

Annex 1

Detailed impacts of Namakhvani Hydropower Project on species and natural habitats of global, European and national importance



Lower Namakhvani dam and tunnel construction site, July 2021. Credit: Andrey Raley, CEE Bankwatch Network

A. Impacts on sturgeon species

If constructed, Namakhvani project would have catastrophic consequences for the survival of the unique Rioni River sturgeon populations because of the design of the plants with high dams and the magnitude and timing of discharge of water. The construction of dams with similar characteristics has practically wiped out sturgeon habitat in other Georgian rivers (Enguri) and worldwide. Construction of hydropower plants alongside overfishing/poaching are the main drivers for the global extermination of sturgeon species. 17 out of 27 *Acipenseriformes* species are globally Critically Endangered according to the IUCN Red List.

For more information on impacts on sturgeon species please contact:

Eng. Dr. Radu Suci, Founder of the Sturgeon Research Group at DDNI Tulcea (1994 - 2018), radu.suciu34@gmail.com

Sturgeon species of the Rioni River

The Rioni River is the last river in the south-eastern part of the Black Sea that still has sturgeon species actively migrating upstream for reproduction. It is the only remaining documented spawning river for the endemic Colchic sturgeon (*Acipenser colchicus* (c.f. *A. persicus colchicus* or *A. güldenstädtii colchicus*)) globally and the only remaining river in the entire Black Sea that has functional spawning habitat available for the ship sturgeon (*A. nudiventris*). Beluga (*Huso huso*) and stellate sturgeon (*Acipenser stellatus*) in the Rioni River are also still considered to be spawning or attempting to spawn on an annual basis. The European sturgeon (*Acipenser sturio*) has been native to the Rioni River but is at present considered as missing or even extinct since the early 1990s.

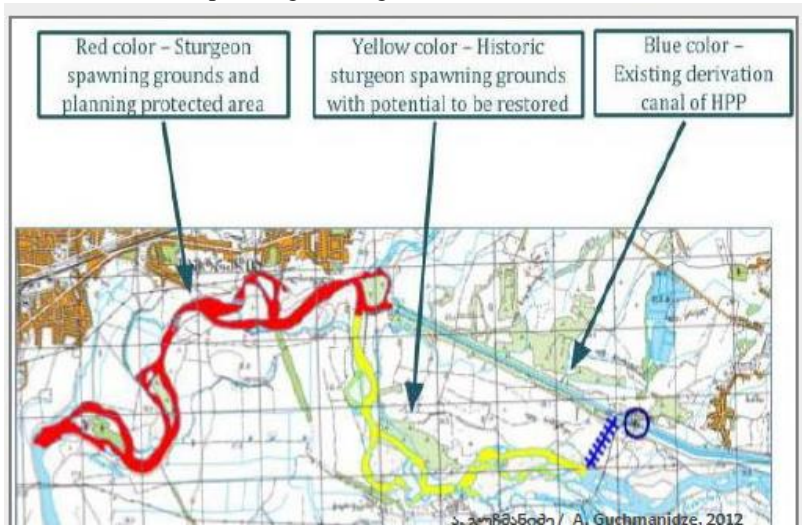


Juvenile sturgeon – believed to be a Colchic sturgeon. Credit: Tamar Edisherashvili/FFI

Georgia as a Party to the Bern Convention has adopted both the Action Plan for the Protection and Restoration of the European Sturgeon and the Pan European Action Plan for Sturgeons, both emphasizing the need for effective protection and restoration of habitats in those rivers where sturgeons are still actively reproducing. Substantial efforts have already been made in the past decade by several institutions to implement a collaborative and synergistic program to save the remaining sturgeon populations, reduce the impacts by an uncontrolled, unregulated fishery as well as to secure the critical habitats.

Existing hydropower projects of the Rioni River and sturgeons

There are three existing large hydropower cascades on Rioni (Vartsikhe¹, Rioni² and Gumati³) and one on its tributary Lajanuri (Lajanuri HPP⁴). Even after the construction and operation of these 4 run-off-river hydropower dams during 1933 - 1976, the Rioni was still providing spawning habitats and conditions for populations of 5 sturgeon species which were adapted to spawn on the gravel grounds downstream the Vartsikhe dam (river Km 129); more recently (2018 - 2021) Flora and Fauna International (FFI) and Ilia University students working closely with local fishermen and anglers have shown by capturing young of the year that at least three species had successfully recruited in the Rioni: stellate sturgeon (*Acipenser stellatus*), Colchic sturgeon (*Acipenser colchicus* / *persicus colchicus* / *güldenstädtii colchicus*) and ship sturgeon (*Acipenser nudiiventris*).⁵ Spawning of sturgeon was possible because all these **run-off-river type dams did not entirely modify the hydrological flow regime of the river**; the Rioni still has every year three high water / flooding periods, in spring (due to snow melting), summer (due to glacier melting) and fall (due to heavy rain season), which are essential conditions for the spawning of sturgeons.



Current and historic sturgeon spawning grounds and Vartsikhe HPP. Credit: A. Guchmanidze

Impacts of the Namakhvani Project on sturgeon species

Namakhvani Project encompasses two HPPs on the Rioni River: Lower Namakhvani HPP (324 MW with reservoir area of 510 ha) and Upper Namakhvani HPP (86.8 MW with area of 100 ha). The construction of Lower Namakhvani 101 meter-high dam and tunnel started in 2020, but in March 2021 was stopped by local protests.

The Lower Namakhvani HPP with its planned 101 m high water storage type dam (at river Km 166) **will modify the natural seasonal hydrological flow pattern of the Middle and Lower Rioni**. In the absence of seasonal flood peaks, which clean the hard substrate of the bottom of the river of fine sediments, sturgeons cannot spawn because their eggs cannot adhere to the substrate and will die. There are worldwide many similar cases, one which was intensively studied and where this mechanism was demonstrated - the impact of the construction in 1974 and operation of the Libby Dam on the upper Kootenai River, Montana, USA, on the white sturgeon (*Acipenser transmontanus*) population⁶. A similar catastrophic

¹ <http://globalenergyobservatory.org/geoid/41913>

² <http://globalenergyobservatory.org/form.php?pid=43010>

³ <http://globalenergyobservatory.org/form.php?pid=43009>

⁴ <http://globalenergyobservatory.org/form.php?pid=43006>

⁵ <https://www.cambridge.org/core/journals/oryx/article/ship-sturgeon-rediscovered-in-the-rioni-river-in-georgia/60F1A4B62B9233BA21A71A8A11179D6B>

⁶ https://www.researchgate.net/publication/271253155_Kootenai_River_white_sturgeon_Synthesis_of_two_decades_of_research

impact on the survival of populations of sturgeons was caused by the construction and operation of the Enguri dam during 1961 - 1987, which left the Rioni as the last and only functional sturgeon river in Western Georgia and the whole SE Black Sea basin. According to an article from 1976 “*due to the construction of Enguri HPP on Enguri River and Vartsikhe cascade on Rioni River the conditions for natural reproduction of sturgeons deteriorated sharply. Enguri River completely lost its importance for sturgeons. The remaining spawning grounds at the Rioni River ensure natural reproduction of beluga, Russian sturgeon, stellate sturgeon, Atlantic sturgeon, ship sturgeon, no more than 20-25% of the previous capacity*”.⁷

The magnitude and timing of discharge of Lower Namakhvani HPP and Upper Namakhvani HPP will depend on peak energy demand. The cumulative impacts of both plants are described in a statement by the World Sturgeon Conservation Society to the Georgian Government.⁸

“*The impacts, as foreseen from the available planning data, mainly relate to the alteration of seasonal water discharge adversely affecting:*

- a) the available habitats in the downstream sections and natural hydro-ecological processes, such as gravel turnover, sediment outwash etc.;*
- b) the annual temperature cycle through deep water discharge from the reservoir;*
- c) the disruption of the ecological flows of the river during the first phase of operation;*
- d) the daily water level fluctuations (hydropеaking) which will affect both the habitats and the faunal elements inhabiting the river sections below the facility;*
- e) the sediment transport into the lower river sections resulting in incision of the river into the landscape and the loss of its connection with its floodplain;*
- f) the migration of the sturgeon species for reproduction;*
- g) the effectiveness of reproduction due to the above mentioned impacts;*
- h) the food base for young sturgeon during the early life phases.”*

It is still not clear if the Namakhvani Project will further increase/change the diversion of water from the Tskhenistsqali River and how this would additionally impact the existing sturgeon habitats of Lower Rioni and potential habitats of Tskhenistsqali.

B. Impacts on other fish species

Although in the EIA of Namakhvani Project there is no detailed research on fish species of the Rioni River, based on published scientific data⁹ we assume that the project will impact the following fish species protected under the Bern Convention (biogeographical seminar assessment given where appropriate) or under the national legislation:

Other **fish species**: asp (*Aspius aspius*, IN MOD: Rioni), European bitterling (*Rhodeus amarus*, IN MAJ), Ukrainian brook lamprey (*Eudontomyzon mariae*, IN MAJ), Colchic barb (*Barbus (plebejus) tauricus rionica*, VU, NE), Batumi shemaya (*Chalcalburnus chalcoides derjugini*, NE); Colchic khramulya (*Capoeta sieboldii*), Colchic gudgeon (*Gobio caucasicus*), Transcaucasian sprilin (*Alburnoides (bipunctatus) fasciatus*), Transcaucasian nase (*Chondrostoma colchicum*), kutum (*Rutilus frisii*), Monkey goby (*Neogobius fluviatilis*). Many reophylic species live in the areas to be flooded, others will be impacted downstream.

As there are no targeted studies post-operation of hydropower dams in Georgia on freshwater fauna the magnitude of these impacts is not clear. However, anecdotal evidence and data from other biodiversity studies can be used to deduce some of their consequences.¹⁰ Hydropower facilities outside of Georgia's national borders, such as the Mingachevir Dam on the Kura River in Azerbaijan have affected freshwater fauna. The original dam at this site was constructed during the Soviet period and began operation in 1953, with a height of 80 m and a flooded reservoir area of 605 km² (15.7 km³ volume). The Mingachevir Dam's closure effectively split the Kura River Basin into an upper and lower portion and disconnected its headwater region within Georgia from the Caspian Sea. This split was followed by the subsequent extinction of Caspian lamprey (*Caspiomyzon wagneri*) and sturgeons in the upper Kura Basin (Demetrashvili, 1963)¹¹.

C. Other downstream impacts

⁷ Ninua N. S., Ways to preserve sturgeon fauna and develop industrial sturgeon breeding in the Rioni river basin

⁸ <https://www.wscs.info/wp-content/uploads/2021/06/Statement-re-Namakhvan-Hydropoweri.pdf>

⁹ <http://eprints.iliauni.edu.ge/352/> and

https://www.researchgate.net/publication/341641813_Checklist_of_the_freshwater_fishes_of_Armenia_Azerbaijan_and_Georgia

¹⁰ https://www.sciencedirect.com/science/article/abs/pii/S0006320721004110?dgcid=rss_sd_all

¹¹ Demetrashvili, M., 1963. Trade Freshwater Fishes of Georgia. Academy of Science of Georgia, 95pp. (in Georgian).

River and riparian habitats not sufficiently protected in the Emerald Network of Georgia and assessed as Insufficient Moderate (IN MOD) and Insufficient Major (IN MAJ) for Black Sea region would also be seriously impacted by changed hydrological and sedimentation regime and flooding. The most severe impacts will be on Sparsely vegetated river gravel banks (C3.55, IN MOD), Riparian and gallery woodlands (G1.1, IN MAJ), Unvegetated river gravel banks (C3.62, IN MOD), Moist or wet tall-herb and fern fringes and meadows (C5.4, IN MAJ). Changes on lower Rioni will also impact the Eurasian otter (*Lutra lutra*, IN MOD) as well as birds that would not be able to breed on or use during migration the river islands and coastal habitats (including Rioni Delta) shrinking due to greatly reduced sediment transport. These birds include waders, terns, gulls, egrets, herons and cormorants.

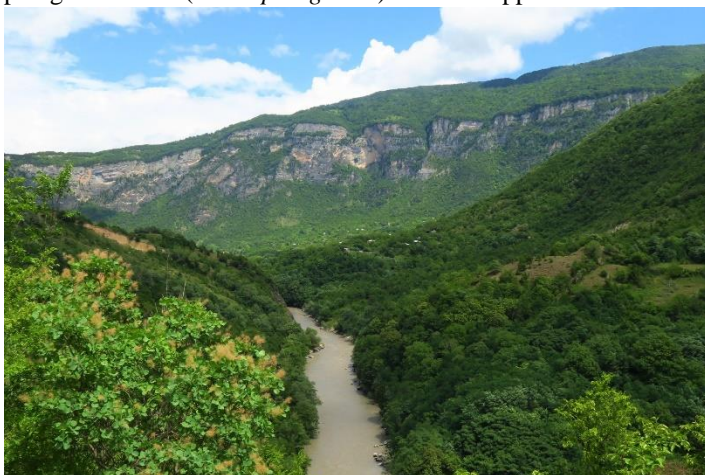


Eurasian oystercatcher (*Haematopus ostralegus*, globally Near Threatened) breeding on a Rioni island. Credit: Andrey Ralev

D. Impacts from the EBRD-financed transmission lines and cumulative impacts

In 2019 the European Bank for Reconstruction and Development (EBRD) approved a EUR 90 million loan to Georgia to support Georgian State Electrosystem (GSE) to implement reinforcement and enhancement of the electricity transmission grid in Georgia.¹² One of the four components of the Power Grid Enhancement Project is the construction of the *North Ring* with new connections to Namakhvani HPP. The project ESIA does not assess the cumulative impact of the transmission lines, their associated facilities and the new hydropower plants.

Our field visit in July 2021 shows the opposite. A colony of griffon and Egyptian vultures nesting close to Tvishi village would be highly threatened by the construction of the new connection to Upper Namakhvani just above the cliffs where the birds breed, whilst construction of Upper Namakhvani HPP would be just below the cliffs. As a result, several pairs of griffon vulture (*Gyps fulvus*), a pair of the globally endangered Egyptian vulture (*Neophron percnopterus*) and a pair of peregrine falcon (*Falco peregrinus*) could disappear.



Cliffs with nesting vultures above Tvishi village. Credit: Andrey Ralev

¹² <https://www.ebrd.com/work-with-us/projects/psd/51422.html>

Old-growth forest habitats, inaccessible up to now, would also be destroyed, flooded by the two new reservoirs and logged for the new transmission lines. These are stepping stone habitats for brown bear (*Ursus arctos*) and lynx (*Lynx lynx*) between the Emerald sites Samegrelo 2 (GE0000057) and Racha 3 (GE0000041).



Old-growth Caucasian forests next to Rioni River. Credit: Andrey Ralev

E. Inscription on the UNESCO World Heritage List and consequences for Rioni River

In July 2021 the World Heritage Committee inscribed the Colchic Rainforests and Wetlands on the World Heritage List “as a unique ecosystem hosting outstanding biodiversity”, and particularly justifies listing under criteria X by the fact that “the property also harbors sturgeon species, including the Colchic Sturgeon”.¹³ However, current initial areas inscribed exclude the Rioni River itself, which puts in question sufficiency of protection measures to safeguard “outstanding universal value”. The UNESCO decision has several clauses aimed to overcome that discrepancy.

First, it “commends the State Party for its commitment to ... consider further enhancement of the conservation of the property by potentially adding additional areas, especially to protect critically endangered sturgeon through plans for a new protected area adjacent to the property;”. Second it “Strongly encourages the State Party to submit the proposed extensions of the buffer zones of the Churia component part towards the North and of the Nabada component part to support the conservation of the sturgeon population as a minor boundary modification, if possible, by 1 February 2023;”. Third, it requests that “Any development projects need to be subject to rigorous Environmental Impact Assessment procedures, and should not go ahead in case of potential negative impacts on the property’s Outstanding Universal Value.”

This effectively means that activities which may impact sturgeons and other biodiversity listed under criteria X should be stopped until their impacts on “outstanding universal value” are assessed in an EIA which satisfies IUCN Advice on World Heritage EIAs. It also means that UNESCO expects that by 1 February 2023 the Georgian Government submits to the World Heritage Center a fully prepared proposal for “minor boundary modification” to include key habitats which ensure survival of sturgeon in Rioni River. This will enable approving this proposal at the 46th Session of the World Heritage Committee in July 2023.

In case Georgian Government fails to perform EIA and goes ahead with activities which present potential danger of decimating sturgeon populations in and around the World Heritage Property, it would present a case for inscription of the World Heritage property on the list of “World Heritage in Danger” and development of a plan of corrective measures to safeguard the outstanding universal value.



¹³ <http://whc.unesco.org/archive/2021/whc-21-44com-18-en.pdf>