

# Report on Bakhvi 1 HPP Scoping Assessment Document



The report was prepared by the non-governmental organization Community for Sustainable Future with the financial support of the Open Society Georgia Foundation. The views expressed by the authors in the text may not necessarily reflect the views of the Foundation, therefore, the Foundation is not responsible for the content of the material.



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## Introduction

In the territory of Chokhatauri and Ozurgeti municipalities, on the river Bakhvistskali, in the recreation zone of the resort Bakhmaro, the company "CCH Hydro VI" plans to build and operate a 12 MW diversion HPP. It is noteworthy that the Ministry requested the company to submit additional documentation and clarify a number of issues, including 12 environmental issues, which are also addressed in this assessment document. The additional documentation requested by the Ministry for the company demonstrates the imperfection of the completed scoping report. The abundance of comments presented is a direct indicator of the quality of the scoping document and absolutely logically leaves an objective feeling that the company did not take the procedure seriously and they simply have no answers on the number of issues, including on the feasibility of losses caused by the impact of the HPP in contrast with the anticipated gain.

It is also noteworthy that at the scoping stage no proper research was carried out either from a geological or hydrological or ecological point of view. The so-called scoping report and the additional documentation prepared do not present a real report and evaluation, but consist of a package of a list of ongoing studies and scope of the research to be carried out in the future, which contradicts the essence of the scoping procedure.

## The general assessment of the scoping report and the additional documentation

The following shortcomings were identified in the Bakhvi 1 HPP scoping report and additional documentation submitted to the Ministry, namely:

- At the scoping stage, the company has not presented any research in any of the relevant areas. In the documents we find only a list of future studies to be carried out at the EIA stage, which is inconsistency and makes the scoping procedure completely meaningless;
- The scoping report and additional documentation incorrectly present the zero alternative. Instead of presenting a scientific scenario for the natural development of the project area (as required by EIA law), the same zero-sum alternative is devoted solely to demonstrating the social benefits of the project, which is contrary to the zero-alternative principle. There are some shortcomings and inaccuracies in the selection of site and HPP type alternatives, detailed information on which can be found in the relevant chapter;
- The construction of the HPP is planned in the Bakhmaro recreational zone, which is characterized by a unique microclimate, therefore, the issue of the impact of the hydropower plant on the Bakhmaro microclimate should be studied in detail and thoroughly. In the presented document, the impact of the hydropower plant is assessed by the methodology of the 1980s, which is an outdated approach to 21st century standards and climatology as an ever-evolving science, and given the sensitivity of the issue, the scoping document requires a modern approach. Most importantly, the present papers and future studies do not address the potential impact of climate change, which we consider to be a necessary component. For a more detailed assessment, please refer to the relevant chapter;

- In order to undermine the biodiversity of the project area, the biodiversity assessment is also incompletely presented in the document. The company considers that the Georgian Red List species are not represented in the project area, however, these findings are in fact, based on non-factual studies and superficial assessments. See Chapter on Biodiversity for details;
- Another important issue is the ecological cost of water, which, as in the case of other similar types of hydropower plants, is defined at 12%. The calculation of the ecological cost should take into account the approaches of the EU Water Framework Directive in order to maintain the good ecological status of the river. This, given the experience of similar types of hydropower plants, can not be ensured by a 12% environmental cost. It can be said that the issue of water consumption is one of the biggest problems in the case of diversion hydropower plants, which originates from incorrectly established practices and causes irreparable damage to ichthyofauna;
- Since the construction of the HPP is planned in the Bakhmaro recreation area, the issue of visual pollution caused by the construction of a hydroelectric power plant is also important. It is true that the head building of the HPP is not directly visible from the settlement, however, it will be well visible from so-called Sunset Mountain, which is one of the most famous points of the resort, with panoramic views and beautiful sunset scenery. Consequently, the company's claim that there will be no visual pollution and, moreover, the HPP will not be visible to tourists is not true;
- Cumulative impact assessments, as well as irreversible damage to the environment, are presented in a non-satisfactory manner by the company.
- Another important issue is the co-existence of the project of the hydropower plant and Guria's prospective plan of the National Park. The project area of the HPP coincides with the contours of the prospective plan of National Park, which means that in the current process, if a construction permit is issued for the HPP, the boundaries of the Guria National Park must be adjusted and, consequently, the area reduced.

## Bakhvi 1 HPP and Guria's Planned Protected Areas

One of the important issues that arose in connection with the project HPP is its co-existence of the project "Bakhvi 1" HPP with the anticipated protected areas of Guria. The Ministry also drew attention to this issue in the remarks sent to the company and asked the company to substantiate the expediency of placing the HPP.

In response, the company submitted a brief comment that had nothing to do with justifying the need to build a hydropower plant within a planned protected area. In the prepared response, the company attempts to establish that the implementation of the HPP project will not have a significant and irreversible impact on the environment, in particular, it says: "Removal of Georgian Red Listed species from the environment in the project corridor will not take place", "Only short-term impacts on fauna species will take place during the construction phase", "Risks of biological environmental impact during the operation phase of the HPP will not be significant" "According to the results of the preliminary study of the biological environment of the project area, the implementation of the project will not be associated with an irreversible impact on the biological environment." **Each of these justifications is solely the assumption of the company, none of them is based on prior research, and therefore making such statements is unjustified.**

The response also mentions that the meeting took place between the project implementer and the representative of the WWF Caucasus office of the WWF Caucasus, an organization working on the Guria Planned Protected Area project. However, **the company has not presented WWF's position on the feasibility of implementing the Bakhvi 1 HPP project within the Guria Planned Protected Area.**

In addition, we find it unacceptable to manipulate the fact that the pre-boundaries of the Guria Protected Area include several already operating HPPs (Bzhuzha HPP, Bakhvi 3 HPP, Medium 1 HPP, "Medium 2" HPP) and planned hydropower plants ("Natanebi 1" HPP, "Natanebi 2" HPP, etc.). Taking advantage of this fact by the company resembles giving a go to my own business based on the logic that if any action is permissible for someone else, it should be permissible for me as well. However, the inclusion of a number of operational or planned HPPs within the Guria Planned Protected Area does not support the argument on the feasibility of building another additional HPP, but on the contrary, it calls into question the need for project implementation by the state.

Also, it is noteworthy that on June 24, 2021, a meeting was held in the city of Ozurgeti on the establishment of the Guria Protected Area, which clarified the information on the allocation of a national park category for the Guria Planned Protected Area. At the meeting, WWF representatives confirmed that the Bakhvi 1 HPP project falls within the boundaries of the Guria Planning National Park. However, they clarified that if the Guria National Park is created before the construction of Bakhvi 1 HPP, considering the category of the national park, construction of the HPP will not be permitted within its boundaries.

It should be noted that the Ministry of Environment and Agriculture transferred the company to the EIA stage right after the meeting in Guria established that the area selected for the Bakhvi 1 HPP falls within the Guria Planning National Park and if, in a given time, creating the boundaries of the Planned National Park will take place ahead of time for a permit to build a power plant, the project will no longer be implemented.

## Consideration of the Alternatives

Chapter II of the Scoping Report, as well as additional documentation (Appendix 1), provides information on the location of project facilities and types of alternatives. Discussing and comparing alternative project locations is one of the most important parts of the environmental impact assessment process. However, in order for this phase to be effective and realistic, it is necessary to start the environmental impact assessment process before considering the alternatives and identifying the location options. It is important to ensure that alternatives are open to discussion and that the most optimal alternatives with minimal environmental impact are selected from the projected location options.

With regard to the alternatives presented by the company, first of all, the issue of the mirror surface areas of the joints should be emphasized in the case of each alternative. In Alternative I, the mirror surface of the hourly regulation reservoir is 56346 m<sup>2</sup> or 5.6 hectares, and in alternatives II and III, respectively - 33587 m<sup>2</sup> or 3.3 ha and 34561 m<sup>2</sup> or 3.4 ha. In addition, the assessment of Alternative I states that the area covered by water, i.e. 5.6 ha, is a large area and it is necessary to study in detail the risks of its impacts on the local climate and geological environment. While, in Alternatives II and III, mirror surfaces are considered to have such a small area that their impact on the geological environment and local climate is minimal. However, it should be noted here that the difference between the surface areas of the compaction between alternatives I and II, III ranges between 2.3 - 2.2 hectares, i.e the area is reduced approximately by 2/5th, which is not large enough difference in order to consider the impact to be significant and detailed in one case and minimal in the latter one.

In addition, there are inaccuracies regarding the risks of developing dangerous geodynamic processes on the slopes of the Bakhvitskali coast. While, when evaluating the alternatives to headwaters it is repeatedly stated that on the right slopes of Bakhvitskali river there is a higher probability of activation of geodynamic processes and therefore, a detailed engineering geological study of the right slope is needed, based on the evaluation of pressure pipeline the alternatives emphasize relatively high risks in terms of hazardous geodynamic processes are the slopes of the left bank of the river, in particular, the slopes are strongly leaning and landslides and erosion processes are observed in many places. Consequently, it is necessary to specify in which section of the slopes of the right bank there is a risk of landslides, only in the vicinity of the headwaters, or even in the lower reaches of the river. Also, it should be deeply assessed what impact these processes may have on the pressure pipeline, the laying of which was decided on the right bank of the river as a result of considering alternatives.

As for the HPP-type alternatives, this sub-section discusses the traditional schemes for the development of small rivers in mountainous conditions and selects the diversion-type hourly regulated HPP, which is the best alternative in terms of environmental impact and does not have high impact risks. However, by comparison, with which alternatives was this type of HPP given priority and why is this not presented. This issue, of course, needs to be thoroughly studied and the relevant alternatives properly considered.

With regard to zero-alternative or project non-implementation alternative, it should be noted that this subsection completely misses the essence and purpose of the zero-alternative consideration. Annex I, presented by the company, discusses only the potential benefits of the Bakhvi 1 HPP project to the socio-economic environment of the local municipality and the region, and the issues that need to be explored in detail at the EIA stage to assess the cost-effectiveness of the project. It concludes that given the benefits received and the small impact on the environment, the alternative of non-implementation is not acceptable at this stage. **It is, of course, premature to make the above conclusions and to say whether the implementation of the project will have a significant impact on the environment and the benefits will be greater if the loss is not justified without thorough research.** In addition, the consideration of the zero alternatives under Article 10 (3) (b) of the Environmental Impact

Assessment Code is "a description of the natural development of the environment in the event of non-performance" and not a discussion of the benefits of implementing the project.

In this section, it is necessary to assess the consequences of not implementing the project in terms of meeting the foreseen needs, which are also not studied and present only conditional, general records on the positive aspects of the project in terms of socio-economic development.

As for the alternatives of access roads to the project area, the issue of arranging the access road to the power unit (lower stream) is noteworthy. According to the document, the arrangement of the lower stream access road is planned to extend the existing forest road. However, no other option of the access road to the power plant has been considered, except for the alternative of forest road development, i.e what will happen if the Bakhvi 2 HPP project is not implemented or the two projects overlap in time is not considered. In addition, when exploring alternatives to access roads to the EIA stage, given the need to cross steep slopes along important sections of road in the river valley, it is particularly important to carefully study the geological characteristics of the area to be explored (rather than access it only visually) and anticipate development. **The alternatives section does not include quarry location alternatives, which are also important to consider.** At a first glance, taking advantage of deposits near the construction site may be economically viable given the lower transportation costs, although this may increase the impact on the social and environmental environment. Consequently, it is necessary to present alternatives with respect to the location of the extraction of building materials as well. In addition, alternative options for the placement of waste rock dumps should have been presented as part of the scoping report.



View of Bakhmaro lower town in winter

## Impact on the microclimate

Bakhmaro is a mountainous resort with a unique microclimate, characterized by an abundance of mountain and field winds, which contributes to its constant ventilation and the presence of particularly fresh air in the area. At the same time, Bakhmaro is distinguished from other resorts in western Georgia by its cool and dry summer. Low humidity is one of the main factors determining the distinctive microclimate of Bakhmaro and its maintenance is essential for the viability of the resort. Consequently, the implementation of any activity, which with the least probability can have even a small impact on the distinctive climate of Bakhmaro, requires in-depth and thorough study.

First of all, it should be noted that the distance is given in the Bakhvi 1 HPP scoping report (approximately 2.5 km) between Bakhmaro and the HPP headworks is the distance between the center of Bakhmaro and the extreme south-eastern point of the floodgates. However, the distance from the houses to the extreme east of Bakhmaro to the same point of the HPP head building is about 2 km, and within the boundaries of Bakhmaro, it completely covers the watershed of the Bakhvi 1 HPP.



Bakhvi 1 Infrastructure layout in relation to the border of Bakhmaro recreational area

In addition, according to the alternatives presented in the Scoping Report chapter, in the case of the first variant of the headworks, which has a water cover area of 5.6 hectares, the risks of local climate risks require detailed study and assessment, however, in Alternatives II and III, where the total area of floodplains is 3.3-3.4 hectares, the impact on the Bakhmaro microclimate is considered to be minimal. **It is suspicious here that the difference (2.2 ha) between the areas of alternatives I and II headworks is not great to consider climate risk assessments significant in one case, and minimal in the latter cases.** In addition, these records contradict

the information provided in Annex I of the Local Climate Impact Assessment, according to which, considering the alternatives to the HPP headworks, "in no case is a large water mirror surface reservoir planned and therefore the impact on the climatic conditions of the resort Bakhmaro is not expected." At the same time, according to the information provided by the company on the impact on the local climate of Bakhmaro, the impact of Bakhvi 1 HPP reservoirs on the microclimate of Bakhmaro is estimated based on the methodological approach of modeling developed at the A. Voeikov St. Petersburg Geophysical Observatory. As it turns out, this approach is quite outdated and developed in the 1980s. Nevertheless, the company does not substantiate why the outdated approach was used by the expert to assess the impact on the microclimate of the Bakhvi 1 HPP. Also, according to the presented conclusion, the value of the minimum impact zone of the floodplain project does not exceed the radius of 200 m, which is in good agreement with the experimental measurements carried out on reservoirs of similar dimensions. However, no specific examples of such experimental measurements are given. The appendix presents an analysis using only the above methodological approach to assess the impact of the Cross Reservoir on the microclimate. However, it is well known that Jvari Reservoir compared to "Bakhvi 1" is very large and the dams of the HPP cover area of 13.5 km<sup>2</sup>.

In addition, in the attached appendix we find the entry: "In the case of large reservoirs, the impact of the reservoir on temperature and humidity is particularly significant at a distance of 500 m from the water's edge, a sustained impact extends up to 5 km, and at 15-20 km the impact is practically not observed." In the case of the Bakhvi 1 HPP project, according to measurements made by the company, the magnitude of the reservoir impact zone is 200 m, although no sustainable impact information is provided, which in the case of large reservoirs extends to a radius of 5 km.

Annex II submitted by the company According to the information provided, the impact of the reservoirs is limited to 200 meters and will not have a significant impact on the change of climate. Also, according to a preliminary study conducted by the company, not a large number of coniferous species of trees will be subject to felling. Consequently, the impact on coniferous plants is considered only in terms of logging compensation. However, the same appendix states that changes in synovium and temperature within a particular radius are expected but will not have a large-scale impact directly on the Bakhmaro recreation area. These impacts are presented in the Appendix as follows: "During the cooling effect of the reservoirs at a distance of 100 meters from the water edge, in July-September, the average monthly decrease in average air temperatures does not exceed 0.50, while the average monthly temperature increase during the heating effect of the reservoirs is only 0.20"; The maximum increase in partial pressure of water vapor at a distance of 100 m from the water edge is expected in August-September and is 0.4 hPa. At a distance of 200 meters, its value decreases to 0.3 hpa." **However, no information is available on the range of conifers within this range, in particular, whether a change in temperature of 0.50 or an increase in partial pressure will affect the timber in the area and the extent to which environmental damage will be taken into account during the compensation period.** It should be noted that according to the project, it is planned to arrange two dams and one storage reservoir, therefore, we consider it expedient to take

necessary measures to identify possible damage to existing trees and plants within a radius of at least 200 m.

## Impact on biodiversity

The company estimates that the construction and operation of the HPP will have no significant impact on Bakhmaro biodiversity in the short or long term. However, the company makes this conclusion based on superficial assessments, as a detailed biodiversity study of neither of the project area nor the resort Bakhmaro has not been conducted, and based on the available data, it is unjustified to predict the impact at the scoping stage.

**However, in addition to predicting negligible impacts on biodiversity without proper research and evaluation, the company seeks to make this conclusion based on false information.**

In particular, the company claims that vegetation will be removed from the environment only in a 30-meter-wide corridor of the pressure pipeline, where alder is the dominant plant species. It is noteworthy that the 30-meter-wide corridor of the 4 km pipeline covers an area of 12 hectares, which is a large enough area to consider the complete destruction of vegetation in this area as a minor impact. The fact that alder (which is mainly found in floodplain forests) dominates this area does not necessarily diminish the importance of the habitat. Floodplain forests are unique yet at the same time extremely vulnerable ecosystems around the world. The floodplain forest ecosystem of Georgia, according to the national legislation, is included in the list of ecosystems that are subject to special protection. The expected impact of the construction of a new road to the power node, which should cross the entire forest-covered area, is also not assessed in the impact.

Another misinformation that the company uses to lighten the impact on local biodiversity is related to the spread of Georgian Red List species in the project corridor. **The company argues that "according to the results of the preliminary research, the species included in the Georgian Red List are not listed in the project corridor."** However, this fact is not true and it can be clearly seen in the scoping report of "Bakhvi 1" HPP. Based on existing literature or information provided by local populations, the area influenced by the project is inhabited by important mammal species such as a brown bear (endangered species (EN) and protected by Red List, a lynx (endangered species (CE) and protected by Red List), an otter (Red Listed Vulnerable (VU) species) and Caucasian squirrel (Red List CE species). In addition, there are endemic species of Caucasian amphibians - Caucasian salamander and Caucasian crucifix, which are also protected species on the Georgian Red List. Within the project corridor, there is also a red-listed (EN category) reptile species - Caucasian snake.

**Although the biodiversity of the project corridor is rich in so many protected species of fauna, the company believes that because no such species were observed in the area**

**during the preliminary study (which does not have a specified timeline), the impact on them will not be significant.**

However, it should be noted that in June 2021, in the valley of the river Bakhvitskali, near the project area, researchers from Ilia State University observed several individuals of salamander (see photo).



საქართველოს ველური ბუნება - Wildlife in Georgia

George Bananashvili · 20 Jun · 🌐

Mertensiella caucasica - კავკასიური სალამანდრა  
Ozurgeti Municipality, With Bakhvi Wather



Photo: 3 individuals of Salamander taken in the gorge of the river Bakhvitskali

As for ichthyofauna, the Georgian Red List species - Stream trout - is widespread in the river Bakhvitskali. The cumulative impact on this species is especially significant, as the operating "Bakhvi 3" HPP and the project "Bakhvi 2" HPP are located in the lower reaches of the Bakhvi 1 HPP. The company claims that the reduction of water level will affect the biological environment of the river, however, due to the type of lifestyle of the stream trout, characterized by the formation of micro populations, the company argues that under the conditions of efficient fishway arrangement and its proper operation, the species' living environment will be

maintained. However, one important fact is overlooked here - stream trout need a high content of oxygen in the water for existence, which is why it tolerates a fast-moving environment, as fast-moving small falls are the main mechanism of river oxidation. Consequently, the disappearance of this feature of the river will directly affect the trout population in the stream. In all likelihood, the 12% environmental cost calculated by the company will not be able to provide such an environment. As a result, in the long run, the trout population in the river may disappear altogether.

It is true that the company is responsible for planning and implementing appropriate mitigation and compensation measures at the EIA stage, **but if the scoping stage does not properly assess the cumulative negative impacts caused by the operation of the three HPPs and review the number of environmental costs, the best mitigation measures to maintain the status quo can not be taken.**

It should be noted that the company invited a foreign expert for the credibility of the biodiversity research who on a meeting with the local population and the interested community, presented to conduct valid research in a short time as viable and added that during the research he will use the data and methods of the company "Gamma Consulting", which does not substantially change the quality of the research and logically creates the expectation that the research conducted by the invited expert will actually be a duplicate of the research conducted by "Gamma Consulting". The use of data from the studies that have already been conducted is problematic, especially since their reliability is questionable since they do not meet the requirements for a complete and quality study of biodiversity, such as seasonality (conducting surveys in all four seasons to study important behavioral characteristics and degrees of vulnerability for different biodiversity species at different times of the year, ( eg during spawning, migration, etc.)), duration of the process (at least one month for each season), the survey area (selection of different sites and researching them so that they represent ecosystems of the project area at its maximum best).

The fact that as a result of the preliminary research of the project area of the Bakhvi 1 HPP, which is rich in many species of the Red List, no species included in the Red List of Georgia were identified in the project corridor, indicates the quality of the research. Thus, it is important that the invited expert conducts a full-fledged field study and assesses the degree of potential impact, and develops an appropriate mitigation plan.

## On water consumption

According to the remarks made by the Ministry, the company should have included in its scoping report information on the impact on biodiversity under reduced environmental costs, as

well as information on the efficiency of fisheries and fish farms and the conservation of biodiversity in the natural riverbed. In response to this remark, the company has submitted very conditional and superficial records, e.g. "The exact amount of environmental costs are determined during the detailed design phase"; "At this stage, the arrangement of so-called stair (pool) fishing is being considered"; "Fishway design details are determined at the detailed design stage"; "A detailed fish route project will be prepared for the EIA phase and the effectiveness will be evaluated." It is clear from these records that the company does not have adequate answers to almost any of the questions asked by the Ministry. **The company has no information at all on what kind of impact water reduction can have on the river's biodiversity and ecosystem.** With regard to fish routes and sideways for fish movement, the company has offered only the option of arranging a pond as an alternative, however, to justify why this type of fish pond is being considered or what advantages it has for this particular type of headwaters and river, given the characteristics of Bakhvitskali and how effective it can be, it has not presented any answers. No information is given about the characteristics of the fish routes and fish alternate routes. Thus, it can be stated that the above information provided by the company is completely misleading and does not answer the questions asked in any way. Here, it should be noted that the scoping phase is the most important phase of the environmental impact assessment process, where the issues that need significant attention in the environmental impact assessment process and in-depth studies should be properly studied. The scoping phase is crucial in that, as a result of the initial study of a wide range of issues, it identifies issues of particular concern, including the expected negative impacts on biodiversity or habitats, and ensures that important aspects are not overlooked during the EIA phase. According to the Environmental Impact Assessment of Projects Guidance on Scoping prepared by the European Commission, the expected impacts (impacts on human health, flora and fauna, water and soil quality, air quality and cultural heritage, etc.) nature of impact (direct-indirect, secondary, short-term, long-term, permanent-temporary, etc.), the scale of impact (size of affected habitats/populations, geographical distribution, etc.) as well as frequency and reversibility of impact. should be assessed during the scoping phase. If we follow the views of the company implementing the Bakhvi 1 HPP project and consider that it is justified to leave without scoping such important issues as the expected environmental impact assessment in terms of remaining environmental costs, Etc., then it turns out that the implementation of the scoping procedure makes no sense at all, and the scoping report is just a dry list of issues to be assessed and researched at the EIA stage, prepared without any prior study, from other similar documents by "copying" it.

As for the issue of water sufficiency, in the scoping report submitted by the company, according to the preliminary assessment, the environmental cost is set at 0.29 m<sup>3</sup> / s. In the remarks response table, the company clarifies that the given environmental cost is preliminary data and needs further clarification and additional research. We think it is important to specify at the scoping stage what methodology and what factors will be used to further assess the adequacy of the ecological flow of the river. Adequacy of ecological expenditure is particularly important for the survival of such sensitive species as stream trout and for the conservation of such important habitats as floodplain forests.

## Methodology for assessment of the ecological cost of water

Regarding the request submitted by the Ministry on the amount and methodology of ecological expenditures in the natural riverbed as a result of the Bakhvitskali HPP project in Bakhvitskali, we read in the appendix proposed by the company that 12% of the average multi-annual flow is taken as ecological expenditures, however, contrary to the request, the methodology for calculating the environmental cost is not presented. It is important to emphasize in relation to the ecological cost of the river that the Bakhvitskali River is a habitat for stream trout, which needs an oxygen-saturated fast and cold river to exist, and these characteristics will be lost after reducing the river flow, which in the long term perspective will cause the extinction of the species from a given river, which is a severe violation of the Law on the Red Book and Red List of Georgia. Article 11 of the law "prohibits any action that could lead to the extinction of endangered wildlife, the reduction of their numbers, the violation of their habitat, breeding grounds, survival stations, migration and waterways, and drinking water sites." Therefore, **it is important to consider the needs of the river or its closely related species or ecosystems when calculating the environmental cost so that the project implementation does not cause irreparable damage.** It is also important to take into account the approaches of the EU Water Framework Directive when calculating environmental costs. The Water Framework Directive imposes an obligation on the EU Member States, including Georgia, as a party to the Association Agreement, to achieve good ecological status for all water bodies. In order to fulfill this commitment and to facilitate the implementation of the Water Framework Directive at the national level, with the support of the United States Agency for International Development (USAID), a "Methodology for Environmental Assessment of Georgia's Rivers" was developed in 2017.

This modern methodology views the assessment of environmental costs as a complex process and takes into account a number of factors in determining environmental costs, including:

- Correlation of environmental flow with the dynamics of natural water body - Environmental flow in the natural course of a river should consist not of the ecological flow of the same magnitude throughout the year, but of the flow of different magnitude at different times according to the river ecosystem and biodiversity characteristics;
- Environmental flow can not be determined solely on the basis of river hydrology, and morphological, physicochemical, social, and ecological information must also be taken into account for the correct assessment of ecological flow;
- Determining environmental costs is a long and complex process. In order to properly and adequately assess the environmental cost, it is necessary to form an experienced, qualified, and scientific group of experts in various fields;
- In order to fully estimate the environmental cost, in general, at least 2-4 sites are required for one project. The location of the sites should be selected in such a way that they represent the river section at best;



River Bakhvistskali in the small town of Bakhmaro

It should be noted that the “Bakhvi 1” HPP project environmental impact assessment scoping stage in the Bakhvitskali River did not use the “Georgian Rivers Environmental Cost Assessment Methodology” and therefore did not take into account all of the above in addition to other aspects which are mandatory to maintain its ecological status and comply with the requirements of the EU Water Framework Directive. At the public hearing of the Bakhvi 1 HPP scoping report, a representative of Gamma Consulting, a consulting company implementing the project's environmental impact assessment, said that the above methodology was not used in calculating the environmental cost, as they do not have this obligation under the law. It is true that national law does not directly oblige managers and operators of the project to use this approach in assessing the environmental cost of water bodies, but one is what the law requires and the other is what personal responsibility/social corporate responsibility requires when the company is claiming that the project meets all environmental standards and will not have an irreversible impact on the environment. The location of the Bakhvi 1 HPP project - which stands at a particularly high cost of the Bakhmaro recreation area in terms of recreation or ecology - should also be taken into account.

Of course, when we talk about the private liability of the company and ask it to use the modern methodology in calculating environmental costs and become an example of best practices for calculating environmental costs for rivers in Georgia, On the other hand, we should mention the obligation of the state to require by law the operators to use the "Methodology for the assessment of the environmental cost of rivers in Georgia." It is already the fourth year that the methodology has been adopted, however, this time has not turned out to be enough for the state to take appropriate steps to make the use of this methodology mandatory.

Also noteworthy is the fact that diversion hydropower plants were not even built in the Soviet Union under the so-called 10% -12% water limit approach; similar approaches are shared by European countries as well as the United States. The 10% environmental cost approach is the so-called. Misinterpretation of the "Tenant method" (same as the "Montana method"). In 2012, the protocol of a meeting on diversion of hydropower plants, we read: "According to this assessment method, if 10% of the water is left in the river, the state of the fish habitat will be 'poor or minimal.' Thus, the assertion in the recent EIA reports prepared in Georgia that investor companies are following the generally accepted and/or existing practice in Georgia does not correspond to reality. The assertion in the EIA reports that the environmental impact of such a project solution would be "minimal" and "insignificant" is also false<sup>1</sup>.

## Impact on visual-landscape

In order to assess the visual-landscape impact, the Ministry asked the company to submit a relief image from the resort Bakhmaro to the project HPP to confirm that the HPP infrastructure would not be visible from the resort. The company presented in the form of Appendix 8 the photo-material of the probable area where the HPP project will be implemented in case of a positive environmental decision. **It is noteworthy that the submitted photo material did not meet the requirements of the Ministry, as the Ministry requested a photo material from the company showing the project area seen from the resort Bakhmaro.** The Ministry's note reads: "A relief image should be submitted from the resort Bakhmaro to the project HPP, which will confirm that the HPP infrastructure will not be visible from the resort area." However, the photos offered by the company show the estimated design area of the HPP. In Appendix 8, photos 1-4 are titled as "Panoramic Views of Bakhvi 1" HPP from the project site and not panoramic views of the project area from different points of Bakhmaro Resort (for example: beauty fountain, sunset hill, etc.).

Also noteworthy is the graphic photograph of the terrain presented in the appendix, where the distance from Bakhmaro to the HPP is calculated from the center of the settlement, while to assess the issue of visual impact, it would be more accurate to calculate it not directly from the settlement but from tourist points that are closer to the HPP project area and enjoy great

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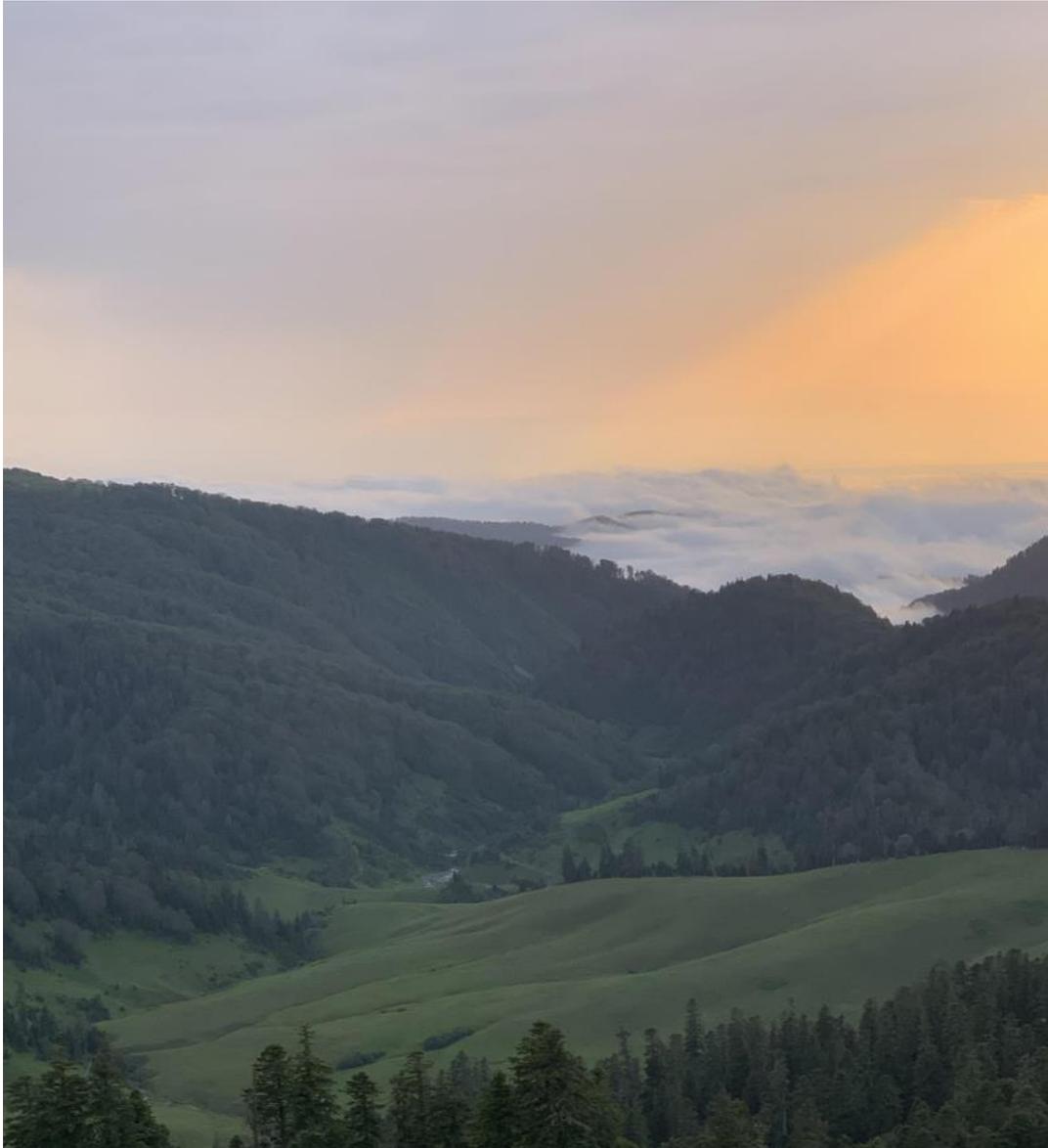
<sup>1</sup> 1 (Green Alternative. (2012). Diversion Type Hydropower Plants in Georgia: Practices and Challenges - Results of the Public Discussion on December 18, 2012).

popularity among vacationers. Accordingly, the issue of visual impact on the landscape should be assessed not in terms of the settlement in the lowlands, but in terms of points such as “Fafara Mountain”, so-called “Spring of Beauty” and “Sunset Hill”, famous for beautiful panoramic views of the sunset.

The submission of irrelevant documentation to the submitted simple note suggests that the company is deliberately trying to mislead decision-makers that the hydropower plant will not have a visual impact on the landscape. **During our field trip on June 20, 2021, which aimed to visit the project area of the Bakhvi 1 HPP in the Bakhvitskali River gorge, it was revealed that the HPP headwaters and floodplains are visible from one of the most famous locations of the Bakhmaro resort, "Sunset Hill" which is one of the main gathering places for tourists, because of the scenic panoramic views.** Consequently, the claim that the HPP will not have a negative landscape-visual impact on the resort of Bakhmaro is false.

## Assessment of Irreversible environmental impact

Another remark of the Ministry was related to the assessment of the irreversible impact on the environment and the justification of its necessity. However, the documentation submitted by the company neither assesses the irreversible damage to the environment nor justifies its necessity.



View of the site selected for the HPP head building from the "Sunset Hill"

The company states that according to the preliminary feasibility study, there will be no irreversible impact on the natural and social environment. "The most important environmental impact during the operation phase of the HPP should be considered the change of the hydrological regime on the section of the river Bakhvistkali in the project impact zone and the

deterioration of the water's living conditions of the aquatic biological environment" - We read in the response provided by the company, however, it is noteworthy that the change in the hydrological regime of the river will affect and likely cause irreversible damage not only to water biodiversity but also to other water-related species and surrounding ecosystems. The project scoping report shows that the project corridor includes floodplain and coastal forest habitat (according to EUNIS classification - G1.1 floodplain and coastal forest), which depends on seasonal flooding by the river, consequently, a change in the hydrological regime of a river and a reduction in its flow will, in the long run, lead to irreversible damage and loss of a given habitat and closely related species; The impact is mentioned neither in the scoping report nor in the documentation submitted to the Ministry. In addition, this issue is not mentioned in the list of future studies, where the main focus is on the fauna and ichthyofauna.

**The company also fails to balance the losses caused by irreversible environmental impacts with the benefits of project implementation.** It states that during the scoping phase it was impossible to find the necessary information and therefore the results of the cost-benefit analysis will be presented at the EIA stage. However, scoping is exactly the stage where the expected benefits and estimated losses of the project must be presented, and the need to incur these losses must be substantiated so that the decision-maker can opt-out of the project during the scoping phase, and thus, avoid wasting financial, human or time resources or take the project to a later stage for more detailed research.

As can be seen from the quality of the documentation submitted by the company in response to the Ministry's remarks, the company was unable to:

1. Assess the issue of irreversible impact on the environment
2. Evaluate and find the balance of the losses and benefits of the project considering environmental, cultural, economic, and social components.
3. Project cumulative impact assessment
4. Impact assessment on Bakhmaro resort microclimate and significant vegetation
5. Assessment of hydrological and geological issues of the project area

However, despite the need for a full-fledged study of the above issues, the company still believes that the impact of the project on environmental and social issues will not be high.

**Given the value of the territory, in the absence of additional and refined research on these important issues, a positive decision on the submitted scoping account should not be considered.**

## Cumulative Impact

The Ministry also requested the Company to provide additional information regarding the cumulative impact assessment of the HPPs planned in the region along with their construction and operation activities. It should be noted that the Ministry's note refers to the cumulative impact assessment for water and water-dependent species; **However, cumulative impacts should take into account not only the total environmental impact of the aquatic ecosystem but, in general, the total environmental impact of the project and the impact assessment should take into account all the activities required for the construction or operation of the HPP, including "impacts from power lines".**

However, in line with the "ugly practice of project segregation" established by companies to lightly visualize the magnitude of their environmental impact, the company plans to conduct an EIA independently of the transmission line project.

As it is clear from the additional documents submitted (Scoping Remarks Response Table, Note 22), the 110 kV dual-circuit power line should be connected to the electricity generated by the planned HPP through a new transmission line, therefore, in order to assess the full cumulative impact caused by the project, it is also important to calculate the estimated impacts caused by the transmission lines; As well as the impact assessment of any other activity that is directly or indirectly related to the construction or operation phases of the HPP. **Reflecting on the issue of transmission lines in the cumulative impact is particularly important, given that the impact caused by transmission lines may be no less significant than the impact on the construction and operation of the HPP itself.** Especially if we take into account the high ecological value of the area selected for the HPP. The HPP is located within the planned protected area of Guria, as well as in the vicinity of important areas for birds and the migration corridor, accordingly, given the current situation and also the fact that power lines are often the cause of extinction of large birds of prey, especially migratory species. Thus, the cumulative effect must be assessed not only in relation to aquatic ecosystems but also in the context of other representatives of biodiversity.

It should also be noted that the document submitted to the company regarding the cumulative impact note does not actually respond to the requested information and needs to be detailed and clarified. The proposed document discusses the cumulative impacts of possible damage to the aquatic environment by 3 HPPs over a distance of 15 km, although it is not specified specifically for which species the cumulative impacts will be significant. The scoping report suggests that in this case, too, the focus will be on the stream trout population only, although it should be noted that if projects are implemented, the red list species, for which the aquatic ecosystem is crucial, will be no less affected. The project area of all three hydropower plants also includes other species of red-listed fauna, which we have already talked about in the upper part (Caucasian endemic amphibians, Caucasian snake, brown bears, etc.). It is also crucial to study the expected cumulative impact on these species

In addition, the implementation of the project will affect a large part of the floodplain forest ecosystem, the risk of damage to which has also not been studied in terms of cumulative impacts.

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