

REVIEW OF

Key Biodiversity and Environmental Problems of

Nenskra Hydropower Project

“Biodiversity Impact Assessment” is a separate volume within the Supplementary Package. As in the case of other parts, assessments are of very poor quality: surveys were made mostly in September 2015 when the period was not appropriate for most of the species, endangered species threatened by enhanced permeability of the habitat were not evaluated at all, no real survey on fish species has been made. A review of key biodiversity and environmental problems follows, taking into account the Environmental and Social Impact Assessment, 2015 (ESIA), the Supplementary Package, 2017 (SP) and the Bern Convention complaint, 2016.

1. EU and international substantive environmental standards infringements:

The Nenska HPP does not meet EU and international substantive environmental standards and, subsequently, EBRD and EIB standards.¹

1.1. The project has already provoked the violation by the Georgian Government of Article 4, point 1 and 2, Article 5 and Article 6 of the Bern Convention. Complaint No. 2016/9 - Possible threat to “Svaneti 1” Candidate Emerald Site (GE0000012) from Nenskra Hydro Power Plant development (Georgia) is being currently assessed by the Standing Committee of the Bern Convention. The construction permit could lead to destroying significant protected habitats and species from Resolution No. 4 (1996) and Resolution No. 6 (1998) of the Standing Committee of the Bern Convention situated in Emerald Site GE0000012 "Svaneti 1" as adopted at the Biogeographical Seminar held between 27th and 29th of May 2015. The Emerald site included most of the Nenskra HPP area - Nenskra River, headrace tunnel, power house, Nakra intake, Nakra transfer tunnel and half of Nenskra Dam and reservoir, as well as most of the roads and transmission lines. **Moreover Georgian Government disregarded procedures for evaluation of sufficiency**

¹ "The EBRD, as a signatory to the European Principles for the Environment, is committed to promoting the adoption of EU environmental principles, practices and substantive standards by EBRD-financed projects, where these can be applied at the project level, regardless of their geographical location. When host country regulations differ from EU substantive environmental standards, projects will be expected to meet whichever is more stringent." Art. 7. of the Environmental and Social Policy (ESP) <http://www.ebrd.com/news/publications/policies/environmental-and-social-policy-esp.html>

of proposed Emerald sites as adopted by the Standing Committee in 2013 (T-PVS/PA (2013) 13), when in February 2016 (a month after a meeting with project promoter) excluded from Emerald Site GE0000012 "Svaneti 1" all territories part of Nenskra HPP².

1.2. The project is also an infringement of Art. 4 of the Habitats Directive by using criteria of a non-scientific nature for excluding the area of Nenskra HPP from the Emerald site. The Emerald Network is an ecological network which was launched by the Council of Europe in compliance with Resolution 3 of the Bern Convention adopted in 1998. It is based on the same principles as Natura 2000, and represents its *de facto* extension to non-EU countries³. When selecting sites for inclusion in the list (of potential Natura 2000 and respectively - Emerald sites) the states should follow three conditions:

- only criteria of a scientific nature may guide the choice of the sites to be proposed;
- the sites proposed must provide a geographical cover which is homogeneous and representative of the entire territory of each state (...);
- the list must be complete, that is to say, each state must propose a number of sites which will ensure sufficient representation of all the natural habitat types listed in Annex I and all the species' habitats listed in Annex II to the Directive (respectively Resolutions of the Bern Convention for non-member states) which exist on its territory.⁴

1.3. If the project is carried on it will additionally lead to infringement of Art.6 of the Habitats Directive. It will lead to drastic impacts on 9 habitats and 8 species from Resolution No. 4 (1996) and Resolution No. 6 (1998) of the Standing Committee of the Bern Convention found in Svaneti 1 Emerald site.

1.4. The project could also lead to the violation of Article 8 of the Convention on Biological Diversity by affecting populations of globally endangered species - Western Tur (*Capra caucasica*, endangered species⁵), Persian leopard (*Panthera pardus saxicolor*, critically endangered in the region⁶) and Caucasian grouse (*Lyrurus mlkosiewiczii*, near threatened⁷).

² ES Nenskra_Vol 4_Biodiversity_Feb 2017, page 121

³ <http://biodiversity.europa.eu/topics/protected-areas>

⁴ <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A61999CJ0220>

⁵ <http://www.iucnredlist.org/details/3794/0>

⁶ <http://www.iucnredlist.org/details/15954/3>

⁷ <http://www.iucnredlist.org/details/22679483/0>

2. Environmental and social impact assessment procedure infringements:

2.1. Construction permit was issued before consultation and evaluation procedures were finalized.

2.2. Construction started in 2016 before biological, geological and social surveys were finalized and the Supplementary Package was issued. The construction works included renovation of existing roads, building of new roads, building of permanent settlements for workers, etc.

2.3. Alternatives for the project design were not evaluated - according to Supplementary Environmental & Social Studies, Volume 2, Project Definition (page 6) "*project identification had largely been completed, and elements of the Project fixed (in two confidential documents from 2010 and 2011)*". "*The objective of the present chapter is not to justify, a posteriori, why the proposed Nenskra HPP is the least-impact alternative to achieve the power production objectives required by the Government. There are other considerations such as politics preference (...) which have - and will - prevail-(ed)*". Afterwards in the 2015 ESIA and 2017 Supplementary Studies all environmental and social impacts were evaluated only for Alternative 1: Nenskra Storage and Nakra Diversion Project. This is an infringement of Georgian and EU Legislation as all alternatives should have been evaluated **before** choosing the alternative that will not have a significant environmental and social impact.

2.4. There were "*conceptual changes in the design since the completion of the feasibility study and issue of the 2015 ESIA*" with slight modifications of some project parts. No new Environmental Permit has been awarded though.

3. Unclear description of the project and of other projects:

Even after the Supplementary Package was made public there are uncertainties in the project design, construction and operation, as well as in other hydropower projects, which do not allow to evaluate the environmental and social impacts:

3.1. It is unclear how much water will the project use. Monthly flows of Nenskra and Nakra Rivers are missing. The lack of specific on-site studies has unsuccessfully been compensated by hydrological modeling done as part of the ESIA. If there is no monthly information on the inflow to Nenskra Dam and Nakra diversion tunnel - impact over riparian ecosystems downstream cannot be evaluated.

3.2. Precise description of the operation regime is lacking.

3.3. Any description of Enguri Hydropower Plant is lacking - current operation regime, change in the operation regime expected if Nenskra HPP is built, current impacts on the Enguri River below and above the Enguri Dam. In fact there is absolutely no information on the current biological value of Enguri River below and above the Enguri Dam.

4. ESIA and Supplementary Package of poor quality

4.1. Insufficient and inadequate field surveys to evaluate the impacts on biodiversity:

4.1.1. Key species were not evaluated: Persian Leopard (*Panthera pardus saxicolor*, endangered subspecies assessed by IUCN), Caucasian Tur (*Capra caucasica*, endangered species endemic to the western part of the Great Caucasus Mountains), Booted Eagle (*Hieraaetus pennatus*), Red-breasted Flycatcher (*Ficedula parva*), Caucasus Chiffchaff (*Phylloscopus lorenzii*), Caucasian Snowcock (*Tetraogallus caucasicus*), Caucasian Grouse (*Lyrurus mlokosiewiczi*, near threatened species). Fish species were not evaluated at all (except habitat survey of trout), as well as many reptiles, amphibians and invertebrates.

4.1.2. No survey on fish species was made at all - "Accurate estimation of the population and density of fish within the Nenskra and Nakra rivers is not possible without employing standard quantitative fish survey techniques. One such technique is based upon electrofishing (...) However at the time of survey (2015) electrofishing in Georgia was illegal so could not be undertaken (...)." ⁸ It is obvious that other quantitative techniques could have been used as they were proposed in the Mitigation Strategy: box traps, casting net, fishing rods, trotlines and seine netting.

4.1.3. Key habitats were not evaluated: Riverine scrub (EUNIS code F9.1), Continental humid meadows (EUNIS code E3.46), Montane river gravel habitats (EUNIS C3.552), Unvegetated river gravel banks (EUNIS C3.62), Continental river bank tall-herb communities dominated by *Filipendula* (EUNIS code E5.414), Continental tall-herb communities of humid meadows (EUNIS code E5.423, Euxinian ravine forests (EUNIS code G1.A47). The habitat Ponto-Caucasian montane *Alnus* galleries (EUNIS code G1.127) was only mentioned.

4.1.4. Field surveys were conducted in inappropriate season for many species and habitats. It is stated that "*the investigations were conducted from August to November 2015 and additional surveys in May to June 2016 in the project-affected area. (...) The (May/June) surveys were designed to search for Eurasian lynx and brown bear at a watershed level*" ⁹. **Breeding birds were not evaluated at all as breeding season in the Caucasus Mountains ends in June or July depending on the species. Plants flowering in spring/early summer and grassland habitats could not be evaluated according to internationally recognized methodology.**

⁸ ES Nenskra_Vol 4_Biodiversity_Feb 2017, page 103

⁹ ES Nenskra_Vol 4_Biodiversity_Feb 2017, page 5

4.1.5. Geographical insufficiency of the surveys: for many species and habitats only the area of the Nenskra Dam is investigated but not the Nenskra and Nakra valleys above the water catchments (problem with increased accessibility for sensitive habitats and species). The 17 km of Nenskra River (17 km) between the dam and the confluence with Enguri and 9 km of Nakra River between the catchment and confluence with Enguri were investigated very roughly, not taking into account all project impacts: drastic change in hydrological regime and extreme floods, drastic change in temperature, sedimentation and oxygen regime, future change in microclimate (that could lead to change in the vegetation of both valleys). The Enguri River was not surveyed at all.

4.1.6. Lack of quantitative data - there is no data on number of breeding pairs of bird species, areas of river habitats or alluvial forests to be affected, etc.

4.2. False mitigation strategy:

Most of the mitigation, enhancement and compensation measures are not really planned, but additional "monitoring", "inventory", "mapping" and "surveys" are proposed before the on-site measures. This means that the most important impacts of the project on biodiversity are not *de facto* assessed (or have been hidden):

4.2.1. There is no idea how large is the population of the endemic plant *Paracynoglossum imeretinum* that will be destroyed at the reservoir site.

4.2.2. The real value of the habitats is unknown, so additional detailed floristic inventory and habitat loss areas mapping and survey is proposed.

4.2.3. Monitoring brown bear populations is proposed but no anti-poaching measures.

4.2.4. Only trees which have been certified nest free will be felled during breeding season, but it is unclear what will be the methodology to assess each and every tree. No bird surveys during breeding season were done until now.

4.2.5. Potential effects on downstream biodiversity are not understood. "After a number of years of operation, the first reservoir sediment flushing operation will be required. As part of the preparation for this event an impact assessment will be performed to understand the potential effects which may occur on downstream biodiversity."¹⁰

4.2.6. Invertebrates sampling for Nenskra and Nakra Rivers, using European Union (EU) standard methods (EN ISO 5667-3, ISO 7828, EN ISO 8689) is proposed for the future, but no base information is available.

4.2.7. A negotiation with the Government is proposed to identify "*conservation project(s) to (part) fund to aid in the creation of the proposed Svaneti Protected Area*". But the protected area boundaries were modified before its creation in order to exclude the Nenskra and Nakra valleys.

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5. Most significant risks for biodiversity:

5.1. Impact on habitats:

5.1.1. Nine habitats of European importance will be affected by the project. From 2% to 12% of the total area of distribution of those habitats in Svaneti will be destroyed or will suffer severe degradation. For more information on the impacts on these habitats see Bern Convention complaint and Appendix 1.

All these habitats should be considered of conservation concern as they are listed in Resolution No. 4 (1996) of the Standing Committee of the Bern Convention. Annex 1 of EC Habitats Directive is still not updated with all Caucasian habitats, so should not be considered. The 9 habitats also contain viable populations of Georgian Red List species - lynx, brown bear, brown trout, etc.

The assessments in the ESIA and SP documents that the *"habitats present in the CHAA are not considered to be highly threatened or unique ecosystems"*¹¹ and *"the area in which the reservoir is to be located, while forested, has been modified by man and so does not represent pristine natural habitat"*¹² are either a result of poor quality field work or are manipulated. Photos provided in the ESIA , Supplementary Package and Bern Convention complaint clearly show that the project will affect some unique ecosystems - pristine and old-growth forests, natural river and riparian habitats and semi-natural grassland habitats in favorable conservation status because of the sustainable use by local people through the centuries.

5.1.2. For habitat Caucasian beech forests (EUNIS code G1.6H , called in the Supplementary Package Colchic relic broad-leaved mixed forest) in the area affected by the Nenskra Dam stands of old growth forests predominate, because of inaccessible slopes.



¹¹ ES Nenskra_Vol 4_Biodiversity_Feb 2017, page 117

¹² ES Nenskra_Vol 4_Biodiversity_Feb 2017, page 150

The expected impact of the project will be significant related to direct destruction due to road and dam construction and especially flooding after the dam construction. The direct destruction of the habitat will occupy an area of about 200 ha, which is about 7% of the total area of the habitat in Svaneti. The construction of new roads for the project have already destroyed several hectares of old-growth beech forests.



5.1.3. Possibly the most representative stands of alluvial forests in Svaneti (EUNIS code G1.127 - Ponto-Caucasian montane *Alnus* galleries) will be affected. Large part of the Nenskra Dam area is covered by an unique forest of *Alnus barbata* and the river banks of Nenskra and Nakra Rivers are covered with *Alnus* galleries. Botanical descriptions during the environmental impact assessment procedures didn't show any scientific prove of the degradation of the habitat as stated in the Supplementary Package¹³.



¹³ ES Nenskra_Vol 4_Biodiversity_Feb 2017, page 117

5.1.4. Riverine and riparian habitats are not assessed as the impacts over them will be irreversible. Riverine scrub (F9.1, 17,5 ha affected), Montane river gravel habitats (C3.552, 16 ha affected), Unvegetated river gravel banks (C3.62, 60 ha affected) and Continental river bank tall-herb communities (E5.414, 30 ha affected) will be destroyed not only because of the Nenskra Dam, but also over the 17 km of Nenskra River downstream and 9 km of Nakra River because of complete change in hydrological and sedimentation regime. **The mandatory ecological flow for Nenskra River will be only 5% of the average annual flow. For Nakra River it will be 13%.** The impacts on Enguri River habitats up to Enguri Dam should also be significant because of unpredictable operation of Nenskra powerhouse causing floods totally different from natural.

5.2. Impacts on plants

5.2.1. One of less than 20 locations in the world where the Georgian endemic Imeretian hound's tongue (*Paracynoglossum imeretinum*) is found would be destroyed at the Nenskra reservoir site. Only one individual plant was found, but this is because of inappropriate survey season. The conclusion that "*the habitat is not considered critical for this species as it is likely to sustain a population less than 1% of the global population*" has no scientific proof.

5.2.2. The Great Caucasian Mountains are a biodiversity hotspot and many other Caucasian endemic plants will be destroyed. No assessment is made.

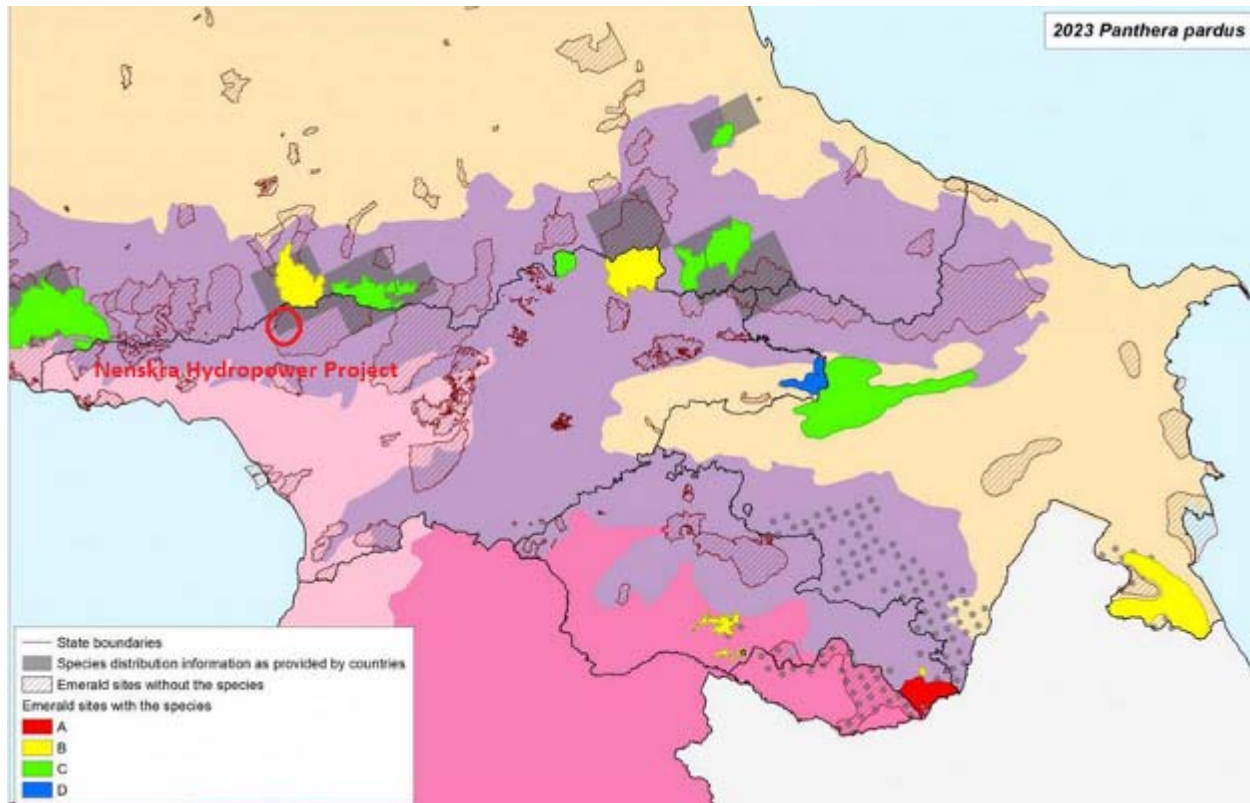
5.3. Impact on mammals

5.3.1. Even with the limited data collected it was proven that the area of the Nenskra reservoir is core area of great importance for the brown bear with as many as 14 signs of the species found in 2015 and 2016. The conclusions that the impacts are not significant are not justified with any scientific methodology and we assume this is made in order not to change the location of the reservoir. No special surveys were made to search for bear, wolf and lynx dens, so there is no proof that reproduction areas for these species will not be affected by the project.

Direct destruction of habitats, increased disturbance and poaching will affect the population in the upper Nenskra and Nakra valleys, our estimation is **for 4-6% of brown bear and 7-10% of lynx population in Svaneti.**

5.3.2. The most significant impact on mammals is the increased permeability of the habitat. New roads will be constructed and existing ones will be rehabilitated. Roads will be maintained all-year-round giving access to the upper parts of Nenskra and Nakra valleys. Permanent human presence associated with the project (500-600 people during construction for 4.5 years, 50-60 people during operation), lack of real control on poaching in Georgia and lack of any anti-poaching measure could lead to the disappearing of two endangered species - the West Caucasian tur and the Persian leopard.

According to data provided by the Russian Federation - the Leopard is present in the Great Caucasus just north of the construction site of Nenskra Hydropower Project:



Interviews with local hunters and shepherds from Nakra and Chuberi communities made in October 2016 show that the species is present in the upper Nenskra and Nakra valleys. At least one individual was found dead by avalanche, there was one sighting of a Leopard feeding on Tur carcass and another chasing Tur. The status of the species in Svaneti is unclear, but some of the few Leopards remaining in the Western Caucasus could be threaten after the construction of the Nenskra Hydropower Project by disturbance, poaching and disappearing of the main prey species - Western Tur.

The Western Tur is endemic to the western part of the Great Caucasus Mountains in Georgia and Russia. Listed as Endangered because of a serious population decline, estimated to be more than 50% over the last three generations. The total world population was given at 5,000-6,000 animals by Weinberg (2004), and might now be lower. Approximately 1,000 tur live in Svaneti region in Georgia (NACRES, 2006). Our estimation is that at least 150 animals live in the Nenskra and Nakra valleys, but the numbers could be much higher. The construction of the Nenskra Project could threaten 3-4% of the world population by poaching, disturbance and destruction of winter habitats.

5.4 Impacts on birds

5.4.1. Booted Eagle (*Hieraetus pennatus*)

1-2 pairs could be breeding in the area to be flooded by the dam. One adult (dark phase) was registered on 06.06.2016 west of the school in Chuberi. One adult (light phase) was registered on 11.06.2016 at the Khudoni dam site, west of Khaishi (see attached photo). The area of the project is suitable for several pairs of the species. The Booted Eagle is assessed with population D in the proposed Emerald site GE0000012 Svaneti, but our opinion is that this assessment is underestimated.



5.4.2. Red-breasted Flycatcher (*Ficedula parva*)

During the fact finding mission on Nenskra Project one breeding pair was registered on 08.06.2016 south of the Nenskra dam site and 5 more pairs on 15.06.2016 in old-growth beech forest west of Nakra village



50 to 100 pairs possibly inhabit the area affected by the project. The area that could be flooded by Nenskra Dam is suitable for 10 to 20 pairs. The species is missing from the Emerald Data Standard Form for Svaneti 1.

5.4.3. Caucasus Chiffchaff (*Phylloscopus lorenzii*)

One of the target species for declaring Important Bird Area 012 Svaneti. Endemic to the Caucasian Mountain. On 09-10.06.2016 five pairs were registered in the Nakra River valley:



On 11.06.2016 two more in the Enguri River valley close to Khaishi. The area to be flooded by the Nenskra dam possibly holds several dozens of pairs.

5.4.4. Caucasian Snowcock (*Tetraogallus caucasicus*)

Healthy population in the Nenskra and Nakra river valleys would be threatened by increased permeability of habitat. According to local people - easy to spot above tree line. In winter descends to lower altitudes, including the dam site. One of the target species for declaring Important Bird Area 012 Svaneti. Endemic to the Greater Caucasus - Russia, Georgia and Azerbaijan. Poaching is a major threat in Svaneti. 2-3% of the population in Svaneti could be affected by the project.

5.4.5. Caucasian Grouse (*Lyrurus mlokosiewiczii*)

This species is listed as Near Threatened species in the IUCN Red Data Book. Healthy population in the Nenskra and Nakra river valleys would be threatened by increased permeability of habitat. On 10.06.2016 at 2100 masl a lek site was registered at the river Nakra with 8 displaying males.



The species is regularly poached but some lek sites have more than 30 males according to local people. The population of Nenskra and Nakra valleys is possibly more than 200 calling males. More than 5% of the population in Svaneti could be affected. One of the target species for declaring Important Bird Area 012 Svaneti.

5.4.6. Green Sandpiper (*Tringa ochropus*)

On 10.06.2016 an adult was registered feeding at the banks of the Nakra River:



This locality is outside the known breeding area of the species.¹⁴ **If a breeding population is proven in the project area it could be the first for Georgia.**

5.4.7. Other endemic subspecies of birds:

The Nenskra Hydropower Project will affect many other endemic to the Caucasus sub-species of birds (registered in June 2016), including: *Picoides minor colchicus*, *Picoides major tenuirostris*, *Anthus spinoletta coutellii*, *Troglodytes troglodytes hyrcanus*, *Cinclus cinclus caucasicus*, *Prunella modularis obscura*, *Erithacus rubecula caucasicus*, *Sylvia atricapilla dammholzi*, *Aegithalos caudatus major*, *Parus ater michalowskii*, *Sitta europaea caucasica*, *Certhia familiaris caucasica*, *Carpodacus erythrinus kubanensis*, *Carpodacus rubicilla rubicilla*, *Pyrrhula pyrrhula rossikovi*, *Garrulus glandarius krynicki*:

¹⁴ <http://maps.iucnredlist.org/map.html?id=22693243>



5.5. Impacts on fish species

5.5.1. ESIA and SP documents do not provide any scientific proof that there is only one fish species in the Nenskra and Nakra Rivers while drafting such conclusions. "*The aquatic biodiversity survey had to rely on a habitat assessment and the examination of fish caught by local anglers as electro-fishing was not licensed in Georgia at the time of survey.*" is written in the Supplementary Package. But later in the same document other techniques were proposed: "*To catch adult fish the following devices will be used: box traps, casting net, fishing rods, trotlines and seine netting. The juvenile trout will likely be caught using seine/landing nets, drift traps and cone traps.*"¹⁵ Lack of fish data is one of the biggest problems of the biodiversity assessment.

5.5.2. It is not even clear which species or subspecies of trout (*Salmo* sp.) is/are present in the affected rivers. The trout caught by local fisherman and photographed were not examined afterwards to determine the species. "*The survey team encountered a local fisherman who caught 10 trout on-site. Detailed dissection of fish was not possible on site given that the fish were food for the fisherman*". Genetic studies in the last years have split *Salmo trutta* into many species throughout its distribution.

5.5.3. If any quantitative fish survey techniques were used we suppose that the 8 other fish species of which 5 endemic would be caught in the Nenskra and Nakra rivers or middle stretches of Enguri river: Transcaucasian sprinlin (*Alburnoides fasciatus*, endemic species), Colchic minnow (*Phoxinus colchicus*, endemic species), stone loach (*Barbatula barbatula*), Angora loach (*Oxynoemacheilus angorae* or other endemic species of *Oxynoemacheilus*), Crimean barbel (*Barbus tauricus*), Colchic khramulya (*Capoeta*

¹⁵ ES Nenskra_Vol 4_Biodiversity_Feb 2017, page 164

sieboldi, endemic species), Colchic nase (*Chondrostoma colchicum*, endemic species), spined loach (*Cobitis taenia*, or other species of *Cobitis*).

Leaving 5% of the river flow in the Nenskra River and 13% in Nakra River would lead to complete extermination of these fish species (before they are even assessed).

5.6. Cumulative impacts

5.6.1. No information is provided about the current working regime of Enguri Hydropower Plant, the planned working regime of Nenskra HPP or other hydropower projects in the Enguri basin. No biodiversity surveys were made in the Enguri river at all.

5.6.2. Significant cumulative impacts on fish species can be expected if the Nenskra HPP project is built. Adding up to all impacts on the middle stretches of Enguri River and its tributaries (Nenskra and Nakra) it is expected that also lower stretches of Enguri River will be affected. The Enguri Dam (Jvari HPP) already has a significant impact on the lower Enguri River by releasing more water in winter and less in summer than the natural hydrological regime. The Nenskra Dam will add up to that problem by regulating even more the outflow from Enguri Dam. This could lead to the complete extinction of species like the critically endangered Russian Sturgeon (*Acipenser gueldenstaedtii*), Ship Sturgeon (*Acipenser nudiiventris*), Stellate Sturgeon (*Acipenser stellatus*) and European Eel ([Anquilla anguilla](#)). These species are reported from the lower Enguri river and depend on high water levels in the warm season for reproduction. No assessment on this species (or any species of fish, except habitat of trout) has been done.