1-SM.pdf?sequence=1&isAllowed=y

We summarize just a few of the key conclusions of the ICJ's decision on the "Gabcikovo – Nagymaros" case and based on them trying to anticipate what could Moldova expect from ICJ settlement if this country decides together with Ukraine to call on such a solution. The main conclusions of ICJ for this case reached in 1997 were the following:

1. *"the Court found that Hungary was not entitled to suspend and subsequently abandon, in 1989, its part of the works in the dam project, as laid down in the Treaty signed in 1977 by Hungary and Czechoslovakia and related instruments"*[74]

   Moldova could also receive such a reasoning of ICJ if it decides to rescind the Agreement signed with Ukraine. Article 11 (2) of the draft of the Agreement under negotiations between Moldova and Ukraine (version of 3 November 2017) has a wording that lead exactly to such a possible scenario because it stipulates that "The termination of this Agreement does not affect the obligations contained in the deals (contracts) concluded within the current Agreement for the period of the conclusion of the contract". This statement may suggests two things: (a) We cannot exclude that the wording "Obligations stipulated in the deals (contracts)" also refers to the documents already signed by the Government of Moldova in the previous years (e.g. the deals concluded by the Governments of Vladimir Filat and Iulia Tymoshenko in 2010), as well as the other documents related to the Dniester hydropower complex which stipulate that Moldova voluntarily renounced to its shares in this hydroelectric node. This also refers to the deals (if any) that have recognized the expansion/enlargement of this hydroelectric infrastructure that have been conducted by the Ukrainian side in recent years; (b) Irrespective of the disastrous consequences that it may cause to the environment and people, the Agreement will remain in force for the whole period it has been signed (and this period may be 30 years, with another 30 years automatic extension) even if the Government of Moldova will become aware at some point in future about the mistakes produced during the negotiations process and may decide to denounce this Agreement.

2. *"The Court has already observed, the basic characteristic of the 1977 Treaty is, according to Article 1, to provide for the construction of the Gabcikovo-Nagymaros System of Locks as a joint investment constituting a single and indivisible operational system of works. This element is equally reflected in Articles 8 and 10 of the Treaty providing for joint ownership of the most important works of the Gabcikovo-Nagyinaros*

[74] International Court of Justice "CASE CONCERNING GABC~KBVO-NAGYMAROS PROJECT (HUNGARY/SLOVAKIA)", *Judgment of 25 September 1997*, p. 1, http://www.icj-cij.org/files/case-related/92/7377.pdf

project and for the operation of this joint property as a coordinated single unit. By definition all this could not be carried out by unilateral action."[75]

It should be clarified what part of Dniester hydropower complex Moldova has given up and if we can still talk about any joint operation of the Dniester hydropower complex with the Ukrainian side.

3. *"The Court further considers that the diversion of the Danube carried out by Czechoslovakia was not a lawful countermeasure because it was not proportionate."*[76]

   In other words it should also be clarified whether the enlargement works of the buffer lake conducted by the Ukrainian side in recent years have been coordinated or not with the Moldovan side and especially if the Moldovan side has given its consent and has no claims and objections in this sense. In brief if the expansion work was legal.

4. *"The Court has found that the 1977 Treaty is still in force and consequently governs the relationship between the Parties. That relationship is also determined by the rules of other relevant conventions to which the two States are party, by the rules of general international law and, in this particular case, by the rules of State responsibility; but it is governed, above all, by the applicable rules of the 1977 Treaty as a lex specialis."*[77]

   In other words, this Treaty takes precedence over any other documents related to the settlement of disputes over these dams. This would imply that if Moldova arrives at the International Court of Justice in The Hague, it will not be able to make any reference to breaches of the Environmental Directives of the Association Agreement or those of the Energy Community Treaty unless it includes explicit reference to each of these Directives in the Agreement that it currently negotiates with Ukraine.

5. "*For the purposes of the present case, this means that the Parties together should look afresh at the effects on the environment of the operation of the Gabcikovo power plant. In particular they must find a satisfactory solution for the volume of water to be released into the old bed of the Danube and into the side-arms on both sides of the river."*[78]

   In order to prevent such effects, it is necessary that both the minimum debits and ecological debits should be clearly set out in the Agreement negotiated between

[75] Idem, p. 5
[76] Idem, p. 5
[77] Idem, p. 7
[78] Idem, p. 7

Ukraine and Moldova. Equally important, the negative effects already produced by the Dniester hydropower complex and those that certainly will occur in the future can be determined by an environmental impact assessment study. A reference to the results of this study must be clearly indicated in the text of the Agreement currently being negotiated.

6. *"What is required in the present case by the rule pacta sunt servanta, as reflected in Article 26 of the Vienna Convention of 1969 on the Law of Treaties, is that the Parties find an agreed solution within the co-operative context of the Treaty."*[79]

   This would imply, among other things, that without specifying from the beginning the compensation mechanism for the ecosystem services lost by Moldova, in addition to the economic losses, the costs of the Moldovan health system and especially the mass migration that could be generated by the expansion of the Dniester hydropower complex, the Moldovan Government will have no legal basis to claim damages at ICJ because these mechanisms have not been included from the start in the text of the Agreement.

7. *"The Court has concluded that both Parties committed internationally wrongful acts, and it has noted that those acts gave rise to the damage sustained by the Parties; consequently, Hungary and Slovakia are both under an obligation to pay compensation and are both entitled to obtain compensation."*[80]

   It is precisely what the Ukrainian side is trying to impose at this moment in the negotiation process. As it will be shown later on in this analysis during the bilateral meetings, the Ukrainian side tries to infer that the pollution sources of the Dniester caused to the environment by the Moldovan side would be proportional to those caused by the Dniester hydropower complex. These claims could be easily dismantled. However for this scope all the major pollution sources on the Ukrainian side of the Dniester must also be identified by Moldavian counterpart and stipulated in the Agreement. These crucial data and figures could turn on the balance of a final decision in case a settlement at the ICJ will be sought.

Even more interesting were the reasons why Hungary denounced the Treaty signed with Czechoslovakia in 1977 and then filed a complaint against Slovakia at the Hague International Tribunal. The motivations of Hungary were grounded on *"the state of necessity", "the*

[79] Idem, p. 7
[80] Idem, p. 8

impossibility of executing the Treaty", "the fundamental change of circumstances", "the material breach of the Treaty", "the development of the new norms in the international environmental law", "the disappearance of Czechoslovakia". We do not detail and analyse the ICJ's response for each of these complaints. Here it is important to outline that the ICJ invalidated each of these claims of Hungary. From this point of view Hungary can be considered a party that lost the most as a result of ICJ resolution.

Moldovan Government should not have any illusions in its negotiations with Ukraine: the existence of this precedent in international law will certainly be invoked and considered if Moldovan and Ukrainian Governments will decide to look for the arbitration of ICJ. If Moldova does not insist on substantive changes in the current draft proposed by Ukraine, then it will certainly repeat the faith of Hungary.

The key lesson that can be learned by Moldova from the Gabcikovo-Nagymaros case is the following: **International Court of Justice is not an ultimate winning card and cannot make ecological justice based on circumstances that may arise later on in time. By contrary, the resolutions of this Court are taken based on the provisions contained in the Agreement signed by the states in conflict and representing the only legal framework based in which violations are assessed. In this sense, the content of the Agreement currently negotiated between Ukraine and Moldova is crucial!**

Last but not the least there should be outlined that the dam constructed on Slovakia section of the Danube had very visible negative effects. As of 2002, only ten years after starting of the operation of the Gabcikovo hydrodam, a text published on the website of International Commission for the Protection of the Danube River had the following alarming statement:

"*Slovak engineers dammed the river bed in late October 1992 and started operating the power plant. Since then, over 80% of the river flow and all commercial navigation are directed through the 25 km long Gabcikovo side-canal. As a result, parts of the Danube bed and the extended side-arm system fell dry. In spring 1993, artificial irrigation systems started providing water for these floodplain biotopes on both sides of the river (altogether 8,000 hectares). However, numerous dikes and cross-barriers dissected the former open and interconnected ecosystem into separated parts. The Danube lost its function as a "life pump" regularly moistening and draining the riparian landscape. The stabilisation of formerly very dynamic hydrological and morphological processes led to a continuous degradation, with many forest areas drying up and fisheries receding, with rare pioneer habitats and species having gone. Also the former*

purification effects for Danube waters through the filtering process in the rich vegetation and soils are lost today."[81]

As in can be noticed the side effects were felt only after 10 years. **Yet, Slovakia din not block the navigation or debit of Danube because *"80% of the river flow and all commercial navigation are directed through the 25 km long Gabcikovo side-canal".* This is a crucial distinction from the hydro infrastructure constructed by Ukraine on Dniester where it totally blocked the watercourse of the River with HPP-1 and HPP-2.** As we have showed in the previous chapters the impact of the existing infrastructure on the Lower Dniester is already critical. The impact of the planned six new reservoirs and dams would be certainly devastating.

10. What solutions does Moldova have for alternative source of drinking water and how much will they cost?

The alternative solutions of Moldova to access sources of drinking water are expensive and unrealistic. We exemplify and discuss only two of them.

Water desalination plants remain only a hypothetical solution. The cost of such plants may range from several hundred million dollars to over one billion. For example, Torrevieja (Spain) was estimated at US$ 400 million[82], the plants from Carlsbad (California) reached US$ 1 billion[83], the plants from Cape Town was estimated at US$ 1.3 billion[84], while the plant from Adelaide (Australia) was estimated at US$ 1.36 billion (eq. of US$ 1.8 billion Australian)[85]. Of course, the cost of such an installation varies depending on capacity, geography, salinity and other technical characteristics. An elementary search on Google shows that about 100 million US dollars are needed to supply every 300,000 people with clean water[86]. **That would mean that a minimum of US$ 1 billion would be needed to supply 3 million consumers in Moldova**. It

[81] ICPDR (2002b) "Gabcikovo: 10 years after the conflict", *Danube Watch*, 2/2002, http://www.icpdr.org/icpdr/static/dw2002_2/dw0202p14.htm

[82] "Spain's Desalination Ambitions Unravel", *New York Times,* 9 Oct. 2013, http://www.nytimes.com/2013/10/10/business/energy-environment/spains-desalination-ambitions-unravel.html

[83] San Diego County Water Authority "Seawater Desalination. The Claude "Bud" Lewis Desalination Plant and Related Facilities", October 2017, https://www.sdcwa.org/sites/default/files/desal-carlsbad-fs-single.pdf

[84] "Cape Town Desalination Plant to Cost $1.3 Billion: Study", *Bloomberg*, 11 March 2015, https://www.bloomberg.com/news/articles/2015-03-11/cape-town-desalination-plant-to-cost-1-3-billion-study

[85] "Cost of keeping Adelaide desalination plant on standby blows out $11 m a year", *The Advertiser,* September 8, 2015, http://www.adelaidenow.com.au/news/south-australia/cost-of-keeping-adelaide-desalination-plant-on-standby-blows-out-11m-a-year/news-story/cb71ce22e9f5784353dc2dd73bea53f6

[86] " How much does a water desalination plant cost?", https://www.quora.com/How-much-does-a-water-desalination-plant-cost

should be emphasized, however, that this billion would only concern the cost of supplying clean water the population. Such a desalination plant cannot replace the uninterrupted supply with surface waters of soils needing a constant degree of moisture in order to avoid salinization and desertification, a desalinization plant cannot provide the needed surface water for the wetlands of the Dniester Basin, the water needed for self-purification capacity of the Dniester River, the water needed for agriculture, industry, tourism and other economic activities. If all these costs were to be included, then the losses that Moldova will incur over the next 30 years (which is the planned period for Agreement on the functioning of Dniester hydropower complex), **could easily reach at least US$ 10 billion**.

More importantly, to consider a desalinization plant a realistic solution, we should take into account another crucial factor: before proceeding to building such a facility, the Republic of Moldova would need to have access to a permanent source of water in very large volumes. She will also need the right to exploit this resource. Currently, Moldova has neither the access to the Black sea (having a small sea port to the Danube does not compulsory mean access to the Black Sea) nor the right to exploit the water of such a space!

Another theoretical solution to access water resources is the neighbouring Romania. We can admit Romania's readiness to allow the Republic of Moldova to import water from the Romanian segment of Danube River. Nevertheless, as in the case of the Black Sea, access to Danube water would require enormous cost for water purification and desalinization and additional transport infrastructure. Unlike Romania, an EU Member State, Moldova does not have access to generous European grants schemes (e.g. European Regional Development Fund and Cohesion Fund) that are supporting capital intensive infrastructure including accessing the drinking water, sewerage, wastewater treatment.

Moreover, even under these favourable conditions, Romania needs considerable additional investment to provide drinking water to its own consumers. To solve this problem and to comply with Directive 98/83/EC on the quality of water intended for human consumption (a Directive which is by the way included in the Association Agreements of Moldova and Ukraine with the EU) for the 2014-2020 EU budgetary cycle the European Union will allocate to Romania Euro 1.38 billion. Although the amount seems enormous, this money covers only partially the investment needs of the neighbouring country. Romania still needs another Euro 4.54 billion by 2020 to comply with the above mentioned Directive[87]. This money must be secured either from budget resources or from loans. Therefore, even admitting an hypothetical scenario where

[87] European Court of Auditors (2017), "Implementing the Drinking Water Directive: water quality and access to it improved in Bulgaria, Hungary and Romania, but investment needs remain substantial", *Special Report*, p. 49 – 50, https://www.eca.europa.eu/Lists/ECADocuments/SR17_12/SR_DRINKING_WATER_EN.pdf

Romania would allow the export of potable water to Moldova, in order to cover the costs of construction and operation of such infrastructure and the export/import this potable water in Moldova (on a commercial basis, not on brotherhood connections!) will have to be covered largely by credits and recovered by very high interest rates.

We must emphasize that these two solutions (desalination of water from the Black Sea or accessing the water of the Danube) are "extreme" solutions and very costly. Ukraine's Dniester hydropower constructions won't make the water from Dniester totally disappear, but would determine high water supply fluctuations (as already does) that would change the quality of water and trigger droughts.

Summing up, a bad and hasty Agreement on Dniester hydropower complex signed by Moldova with Ukraine, which does not take into account the risks of a permanent water shortage, can only signal that Moldova voluntarily and inexplicably gives up the water from Dniester at the expense of still unidentified, hypothetical, extremely costly and illusory alternatives.

11. Why the "package approach" of negotiations is inefficient and counterproductive?

During the 14th meeting of the Moldova - Ukraine intergovernmental Commission on Trade and Economic Affairs from 18-19 September 2017, there was elaborated a Protocol of eleven points. The second point of this Protocol makes reference to the "package regulation of matters concerning the right to property of objects located on the territory of Ukraine and Republic of Moldova, of Agreement concerning the operating conditions of Dniester hydropower complex, of the demarcation of the border in the area of Dniester hydropower complex and the problems from the Giurgiulesti area".[88]

In this regard the Moldovan Civil Society Public Appeal from 21 November 2017 stated that coupling the negotiations on Agreement for the functioning of Dniester hydroelectric complex with other problems of the Moldovan-Ukrainian bilateral agenda that are not related to this complex are unacceptable and tricky. By contrary such an approach will lead to compromises that will negatively affect the lives of citizens' of the Republic of Moldova. It should be noted that the issues pushed the Ukrainian side in the "package deal" are also in the interest of the Ukrainian Government, not only in the interest of Moldova. At the same time, costs of miring (silting) of Dniester starting from the Dniester hydroelectric complex to the point of discharge into the Black Sea are disproportionately high compared to any possible gain that could be

[88] Point 2 of the Protocol of the 14th meeting of Moldavian – Ukrainian Comission on Trade and Econmy held at Odessa on 18-19 September 2017 (unpublished document).

obtained on each separated issue included in the "package deal". We discuss some these issues as follows:

a. It is well known that during Soviet times Moldova build or acquired on the territory of Ukraine a few fixed assets. These assets included sanatoriums, mines and other properties. After the dissolution of the Soviet Union, Ukraine did not officially recognise the right to ownership over these assets to Moldova, conditioning such recognition by among others the right to lease the surrounding Moldovan territory where Dniester Hydropower Plant 2 and its buffer lake are located.

   Even if we admit that such a bargain could be considered, there should be first conducted an evaluation/audit of the value of Moldovan assets from Ukrainian territory. Because of the lack of maintenance, lack of investments and upgrading over the past 30 years these assets might be significantly depreciated. In this sense putting into the same negotiation "package" properties whose added value is extremely negligible in relation to the losses and damage produced in the past 30 years to the Moldovan side of Dniester river by Ukrainian Dniester hydroelectric complex is not justified in any way, not to mention the losses for the next 30 years. The harm would be even higher in the future if Ukrainian Government sticks to its plans to build six new additional hydropower plants on Dniester. These properties (e.g. the ones belonging to Moldova) are of no value to Ukraine, otherwise they would have been long time ago nationalized by Ukrainian side. This suggests that the Ukrainian side deliberately maintained open to negotiations the question of ownership of these assets with Moldovan side as a bargaining coin over more substantive priority issues for the Ukrainian Government.

   Overall this bargain appears to be extremely strange. Moldova would have to lease a part of its territory (where the buffer lake and Dniester Hydropower II are located) in exchange of some properties that *de facto* belong to Moldovan Government. If such an "innovative" proposal is not one of humiliating the Moldovan side during negotiations, then certainly it cannot be qualified in other than *legal non-sense*.

b. In the current negotiations Ukraine invokes the so-called ecological problems of the Giurgiulesti International Port affecting the Danube River. This is another issue that has nothing to do with Dniester hydropower complex or with Dniester River. In fact, such a problem appeared on the empty space in order to give the impression of a fair deal with Moldovan Government in regard to its hydroelectric infrastructure. It aims to suggest that actually Moldova received a concession from the Ukrainian side so that Chisinau

would not make any claim to the ecological disaster that emerged as a result of the exploitation and extension of the Dniester hydropower complex.

We should pay a closer look at the environmental aspect of the problem. The group of Ukrainian negotiators remind at point 5 of the above mentioned Protocol that Moldova pollutes the Dniester in the area of Soroca because there is no waste water treatment plant in this Moldavian locality. This is indeed an established fact. The Ukrainian side admit that they have a similar problem (lack of waste water treatment plant) in the city of Mogilev Podolsk (with a larger population than that of Soroca) discharging the waste water directly into Dniester. Yet, what Ukrainian negotiators forget to recognize is that the Yampol city, located on the Ukrainian side of the Dniester, also does not have municipal waste treating facilities and pollutes Dniester as much. In fact, taking advantage of the Moldovan side's ignorance so far, the Ukrainian side did not hesitate to raise issues related or not to Dniester and related or not to Dniester hydroelectric complex, to which the Moldovan side could not answer. For example the pollution of the Chirghij-Chitai (which is a small river in the southern part of Moldova), by a Moldovan alcoholic enterprise affecting some Ukrainian border villages serves this purpose. Such problems are faced by the Ukrainian side as well. In this regard the Moldovan Government should work more closely with civil society to better understand what issues are real, relevant to these negotiations and commensurate to those raised by the Ukrainian side.

As it was stated above, the aim of such tactics used by Ukrainian negotiators is to create the illusion that the environmental issues produced by Moldova and having a cross-border impact are equally serious as those produced by the Ukrainian enterprises, municipalities and Dniester hydroelectric complex affecting Moldova. In this sense it can be easily deducted that the ultimate goal is to create a bargaining field aimed to annihilate any substantive objections of the Moldovan side in regard to the dramatic impact of Dniester hydropower complex on Moldova, and to force the Moldovan Government to be lenient in regard to the exploitation of this energy complex.

It is not excluded that the joint border control on the Transnistrian segment and the border demarcation issue are part of the package deals. Here would be needed two key observations:

c. The border demarcation is not only in the interest of Moldova but also of Ukraine. Ukraine intends to join a military - political bloc, NATO. One of the key principles for accepting new members in this Alliance is to have settled all of border issues with neighbouring states. That is why Hungary has a border Treaty with Romania, Romania

has a border Treaty with Ukraine and for this reason Ukraine should first be interested in having a border Treaty with Moldova clarifying all the border demarcation issues. Moreover, neither EU admits new members with unresolved border issues. The case of the border disputes between Slovenia and Croatia is an illustrative example in this regard, that lead to the extension of the EU accession negotiations of Croatia. In other words European integration aspirations of both Ukraine and Moldova are an additional reason why these countries should be equally interested in solving their border demarcation problems. There is absolutely no reason to put and negotiate in one single basket the border issues between Moldova and Ukraine that are not related to the border segment where the Dniester Hydroelectric Power Plant II is located.

d. The settlement of Transnistrian conflict and its related issues (common border control) are again both in the interest of Ukraine and Moldova. There were mercenaries who fought in Donbas against the forces of Ukrainian Army, coming from the uncontrolled Transnistrian region of Moldova. In should be mentioned that Moldovan Governments proposals to open joint border control on the territory of Ukraine across the Transnistrian segment did not appear in 2014 or in 2017. They date back to the late 1990s. Unfortunately, these proposals were torpedoed or deliberately neglected by the Government of Ukraine until 2014 when this country faced serious problems with territorial secessionism. From this point of view, the cooperation with the Moldovan Government should not only be accelerated on this dimension, it cannot be conditioned in any way by the signing of the Operation Agreement of the Dniester hydroelectric complex since these issues have nothing to do with each other.

12. What is the position of donors and development partners in the Republic of Moldova?

<u>International Development Banks</u>

It is worth noting that in the past the World Bank refused to disburse funds for the termination/expansion of the existing hydropower infrastructure of the Dniester hydropower complex and particularly to the Dniester Pumped Storage Station, due to multiple problems associated with project documentation. The current position of WB in regard to this infrastructure and to the planned one on Dniester is not yet known and it will need to be clarified.

Furthermore, at the beginning of 2017 in a response to a Public Appeal of civil society organisations from Moldova and Ukraine, European Investment Bank (EIB) replied that “EIB is not financing or considering to finance any of the proposed hydropower stations on Dniester” and added that “should EIB consider financing any hydropower project on Dniester river in the

future,…, the Bank would apply the highest standards in its economic, technical, financial and environmental and social assessment and request their compliance with national laws as well as with EIB Environmental and Social standards and criteria".[89] It should be expected that the position of EIB did not change in less than a year in regard to a similar Public Appeal launched by the Moldovan Civil Society in November 2017.

More worrying signals seem to come from to European Bank for Reconstruction and Development (EBRD). According to some Ukrainian researchers the budget for the building of the new six power plants is in the range of "*16 billion hryvnia. Out of these: 166 million dollars are sourced from public funds and EUR 400 million will be attracted from international community.* ***There are also talks about a EUR 1.1 billion (UAH 32 billion.) loan****, which has been* ***already agreed to be offered by the European Bank for Reconstruction and Development***".[90] This information would need to be checked. Nerveless if the information of the Ukrainian researchers is true, then it would appear extremely scandalous to commit loans on infrastructure that may have dramatic cross-border impacts without waiting any preliminary impact assessments (SEA, EIA and others). EBRD was also copied in the Appeal of Moldovan Civil Society dated 21 November 2017 and had no reaction as of January 2018.

<u>Development partners and bilateral donors</u>

Currently, most of the bilateral and multilateral donors that are active in Moldova have technical assistance programs that directly or indirectly support access to clean drinkable water, sanitation and sewage, sustainable agriculture through irrigation, regional development, and support for SMEs or social innovations to name just a few. There is certainly a general understanding that there can be no sustainable development of Moldova as long as the country has no access to water. The position of most of the donors that were targeted in the Civil Society Public Appeal dated 21 November 2017 is still not heard.

Implementation of EU Association Agreement and the Free Trade Agreement that Moldova signed with EU in 2014 falls of course under the obligation of Moldova. However its proper and effective application depends also on the support of the partners with which it was signed. In other words EU has also the obligation to check, monitor and support this process. Between 2007 and 2013, the direct support provided to Moldova by the European Commission was estimated at 782 million euros. If the last four years are added, this support has probably reached more than 1 billion Euros. In addition the indirect support could be estimated at

[89] EIB response to the letter regarding hydropower investments in the Dniester River basin, dated 10 February 2017.

[90] Grubinko et al (2017) "Conseqeunces of construction of HPP on Dniester", in *Transboundary Dniester River Basin Management*: *Platform for Cooperation and Current Challenges*, Proceedings of International Conference, Tiraspol, October 26-27, 2017, p. 79

several hundred million Euros. Needless to say, without access to a permanent source of water to maintain life in Moldova the above mentioned documents and the impact of these funds will evaporate much faster than the water in Dniester. From this point of view, **the involvement of the European Commission and the Energy Community Secretariat in these negotiations is not optional, but mandatory. The result of their involvement should be the inclusion of the references to the Association Agreement and the Energy Community Treaty in the Agreement on the functioning of the Dniester hydroelectric complex**. The silence of EU would arises two questions:

(1) Is EU prepared to host half a million of Moldovan refugees in the mid-term period because of lack of basic access to clean water in their home country?

(2) Are EU taxpayers prepared to pay up to 10 billion euros as the cost of silence of the European Commission and their Governments?

Furthermore, the silence of the US Embassy's in Moldova is even more enigmatic. USAID had since 2005 one of the most solid support programs for the agricultural sector and key industrial sectors of Moldova. Agriculture, the wine-growing sector and the industrial sectors supported by US Government are areas that depend on access to water. All the support of US in Moldova over the past 25 years probably exceeds 1 billion USD. At the same time the US Assistance Programs in Moldova are usually carrying out scrupulous assessments on environmental impact and sustainability. US is also interested in a peaceful settlement of Transnistrian conflict, a stable, democratic, prosperous Moldova in this turbulent region. These are sufficient reasons to step into the negotiations.

It should be recalled that back in 2003, both US and EU diplomatic messengers strongly advised Moldova not to sign the so called “Kozak Memorandum”, a document proposed by a key adviser of Russian President Vladimir Putin for the settlement of Transnistrian conflict. The Plan proposed the federalisation of Moldova and maintenance of the Russian troops for at least another 20 years on the territory of Moldova. In the opinion of the US and EU officials this Plan would have been paralyzed the functionality of the Moldovan state and institutions for many years to come. Both US and EU interfered into these negotiations and convinced Moldavian President Vladimir to refrain the signing of the “Kozak Memorandum”.

In 2018, fifteen years after that event, there is a serious risk of signing another document: the Agreement on the operation of the Dniester Hydroelectric Complex. This Agreement will have a much dangerous impact than the Kozak Memorandum. This document it is not about institutional blockage of Moldovan state. It is essentially about the destruction of a whole

country because it will deprive its citizens and economy from badly needed access to clean water. In this regard Moldovan citizens ask their selves:

(1) Isn't this a strong enough reason for the US to interfering into these negotiations as it did in 2003?

(2) Is the claimed "energy security" of Ukraine a sufficiently reasoned purpose to allow the extermination of the neighbouring Moldova?

The tranquillity of EU and US has perhaps three main explanations. The *first* is rather formal and relates to the principle of non-interfering into the domestic affairs of other states. It is a well-known principle that governs the international public law. This argument however is totally flawed considering that development partners of Moldova neglected it during "Kozak Memorandum".

The *second* explanation is perhaps geopolitical and stems from the fear of not-alienating the loyalty of Moldovan and Ukrainian pro-West declared Governments in order to prevent the rise of Russian influence in the region. Yet, what EU and US partners of Moldova ignore is the fact that a bad deal on Dniester hydroelectric complex affecting the lives of most of the citizens of Moldova (be they pro-Russian, pro-West or undecided) will be associated with the ignorance of Western institutions on an issue that fundamentally affects their everyday life and existence. Silence of US and EU would only strengthen the perception that West is supporting the Moldova's and Ukraine's oligarchs at the expense of their own citizens. No Russian propaganda or tanks would be more effective in Moldova than the US' and EU's own ignorance on Dniester hydropower infrastructure.

The *third* reason may relate to the perception that the existing and planned hydropower infrastructure in Ukraine will enhance the energy security of this country. Ukraine is severely dependent of Russian Federation supplies of uranium and of coal supplies from Donbas, a region that it currently does not control. Yet this argument does not stand up to scrutiny. The existing infrastructure of Dniester hydro energy complex accounts only for a limited volume of power generation in Ukraine. For example in the period January – November 2016 the national fleet of Ukraine's HPP and Pumped Storage Power Plants (including those from Dniester) generated 6,1 % of the whole electricity production of Ukraine, while for the period January – November 2017 this number was 6,6 %.[91] Dniester hydroelectric complex accounts for less than

[91] "Производство электроэнергии в Украине за 11 мес. 2017 г. увеличилось на 1.1%", *Uaenergy,* 4 Jan. 2018, http://uaenergy.com.ua/post/30382/proizvodstvo-elektroenergii-v-ukraine-za-11-mes-2017-g/

half from this percentile. **An even smaller quantity would bring the six new planned HPPs. They would cumulate 390 MW of installed capacity and add just 0,5% in the annual electricity production of Ukraine**.[92] In no way these incremental amounts solve the energy problems of Ukraine. Balancing of its electricity system with flexible capacities during the peak hours of the day could be solved more effectively in other ways. Ukraine could take advantage of grid scale battery technologies. These technologies had a boost in the past two years, decreased in cost and will continue to do so in the coming years due to economies of scale and technology improvements. Their major advantage is the limited space needed to install and not harming the environment to the magnitude of the large accumulation reservoirs. An alternative solution could be the imports of electricity from neighbouring EU market and states such as Romania with excess of capacities and half of the generation coming from flexible sources (e.g. existing hydropower).

In an era when European countries choose to shoot down hydroelectric plans on environmental grounds (e.g. France[93]) and energy storage and clean technologies are boosting globally, Ukraine is choosing the soviet style "Aral sea syndrome"[94] approaches to "solve" its energy issues and create new sources of tension with its neighbours.

At the end of the day no matter which are the real explanations of the US and EU apathy, and for the moment the unclear agenda of the IFIs, their silence and their lack of interference into the Moldovan-Ukrainian negotiations equals to their co-participation in triggering a humanitarian crisis in the region, a civil conflict in Moldova and even a conflict with neighbouring Ukraine. They will have to assume each of these consequences.

13. Could a lack of water trigger either a civil war in Moldova or a conflict between Moldova and Ukraine?

In this moment Moldova faces an unresolved Transnistria conflict. Since 1992 when military hostilities took place in Moldova the situation in the region was relatively stable with no subsequent clashes or military operations. Due to this status-quo of relative peace the

[92] Grubinko et al (2017) "Conseqeunces of construction of HPP on Dniester", in *Transboundary Dniester River Basin Management*: *Platform for Cooperation and Current Challenges*, Proceedings of International Conference, Tiraspol, October 26-27, 2017, p. 79

[93] Morgan, S. "French dams' days numbered after demolition decision", *Euractiv*, 27 Nov. 2017, https://www.euractiv.com/section/climate-environment/news/french-dams-days-numbered-after-demolition-decision/

[94] Stefan Klötzli (1997) "The 'Aral Sea Syndrome' and Regional Cooperation in Central Asia: Opportunity or Obstacle?" in *Conflict and environment*, p. 417 – 434, https://link.springer.com/chapter/10.1007/978-94-015-8947-5_25

Transnistrian issue is internationally and locally dubbed a "frozen conflict"[95]. Up to now there were squabbles on different issues between the official Government from Chisinau and the break-away representatives of Tiraspol. The periods of heated negotiations altered with times of missing dialogue. Nevertheless not a single time in the past 25 years there was a conflict over water resources of Dniester, which acts as an "imaginary" administrative border between the two sides. By contrary, there were multiple incentives of OSCE, UNDP, EU and other major donors to support confidence building measures on water amelioration and improvement Programs along the River. Contacts between people and NGOs targeting environmental issues of Dniester from both banks of the River are also frequent and in many ways shows that not all bridges were burned.

In this moment the breakaway Transnistria may have the military, economic and political support of Russian Federation with the troops of the latter stationed on the ground. Nevertheless this secessionist territory is missing any tool to influence the negotiations between Chisinau and Kiev on the Agreement of operation on Dniester hydropower complex as this is a bilateral intergovernmental issue between Moldova and Ukraine.

However this period of relative peace between Moldova and its break away territory risks to deteriorate and to create a new line of fracture along water issues in Moldova. How would be this explained?

Currently most of the residential consumers of the Transnistrian region are using ground/underground water, including in the largest cities of Tiraspol and Bender. On the right bank of Dniester, by contrary a significant number of consumers are using the surface water from Dniester, including from the largest cities of Chisinau and Balti. At the same time those who use ground/underground water depend by the availability of water in Dniester (principle of "communicating vessels" explained in the Chapter 4). Agriculture and industry are also mostly using surface water. There were cases however when large industrial companies were using ground/underground water on a permanent basis such as "Tirotex" (in Transnistria region) or on a temporarily (and illegal) basis such the thermal power plants of "Termoelectrica" and tobacco producing giant "Tutun-CTC" (located in Chisinau). Larger industrial companies such as "Moldovan Steel Works", by far the largest industrial company from Transnistria and one of the largest in this segment in Eastern Europe or "Lafarge" cement factory on the right bank of Dniester are for the moment using the water of Dniester. Actually Chisinau authorities does not know exactly how many companies and large agricultural farmers from the territory they

[95] European Parliament (2016) "The frozen conflicts of the EU's Eastern neighbourhood and their impact on the respect of human rights", European Parliament's Subcommittee on Human Rights (DROI), http://www.europarl.europa.eu/RegData/etudes/STUD/2016/578001/EXPO_STU(2016)578001_EN.pdf

control use ground/underground water, and even less they are documented on the situation from Transnistria, a region where they lost control in 1992. What is suffice to say is that all these companies are water intensive consumers, significant tax contributors, and major exporters and employers. For example at some point "Moldovan Steel Works" used to generate 60% of Transnistria's annual budget.[96] This metallurgical plant used to have financial troubles in the past years, but seems to recover as of 2015 and 2016. Its production is exported mainly in EU and Ukraine.[97] **The bottom line is the following: as soon as the debit of water in Dniester will be insufficient, all these companies will simply be forced to tap ground/underground resources from the Dniester River Basin in order to have economic activity.**

Further strain on water resources of Moldova is felt from agricultural producers, which are intensively lobbying to amending the Law of Water from 2013 to easier access the ground/underground water for economic purposes. Unfortunately, Moldova never knew in its 26 years of independence how much ground/underground water resources she has. If the lobbyists succeed in their endeavours, this would be another nail in the coffin of water poor Moldova. All of the above mentioned circumstances **may lead to a point where there will be a survival battle between economic/industrial consumers of water and people, a water resource conflict between the right bank and left bank of Dniester River, and for the same reasons even clashes among the consumers of the right bank of Dniester. In this regard a situation escalating in violence to the level of "*ready to kill each other over water*"[98] would not be utopic.**

Such a situation would expose first of all for Ukraine, which since 1992 acts as a mediator in Transnistrian conflict. By slandering the water needs of Moldova and the transnational nature of Dniester waters, Ukraine risks to easily "unfroze" a conflict she was meant from the very beginning to facilitate settling. Conflict escalation would be even more embarrassing for EU and US. In 2005 they joined in a format of negotiations called since then "5+2" that includes the sides (Transnistria and Moldova), OSCE, Russia, Ukraine as mediators, and EU and US as

[96] Economist Intelligence Unit (2006) "Moldova Strategic Conflict Assessment (SCA)", Novembre 2006, p. 17, https://web.archive.org/web/20071025224219/http://www.peacebuilding.md/library/153/en/Moldova%20Strategic%20Conflict%20Assessment%202006.pdf

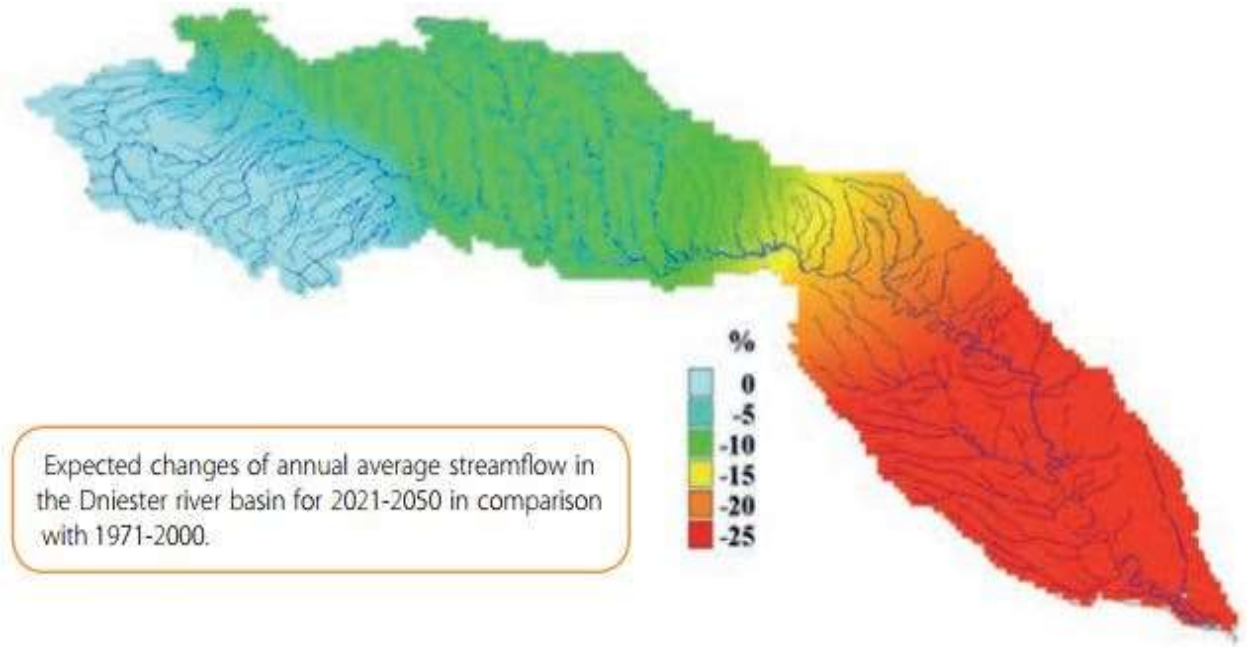
[97] Lupusor et al (2016) "What are the economic threats from Transnistrian economy for 206 – 2017", *Regional Economic Review: Transnistrian Region*, Nr. 4, July 2006, p.10, http://www.md.undp.org/content/dam/moldova/docs/Publications/RER_Transnistria_July_2016_EN.pdf?download

[98] Situation describing tense relations among the framers of Uzbekistan as a result of lower quantity of water discharges from the neighboring Kyrgyzstan, and also tense relations between Uzbekistan and Kyrgyzstan Governments. See Cholpon Orozobekova "An Absence of Diplomacy: The Kyrgyz-Uzbek Border Dispute", *The Diplomat*, 1 April 2016, https://thediplomat.com/2016/04/an-absence-of-diplomacy-the-kyrgyz-uzbek-border-dispute/

observers.[99] It would be clearly a diplomatic and crisis management collapse of EU and US if they fail to anticipate the water generated civil tensions in Moldova and the region.

A recent modelled scenario of an OSCE project showed that between 2020 and 2050 Moldova Dniester Basin on the Moldovan segment will lose up to 25% from the quantity of water relative to the period 1971 – 2000 [100] (See Figure 5). This means that Moldova will lose close to 1% annually in the next 30 years, an incredibly high figure giving the existing water shortages of the country. Droughts would be more severe, water shortages more frequent.

Figure 5 Expected water availability in the Dniester River Basin



Source: OSCE, 2014

As it was already mentioned if the available water volume is less than 1000 m3/inhabitant/year, the lack of water can hinder economic development and may affect the health and standard of living of the population. [101] Unfortunately this figure already stands at only 500

[99] For the results of these negotiations since see the website of OSCE with "Press releases and statements related to the 5+2 negotiations on Transdniestria", http://www.osce.org/chairmanship/119488

[100] For details see OSCE (2014) ""Transboundary Co-operation and Sustainable Management in the Dniester River Basin: Phase III – Implementation of the Action Programme", http://www.osce.org/ukraine/110653

[101] See the Government Decision nr. 199 from 20 March 2014 concerning the *Strategy for water supply and sanitation (2014 – 2028),* lex.justice.md/UserFiles/File/2014/mo72-77md/anexa_1_199.docx

m3/inhabitant/year.[102] With the additional hydro infrastructure built by Ukraine on Dniester Moldova will enter in a critical situation to secure its needs for freshwater.

Furthermore, **in this moment nobody takes seriously an open conflict between Ukraine and Moldova over water resources. Nevertheless a closer look to the hydropolitics of other countries from Post-Soviet space could give a better mirror of possible scenarios when water becomes scarce.** We briefly present three relevant and recent examples:

Example 1. The first is the case of Orto-Tokoi (or Kasan-Say) water reservoir. This reservoir was built in in 1954, 13 kilometers inside Kyrgyzstan's territory close to the border with Uzbekistan. Yet the reservoir was operated and de facto controlled by Uzbekistan for over two decades. In March 2016 both countries deployed troops and were on the verge of escalating an open conflict.[103] It should be noted that Kyrgyzstan needs this water for producing more electricity to cover its increasing domestic needs, particularly in winter, while Uzbekistan needs the water for irrigation in its agricultural sector.

Example 2. In 2014 tensions risking to confront 2000 to 3000 people on water disputes took place across Tadjikistan-Kyrgyzstan border. The conflict was prompted by the diversion of a river from the Tadjikistan territory. Army had to intervene to keep the conflict apart.[104]

Example 3. The third case relates to Tajik-Uzbek relations. A report of International Crisis Group mentioned that "relations between these countries are already strained by Tashkent's objection to upstream hydropower projects and are complicated by a long dispute over the Farkhad reservoir in northern Tajikistan that Tajikistan seized in 2002. Originally part of the Tajik SSR, the area was leased to Uzbekistan in 1933 for 40 years. Dushanbe maintains that it had to take the area back because, after the lease expired, Uzbekistan refused to vacate it. Tashkent says a land swap had been agreed in 1944. The reservoir supplies water to the cotton fields of Matchin and Zafarabad districts, which produce 60 % of all the cotton grown in Tajikistan's Soghd province. A hydropower station connected to the reservoir operates on Uzbek territory. In November 2011, the Uzbek army massed in Bekabad district bordering Soghd province after a border guard was killed during a skirmish with Tajik counterparts. Fears

[102] See the Government Decision nr. 814 from 17 October 2017 concerning *the Plan of Management of Dniester hydrographic Basin,* lex.justice.md/UserFiles/File/2017/mo371-382md/plan_814.doc

[103] See Cholpon Orozobekova "New Standoff Between Kyrgyzstan and Uzbekistan", *Eurasia Daily Monitor*, Volume: 13 Issue: 146, https://jamestown.org/program/new-standoff-between-kyrgyzstan-and-uzbekistan/

[104] Qobil, R. "Will Central Asia fight over water?", *BBC*, 26 October 2016, http://www.bbc.com/news/magazine-37755985; and Кобил, Р. "Центральная Азия: реки раздора. Специальный репортаж", *ББС*, 10 октября 2016, http://www.bbc.com/russian/features-37598443

grew that Uzbekistan was preparing to retake the reservoir. A few days later Uzbekistan closed the rail line connecting Termez on its Afghan border to Qurghonteppa in Khatlon province, Tajikistan".[105]

It should be mentioned that on 12 October 1991, the water ministers of Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan agreed that they would maintain the Soviet allocations of water, an accord that was formalized in February 1992 within the framework of the Almaty Agreement with the goal of goal cooperation in the field of water management to use and protect water resources.[106] This Agreement somewhat remembers about the Agreements on Dniester signed so far by Ukraine and Moldova (e.g. Treaty on Cooperation on the Conservation and Sustainable Development of the Dniester River Basin, signed in Rome in 2012). It also reminds about the current negotiations for the Agreement on Dniester hydropower complex.

There are three main lessons that could be learned from the above examples.

The first lesson is that no matter of the Agreements in force they cannot guarantee long standing peace when water becomes scarce and the shared benefits are missing.

The second lesson is that although the context of the Orto-Tokoi and Farkhad reservoirs might be different from the reservoirs of Dniester hydroelectric complex, the key message of those negotiating the Dniester Agreement should be the same: critical water deficits push the neighbors to take critical measures in order to survive.

The third and the overall lesson for the donors and for those brokering the negotiations of the Dniester hydropower complex is the following: without clear provisions for protection of environment and sufficient water discharge on the Middle and Lower Dniester, the risk for a civil conflict in Moldova and even for a conflict with Ukraine over water resources will inevitably grow.

14. Recommendations or what should be done to prevent an ecological and humanitarian disaster in Moldova?

[105] International Crisis Group (2014) "Water Pressures in Central Asia", Europe and Central Asia Report N°233, 11 Sept. 2014, p. 11 -12, http://www.refworld.org/pdfid/5412a6444.pdf

[106] Mosselo, B (2008) "Water in Central Asia: a prospect of conflict or cooperation?", March 2008, *Journal of Public and International Affairs,* Vol. 19, p. 161, https://www.researchgate.net/publication/265012767_Water_in_Central_asia_a_ProsPeCt_of_ConfliCt_or_CooPeration

1. Giving the magnitude and dramatic consequences of the current negotiations between Moldova and Ukraine the draft of the negotiated Agreement should also be submitted for consultation with civil society and subject to public debates for a minimum of two months. There is sufficient expertise and information within civil society that can be used by the Moldovan Government in the negotiation process.

2. Negotiations should be immediately internationalized. Moldova has neither the will nor the capacity to negotiate this Agreement in the interest of its citizens. The civil perception is that private and corporate interests are given priority.

3. The Moldovan side in the negotiations should insist on the explicit indication in the Preamble of the Agreement on the functioning of the Dniester Hydroelectric complex of the references to the Association Agreement and the Energy Community Treaty. However only the reference to these documents in the text is not a guarantee that their provisions would be fully considered. That is why at least 7 of the 8 Directives discussed above should be clearly indicated in the body of the Agreement. References to UN multilateral treaties alone are not enough because they do not have enforcement and coercion mechanisms. In the form in which the Agreement is currently being proposed, references to the Espoo Convention and the International Court of Justice in Hague do not protect the population, the environment and the economy of Moldova in any way.

4. The governments of Ukraine and Moldova should refrain from signing the Agreement on the operation of the Dniester hydroelectric complex until studies on environmental impact assessment, social impact assessment and economic impact assessment of existing and planned hydro infrastructure on the Upper Dniester are not conducted. Without such assessments any Agreement signed by the two Governments has no data and evidence based analysis and such ab Agreement cannot be valid. These assessments and data are badly needed for an effective joint management of Dniester River. Without such data any Agreement negotiated by Ukraine and Moldova would be irresponsible, obscure and extremely dangerous considering the consequences of this infrastructure may have on the population and environment in the Dniester Basin. More important, these assessments should be performed by an international company with reputation and experience and with no financial/business interests in Ukraine. Assessments performed by the institutes contracted by Ukrainian Government or Ukrhydroenergo cannot be reliable or unbiased from the very outset.

5. Moldova should avoid signing this Agreement in a hurry. In December 2017 Ukrainian counterpart submitted to Moldavian side a 100 page technical document on rules of

exploitation of Dniester energy complex. This is a complex document that needs time to be analyzed. In this sense there is no need for Moldavian Government to hurry up with a response to Ukrainian counterpart. Moldovan civil society has reasoned concerns that Moldovan Government does not have the capacity and staff to fully and seriously analyze such a complex document. The content of this document should be consulted with civil society organizations from Moldova, Energy Community Secretariat, and European Commission and with donors that support the energy sector of Moldova.

6. Governments of Republic of Moldova and Ukraine to avoid the "package approach" by mixing different issues their bilateral agenda which nothing to do with Dniester hydroelectric complex. By contrary such an approach will lead to compromises that will negatively affect the lives of citizens' of the Republic of Moldova. At the same time full transparency and public participation should become the key condition for this improvement of the documents under negotiation.

7. Development partners of Moldova and Ukraine should condition the financial support offered to building hydroelectric infrastructure and any other infrastructure in these two countries by the application of Agreements and Directives mentioned in at the point (3) when it comes to the extension or building of new hydroelectric infrastructure on the upstream segment of Dniester River basin. In addition to this, donors and international financial institutions from Moldova should closely monitor the way this Agreement is negotiated in order to avoid the undermining of their efforts invested so far in Moldova for the development of this country and wellbeing of its citizens.

8. The Agreement should contain as minimum:

    a. Guarantees and clear stipulations on the minimum ecological and spring debits ensured on Dniester River in different periods of the year based on the hidraulicity in the River and other guaranteed water flow factors (such as gradient of increasing/decreasing of the water flow and establishing of minimum parameters for the ecological flow that are ensured by the accumulation of water in the main dam);

    b. A mechanism of coordination for the functioning of the units of Dniester hydropower complex with the Moldavian counterpart (Apele Moldovei) in regard to the guaranteed debits on Dniester;

c. Obligation of Ukrainian side to perform the Environmental Impact Assessment, Social Impact Assessment and Economic Impact Assessment and obtain the consent from the Moldavian counterpart for generating units of Dniester PSPS;

d. Obligation of the Ukrainian counterpart to stop the works at the planned generating units on pumping storage lake of Dniester hydropower complex until the point (c) is achieved;

e. Sudden changes of debit/volume of water at the hydropower plants with pumping storage that occur few times per day should be forbidden or strictly regulated;

f. A detailed description in the Agreement and its Annexes (having the same legal force) with the compensation mechanism for the lost ecosystem services. The compensation mechanism was withdrawn from the earlier versions of the draft Agreement under negations for reasons that are unknown to civil society. Moreover, withdrawal of "polluter pay principle" which is both a key principle of UN environmental framework and EU Directive 2004/35/CE is unacceptable and obscure considering that both Moldova and Ukraine have complying commitments in this regard toward EU and Energy Community. Such a step allows the Ukrainian side to continue unhindered the construction and exploitation of dams and hydropower units of Dniester hydropower complex without considering the lost ecosystem services on the lower Dniester and without paying for the damage inflicted to environment, population and economy of Republic of Moldova;

9. Civil society from Ukraine and Moldova should be consulted on the text of the Agreement before its signature.

CONCLUSION

Moldova risks to become a unique case of a 21st century European country where it would be possible to silt the sixth river of Europe by size, producing a humanitarian catastrophe with hundreds of thousands of refugees and without a single bomb falling into the territory of the latter. Such an anti-utopian scenario seems increasingly real with a Government of Moldova that destroys its own country at a daunting speed, with an unexplained silence of donors and development partners that equals to their co-participation in such a catastrophe, with a population unconscious of the disaster that will follow, and with an extremely sleepy mass-media.