

Green Alternative's Policy Briefs are short analyses on some of the challenges to country's sustainable development. They are part of the broader Green Alternative's analytical works; some complement or summarize reports, while others combine analysis from the research with consultation around a pressing issue. The purpose is to convey urgent public policy problems and promote debate on courses of action to resolve them.

This policy brief is intended for public policy makers and practitioners; it will also be useful for those groups and individuals seeking to influence the policymaking processes.

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Sustainability Criteria for Hydropower Development

Introduction

On June 27, 2014, Georgia and the European Union signed the Association Agreement that created a new legal framework of cooperation between Georgia and the European Union. By signing the Association Agreement (and its further ratification), Georgia undertook a commitment to ensure convergence of its legislation, within the stipulated timeframes, with about 300 legislative acts of the European Union, including in the spheres of environmental protection and energy. The environment related chapter of the Association Agreement is very impressive. It contains the obligation of convergence with both horizontal environmental legislation (Environmental Impact Assessment Directive; Strategic Environmental Assessment Directive; Directive providing for public participation in EIA; etc.) and sectoral directives (e.g. EU Water Framework Directive).

Since 2013, Georgia has been carrying out negotiations with the European Energy Community (EEC) to obtain the status of a full-fledged member. It is worth noting that the Energy Community Treaty considers compliance with the environmental directives as the key requirement when planning energy projects.

The Government of Georgia sets optimal usage of its hydropower resources as the key priority of its energy sector development. According to the research data, Georgia is especially rich in hydropower resources¹ with an aggregate annual potential of 15.63 million kW, and an annual average power of 135.80 billion kWh².

The Government of Georgia plans to construct over 100 hydropower plants (hereinafter HPP)³ with a lion's share going to the construction of run-of-the-river hydropower plants⁴. It is also planned to construct several high dam plants⁵. It should be noted that as a result of established practice of HPP construction in Georgia, the construction of both types of HPPs causes strong and irreversible damage to natural and social environment.

The current practice of HPP construction contradicts the EU environmental directives and the commitments undertaken by Georgia. Therefore, it is important that the Government of Georgia and the society jointly develop the criteria for the sustainability of energy and hydropower projects that will help implement the Association Agreement directives and will simultaneously be based on the successful practice of HPP construction throughout the world. It will become the basis for the construction of HPPs that will be acceptable from both environmental and social points of view.

¹ Georgia's Second National Communication to the United Nations Framework Convention on Climate Change (UNFCCC): In total, there are 26,000 rivers on the territory of Georgia; however, out of the total number of Georgian rivers, 319 are especially interesting due to their hydro power potential.

² Georgia's Second National Communication to the United Nations Framework Convention on Climate Change, p. 177.

³ <http://gedf.com.ge/wp-content/uploads/2014/04/Energy-Market-Overview.pdf>

⁴ Run-of-the-river (derivative type) hydropower plant, which operates with a small dam or without it; a part of the river downstream is directed to turbines through a pipe or a channel for electricity generation.

⁵ In case of high dam hydropower plants, formation of large reservoirs, flooding of thousands of hectares of agricultural lands and forests and resettlement of local population is also envisaged.

1. Problems Related to HPP Construction in Georgia

1.1. Absence of Strategic Energy Development Plan

As of today, the Government of Georgia and Georgian or foreign companies have signed over 40 Memorandums of Understanding and/or agreements on the construction of up to 100 small, medium and large HPPs. It should be noted that Georgia has no strategic document substantiating the necessity of construction of those HPPs as well as defining the place of these HPPs in Georgian energy sector, taking into account existing seasonal imbalance and develop the ways to eradicate it⁶.

The government, generally, believes that the more power generation facilities are built in Georgia, the more energy independent the country will become and it will ultimately promote the country's economic development and reduce high growth rate of electricity consumption (annual 10%⁷); however, it is noteworthy that a lion's share of electricity generated by planned and current HPPs is intended for export and the model established for HPP construction – "Build, Own, Operate" – brings insignificant revenues to the state budget.

Without assessing energy demand and developing strategic plan of energy sector, hydropower development may rather create problems to the country than bring any benefits.

1.2. Faulty System of Environmental Impact Assessment and Permit Issuance

Current practice of decision making on HPP construction is one of the most problematic issues nowadays. As a rule, the investor and the Ministry of Energy, on behalf of the Georgian Government, sign an agreement or a memorandum on the construction of a hydro power plant. The document already determines technical parameters of a proposed HPP, starting and ending dates for construction works and other key issues. Just after signing an agreement/memorandum, the investor starts the process of Environmental Impact Assessment (EIA) as the part of a process for obtaining construction permit and environmental impact permit. The process actually becomes a mere formality, because the decision on the project's technical parameters is already accepted and therefore, it is practically senseless to carry out EIA procedures. Consequently, there is no opportunity to discuss socially and environmentally most acceptable project alternatives either.

Accordingly, as EIA procedure is a mere formality and the HPP capacity and its generation are already determined by the agreement/memorandum, in case of construction of derivative HPPs investors are just following established practice and neglecting any detail analysis. As a result they leave only 10% of an average annual flow of the river, while 90% is diverted to turbines through derivation pipes, channels and/or tunnels in order to generate electricity. Due to this practice, even small hydro power plants cause full destruction of the river ecosystems.

It should be also noted that the existing EIA system in Georgia mostly does not comply with the requirements of the European Union's Environmental Impact Assessment (EIA) Directive. For example, current Georgian legislation does not recognize screening and scoping stages, whereas according to the EIA Directive, environmental impact assessment report can be prepared only after passing through these stages. The list of activities defined by Georgian legislation for which EIA is mandatory also does not meet those defined by the EU Directive and they do not envisage the possibility of individual discussion of those activities, which are not included in the list, though can have an adverse effect on the environment.

According to the Georgian legislation, an activity can be released from EIA requirement if it is carried out by the state and/or local government bodies. Unlike the EU Directive, Georgian legislation rules out any opportunities for informed and meaningful public participation in making decisions by competent authorities on issuing permits on the projects (including energy projects) that have adverse effects on the environment and human health.

It is worth to note that the EU-Georgia Association Agreement also emphasizes the necessity of meeting the EIA Directive within the next three years. Annex II of the Treaty Establishing the Energy Community also focuses on the importance of improving the EIA system. This annex is completely dedicated to the environmental legislation, including in terms of implementation of individual energy projects. It directly demands a developer to provide an outline of the main alternatives studied by the developer and an indication of the main reasons for his choice, taking into account the environmental effects⁸.

⁶ www.iset.ge/blog/?p=1726.

⁷ 10% growth of demand for electricity is not confirmed by official data of Electricity System Commercial Operator (ESCO), www.esco.ge

⁸ Annex II environmental legislation: „1. Each Contracting Party shall implement Council Directive 85/337/EEC of 27 June 1985 on the assessment of the effects of certain public and private projects on the environment, as amended by Council Directives 97/11/EC of 3 March 1997 and Directive 2003/35/EC of the European Parliament and of the Council of 26 May 2003, on the entry into force of this Treaty.“ Council Directive 85/337/EEC Article 5: „3. The information to be provided by the developer in accordance with paragraph 1 shall include at least: - an outline of the main alternatives studied by the developer and an indication of the main reasons for his choice, taking into account the environmental effects“;

1.3. Public Participation

The EIA system is ineffective in Georgia both in terms of access to information as well as public involvement; moreover, this faulty system fails to render any valuable assistance to decision makers for making informed decisions regarding the activities that may have adverse impacts on the environment and human health.

The current legislation of Georgia fails to ensure timely and full public participation in the decision making. The public has no information about those projects, which are submitted to the Ministry of Environment and Natural Resources Protection for obtaining environmental impact permit, whereas a public participation component is withdrawn from the decision making process and is fully trusted to the investor. Therefore the Environmental Impact Assessment System is not in compliance either with the Aarhus Convention, or with the relevant EU Directives.

According to the EU Directive providing for public participation in EIA (2003/35/EC), the public shall be given early and effective opportunities to participate in the environmental decision-making procedures and shall, for that purpose, be entitled to express comments and opinions, when all options are open; consultations with the public shall be held at an early EIA stage.

1.4. Other Problems

Georgia lacks a number of instruments, which regulate hydropower development in the European Union and generally, worldwide, including **river basin management system** and **strategic environmental assessment**. The EU-Georgia Association Agreement also obliges the country to introduce these instruments.

The Association Agreement also obliges the country to move to the river basin management scheme within the next 10 years; at the same time, the state should ensure the involvement of all stakeholders in the process of preparing river basin management plans⁹ and carrying out analysis of characteristics of the river basin districts¹⁰. It should be noted that country nowadays lacks even the fundamental legislation regarding the river basin development and management.

The necessity of preparing river basin management plans is especially pressing in Georgia. During the planning new HPP construction and signing agreements/memorandums not only environmental and social impact issues are not taken into consideration but also requirements of other sectors of economy (e.g. agriculture) for water. Under such conditions, especially under the existing practice of derivative HPP construction, HPPs may also have adverse impacts on other sectors of economy, to say nothing about the problems of access to water by local population.

Along with the lack of river basin management plans, the absence of strategic environmental assessment legislation in the country is also very problematic. Various plans, programs or policy documents developed by the government are not subject to strategic environmental assessment. Respectively, public participation in this process is not regulated.

Strategic Environmental Assessment Directive¹¹ defines the plans and programs subject to strategic environmental assessment, on the one hand, and determines the obligation for the involvement of all stakeholders in the assessment process. The energy plans and programs developed by the state directly fall under this directive.

As already mentioned above, there is no such instrument established in Georgia and therefore, decisions are made on the construction of HPPs in virgin ecosystems, such as existing and/or planned protected areas or their adjacent territories, which are created for conservation of unique nature in its primary form (Khde Gorge, Tergi Gorge, Machakhela Gorge, Paravani Gorge, Kintrishi Gorge, Nenskra Gorge, etc.) that further aggravates adverse impacts of the projects on biodiversity.

⁹ "Directive 2000/60/EC of the European Parliament and of the Council establishing a framework for the Community action in the field of water policy", articles 13 and 14.

¹⁰ Directive 2000/60/EC of the European Parliament and of the Council establishing a framework for the Community action in the field of water policy", articles 5.

¹¹ Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment.

2. Sustainability Criteria for Hydropower Development

Rivers are a vital element of the environmental, climate adaptation, social and cultural systems of our planet and areas of high conservation value have to be preserved from the negative impacts of hydropower plants. In the process of planning and development of hydropower projects, Georgia should develop sustainability criteria for hydropower development, which will be in compliance with the EU Environmental Directives, the requirements of the Energy Community and the recommendations of the World Commission on Dams¹².

Sustainability criteria for hydropower development are developed by various organizations based on international and European legislation as well as good practice¹³. Green Alternative, together with CEE Bankwatch Network, developed the sustainability criteria for hydropower development as far back as 2013¹⁴. The criteria were based on the problems revealed during construction of HPPs in Eastern Europe, including Ukraine and Georgia, and the ways of their solution.

Sustainability criteria were discussed with various stakeholders, including the European Bank for Reconstruction and Development (EBRD), European Small Hydropower Association (ESHA), World Wide Fund for Nature, European Commission's Energy Department and other organizations or persons. The issue is still under discussion.

The importance of strategic planning for energy sector and the ways of solving the problems related to the implementation of particular projects were outlined as the key factor in the process of determining the sustainability criteria. The following subchapters thoroughly discuss these criteria and provide the best EU practice, as we deem it important to share and introduce it in Georgia.

2.1. Need for Long-Term Energy Strategy

Over one hundred planned and ongoing small, medium and large HPP projects are not based either on energy demand assessment or strategic energy development plans. The presence of such assessment and plans would have enabled us to determine the country's real energy needs and to meet them.

The Georgian Government's hydropower development policy is in conflict with the recommendations provided by the World Commission on Dams in 2000. The World Commission on Dams has clearly demonstrated those criteria, which should be met before making decision on HPP construction¹⁵.

The World Commission on Dams recommends the country, first and foremost, to develop its strategic energy development plan, which should be based on energy demand assessment process and best scenario of meeting these needs not only from technical, economic and financial points of view, but also from environmental and social points of view.

In addition, the state has to ensure open and decentralized planning process and for this purpose it is essential to identify all stakeholders before launching the process of determining energy needs and to ensure their involvement in the discussion.

After preparing a working version of energy needs assessment, the state is obliged to organize public discussion of this document at national and/or regional level, and if needed, it is also necessary to hold consultations with target groups.

The World Commission on Dams explained the need for such actions by negative experience accumulated in the process of HPP construction worldwide – when the governments mostly focused on energy needs in their energy plans without paying due attention to social and environmental impacts of HPP construction, as well as to distribution of benefits and costs, negative effects on local communities and other problematic issues.

According to the commission's recommendation, after identifying existing needs, it is necessary to develop various scenarios of meeting energy needs, which should discuss and assess current energy policy and programs, scales of planned projects, their geographical area and how these plans meet current challenges.

¹² the World Commission on Dams (WCD) was established in May 1998 by World Bank and the World Conservation Union (IUCN), with the aim to review the development effectiveness of large dams and assessed alternatives for water resources and energy development; and develop internationally acceptable criteria, guidelines and standards for the planning, design, appraisal, construction, operation, monitoring and decommissioning of dams.

¹³ The World Commission on Dams, World Wide Fund for Nature, etc.

¹⁴ <http://bankwatch.org/sites/default/files/briefing-sustainable-hydropower-Aug2013.pdf>

¹⁵ http://www.internationalrivers.org/files/attached-files/world_commission_on_dams_final_report.pdf, p.269

In addition, already developed scenarios should undergo strategic environmental assessment in order to rule out socially and environmentally unacceptable options at an early stage of planning. Moreover, strategic environmental assessment should create a multi-criteria assessment model for already defined scenarios, where the significance of each criterion (scale of negative impact, costs, and benefits) will be determined as a result of involvement of all stakeholders. This will, in turn, provide the opportunity for scenario ranking.

Technical, economic and financial aspects, as well as environmental and social aspects should equally be taken into consideration when assessing the scenarios. If needed, additional research should be conducted for each scenario to assess whether the offered scenario meets initially defined development goals and whether it covers the issues, such as:

- The issue of optimization of investments in energy sector, which is related to rehabilitation and increased efficiency of existing HPPs;
- The issue of electricity demand management and assessment;
- Options of decentralized supplies and community initiatives;
- Issues of current energy policy and institutional reform.

Alpine Convention¹⁶ and the guidelines developed to ensure its implementation, including Common Guidelines for the Use of Small Hydropower in the Alpine Region¹⁷, is a good example of meeting the recommendations of the World Commission on Dams. It should be noted that the Alpine relief is similar to that of the Caucasus Mountains; therefore, the experience accumulated in the process of implementing the Alpine Convention might be useful for Georgian society.

Common Guidelines for the Use of Small Hydropower in the Alpine Region

The purpose for developing these guidelines was to prepare recommendations for the member states to fulfill the EU Water Framework Directive and to take into account the recommendations of the World Commission on Dams.

The key goal of the majority of members of the Alpine Convention is to increase the amount of their hydropower generation; moreover, the Convention sets strategic planning for energy development and determining the expedience of new HPPs as the primary criterion, which should be developed with the involvement of all stakeholders.

If the need for construction of new HPPs is revealed after strategic energy planning and selecting the best scenario for meeting current energy needs, the Convention supposes that the country should develop river basin management plans, where new HPP projects are planned to be implemented¹⁸. At the same time, river basin management plans should be in compliance with the requirements of the EU Water Framework Directive.

The guidelines also focus on cumulative impacts; even in case of selecting an environmentally and socially acceptable hydro power plant, implementation of many such projects in one river basin may cause irreversible negative cumulative impacts on the entire river basin. Thus, assessing cumulative impact of current and planned HPPs on the entire river basin in the process of developing basin management plans is extremely important.

The guidelines also emphasize that the designation of areas that are deliberately kept free from any exploitation, avoiding irreversible impacts, should be considered (in order to avoid irreversible impacts on the environment and landscape caused by new HPPs¹⁹), as well as a transparent evaluation and classification of the potential appropriateness of river stretches for hydropower use shall be carried out (considering hydro-electric potential, ecological and landscape value and areas under special protection)²⁰.

After the determination of the river stretches with high ecological and landscape value as a result of the strategic environmental assessment of river basin management plans, it is essential to grant them the status of "No Go Zones"²¹, where construction of any type of hydro power plant will be prohibited.

The guidelines provide necessary criteria for defining "No Go Zones" meeting of which leads to granting a "No Go Zone" status to a river stretch. According to the common guidelines, it is inadmissible to construct hydro power plants in the protected areas, landscapes and natural monuments of national or regional importance or their adjacent areas, areas of high conservation value and importance and other places.

¹⁶ <http://www.alpconv.org>

¹⁷ The Platform Water Management in the Alps (PWA) worked out common guidelines at the 10th Ministerial Conference of the Alpine Conference in Evian, March 2009. http://www.alpconv.org/en/publications/alpine/Documents/SHP_common_guidelines_en.pdf

¹⁸ http://www.alpconv.org/en/publications/alpine/Documents/SHP_common_guidelines_en.pdf. This is in full compliance with the recommendations of the World Commission on Dams, according to which when assessing scenarios for meeting energy needs, river basin management plans and projects' cumulative effects on river basins should be taken into consideration that should be ascertained as a result of strategic environmental planning.

¹⁹ Common Guidelines for the Use of Small Hydropower in the Alpine Region: Recommendation No13;

²⁰ Common Guidelines for the Use of Small Hydropower in the Alpine Region: Recommendation No 12;

²¹ So called "No go area"

The Water Framework Directive classification scheme for water quality includes five status classes: high, good, moderate, poor and bad²². 'High status' is defined as the biological, chemical and morphological conditions associated with no or very low human pressure. This is also called the 'reference condition' as it is the best status achievable - the benchmark. 'Good status' means 'slight' deviation, and so on²³.

In case of derivative HPPs, classification of river stretches is especially important for determining the so called "sanitary flow" downstream so that to select appropriate methods for determining the environmental flow²⁴, which will ensure preservation of the current river status.

2.2. HPP Project Sustainability Criteria

The below criteria do not concern the strategic process, but rather the project-level, particular HPP project planning and implementation process stemming from the project type and impact scales.

- **Involvement of all stakeholders** – upon identifying the need for the construction of new HPP, it is extremely important at the very initial stage of project development to identify timely, inform and involve all stakeholders in the decision making (screening and scoping stages), as envisaged by the recommendations of the World Commission on Dams and EU's Environmental Impact Assessment (EIA) Directive, the commitment on implementation of which was undertaken by Georgia upon signing the Association Agreement with EU.
- **Environmental flow for derivative HPPs** - In case of derivative HPPs, based on the status of the river determined as the result of classification, either a complex or simplified holistic methodology must be used to determine environmental flow.
- **Compensation measures for affected communities**²⁵ – If the project is expected to have negative social effects on local communities, the latter should be involved in the process of preparation of resettlement action plan (if the project envisages resettlement) or land and livelihood restoration plans, as envisaged by the UN International Covenant on Economic, Social and Cultural Rights or the WB and EBRD security policies, according to which people have the right to better or similar alternative land and adequate housing, also covering the existence of necessary livelihoods (labor, infrastructure and other means).

In order to minimize the impact of HPP project on the ecosystem and to take account of environmental issues as much as possible, the project must:

1. Not involve construction of any dam that blocks the river flow entirely;
2. Not derogate the current status of the river;
3. Not derogate the ecological services / functions of the river;
4. Not involve artificial mitigation like fish ladders and/or fish friendly turbines as these have been proven to be ineffective measures;
5. Not involve any physical and large scale economic resettlement;
6. Should be integrated into the existing landscape in a way that it does not cause significant visible changes or disrupt wildlife movement, as defined by the EU Landscape Convention²⁶.

²² http://ec.europa.eu/environment/water/water-framework/objectives/status_en.htm#_Assessment_of_water

²³ According to the EU Water Framework Directive, the EU member states have to ensure that good status of surface waters is achieved by 2015. To define "good ecological status", the upper and lower boundaries of good ecological status, i.e. the "high-good" and the "good-moderate" boundaries should be defined.

²⁴ Environmental flows describe the quantity, timing and quality of water flows required to sustain freshwater and estuarine ecosystems and the human livelihoods and well-being that depend upon these ecosystems (Brisbane Declaration, 2007, Appendix 1).

²⁵ As defined by the UN Special Rapporteur on Adequate Housing; October 16, 2011: "Affected parties consist not only of those who will be displaced, but also those who will be subject to any restrictions on their access to resources required for continuity of their way of life, or any loss or reduction of employment, income or means of subsistence. Affected parties also include those living around the project sites, those that may be segregated from their original communities, those living in or near resettlement sites, and downstream communities in the case of a dam project. owners and non-owners, renters, sharecroppers, partners, occupants, lessees, informal workers, for example, may be considered as the affected community

²⁶ In line with the European Landscape Convention.

Recommendations

To implement the EU-Georgia Association Agreement and to ensure sustainable development of the energy, it is essential for Georgia to introduce and use globally recognized environmental impact assessment and planning tools.

It is urgently needed to start assessment process of the country's energy demands and on its basis to develop strategic energy development plan; simultaneously, it is important to think over moving to water basin management system and to determine the status of the rivers and river stretches.



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