Strategic Environmental Assessment
Proposal
for Energy Planning in
DEVOLL RIVER

February 2010
Devoll Hydropower Project

Draft Strategic Environmental Assessment

Executive Summary
1 SCOPE AND PURPOSE OF SEA

1.1 Definition of SEA and EIA

The requirements of Strategic Environmental Assessment are defined in Article 5 of the Law on Environmental Impact Assessment of 2003. In §1 the Law says that the SEA relates to: “Strategies and action plans on energy, mines, industry, transport” and the study shall be compiled by (§2) “State organ or natural or juridical person that submits a proposal in accordance with Paragraph 1”. This requirement is established to follow the commitments of the Protocol on Strategic Environmental Assessment to the UN ECE Convention on EIA in Transboundary Context (Kiev, 2003).

The difference between a SEA and a “traditional” EIA is:

- SEA refers to assessment of Policies, Plans and Programs, and
- EIA refers to assessment of specific Development Projects.

The two processes are to a large extent complementary. The SEA is "up-stream" and is linked to the process of identifying environmentally sustainable alternative for development and preferred options at an early planning stage, whereas the EIA is a "down-stream" process and refers to assessment of specific projects, ideally coming out of the earlier strategic process.

1.2 Devoll Hydropower SEA

The Ministry of Economy, Trade and Energy issued in June 2003 the document National Strategy of Energy and Plan of Action. This strategy has been updated into the new National Energy Strategy 2009 – 2020. So far, no SEA has been prepared in conjunction with the issuing of this strategy.

Joint Venture - Devoll Hydropower Sh.A. (DHP) is not a legitimate party to participate in the preparation of a National Strategy or Plan for energy development in Albania. Consequently DHP can not be responsible for preparing a SEA with such a general or national focus.

The first phase of the Devoll Hydropower planning might, however, be seen as a strategy for “Hydropower Development in Devoll River Basin” and not a study for a specific project. I.e. the Screening Phase of the Devoll Project can be seen as a “Devoll Hydropower Strategy”.

Thus the main focus of the Devoll River SEA is:

- Clarify regulatory conditions and limitations for the planned hydropower development within this environmental and social setting;
- discuss the proposed option and alternative hydropower options and no-action option from a social, and environmental perspective,
- clarify that the approach for optimising energy production with the minimal social and environmental impacts, to ensure sustainable use of the resource pursuant best international standards,
- provide information on opportunities and limitation on future land use and projects resulting from the planned hydropower development,
- identify critical issues and needs for further study.
2 HYDROPOWER DEVELOPMENT

Albania is being confronted with an increasing demand for electric energy. A gross production of around 4,400 GWh is contrasted to an overall yearly demand of around 6,500 GWh to 7,000 GWh, and increasing significantly (EVN, 2007). Only 35% of Albania’s hydropower potential is presently developed.

In its engagement of hydropower development in Albania EVN AG, an Austrian based leading utility company, with major investments in Eastern and South Eastern Europe, focused particularly on hydropower development schemes in the south part of the country. This included Devoll, Osum and Vjosa (incl. Drin) rivers. From a more thorough and intensive investigation, it became evident that the potential in these river systems should be developed in a coordinated manner. This would be the best way for Albania to guarantee the optimal utilization of its hydropower potential.

On 30.06.2007 the National Water Council gave their Approval in Principle that the Devoll River could be developed for energy production.

In 2008 EVN AG joined with Statkraft AS, the Norwegian based European leader in renewable energy, and formed a Joint Venture - Devoll Hydropower Sh.A. (DHP). On 1st April 2009, DHP was together with their owners officially awarded the Concession to develop the hydropower potential in Devoll River and its tributaries. The Concession Area covers the middle reaches of the Devoll River between the town of Maliq in Korçë District and the village of Banjë in Elbasan District.

The CA identifies a three step development scheme to harness the whole hydraulic potential of the Devoll River between elevations 810 masl and 95 masl. The envisaged cascade consists of three hydropower plants (in an upstream to downstream order) with the following names and capacity estimates:

- Lozhan-Graboves Plant with an installed capacity of 160 MW
- Skenderbegas-Cekin Plant, 114 MW
- Banjë Plant 45 MW

The first two plants are high head schemes with an annual storage capacity. The Banjë Plant, which represent the completion of half finished structures, is a medium head plant with a reservoir able to modulate the highly varying outflow of the two upstream plants during a day and provide a more stable supply of water for irrigation further downstream.

The CA is, however, flexible as to the precise scheme layout. This allowed for a more detailed analysis including location of dams, power stations, tunnels etc. as long as the basic parameters for the basin development as a whole were met. Based on this several rounds of scrutiny of location and design alternatives has taken place.

3 OTHER DEVELOPMENT PLANS AND SCENARIOS

Hydropower development can not be carried out in isolation or decided based on only a narrow technical scope. The water and land resources to be developed and impacted must be considered also in the context of other uses than hydropower. To a certain degree this is regulated by the CA where it is stated that the Concessionaire shall respect and preserve existing water use rights. Further considerations of use conflicts and opportunities are integral aspects of the ESIA process.
3.1 Irrigation

Several water rights exist for using Devoll water for irrigation. Usage of existing rights in the upper part of Devoll might influence the water available for hydropower production downstream, whereas the downstream water rights might be influenced by operation of the power plants.

On the Korçë Plain the irrigation practices today do not reflect the levels of usage that once occurred. Today the irrigation is undertaken for individual small scale farmers. However, with the continued reforms and investments it is likely that irrigation demand will to grow. This is in particular the case where investments in the form of World Bank projects have occurred. It is reported by the Korçë Drainage Board that additional reservoirs are planned on the Devoll River tributaries.

Statements from local experts indicate there is little or no flow in the Devoll River at Maliq Bridge in the summer months. This is a problem for the ecological function of the River as well as for downstream water users, including hydropower generation. Given the activities and plans outlined by the Drainage Board there is a risk that summer river flows of Devoll could decline further.

According to the Ministry of Agriculture, the seasonal requirement of irrigation water in the downstream reach is a summer flow of 90 million m$^3$.

With the planned operational regime of the Devoll Hydropower plants, (Upper reservoirs operating for seasonal storage and Banjë operating with combined base-load and peaking production) there appears not to be a conflict between power production and irrigation requirements. On the contrary the regulation provided by the dam will be more stable water flow and improve the water quality through lower sediment loads.

3.2 Transport

The road infrastructure and development plans are described in the Albania - National Transport Plan from 2005.

Albanian Development Fund (ADF) is an implementing agency for the Albanian Government established in 1993 with focus on the reduction of poverty in rural regions. One major project carried out by the ADF is the rehabilitation of secondary and local roads supported by World Bank and other donors. The ADF programme for rehabilitation of secondary and local roads include the sections Ura e Devoll - Skenderbegas and Bulcar - Lenie, both in the central part of the project area.

As reservoirs are planned in the main Devoll River and tributaries the existing roads on potential reservoir sections will need to be relocated. Approximately 28 km of new road has to be constructed along the Banjë reservoir. Also the Moglice, Lozhan and Skenderbegas dam alternatives will result in substantial relocation of major roads.

3.3 Agriculture

The future agricultural development in the basin will be influenced by both the future irrigation prospects and the development of the transport infrastructure.

Agriculture is the main economic activity in the Basin and is in particular important on the Korçë Plains. As a result of land ownership reforms following the system changes in the early 1990ies, the sector is currently facing serious problems linked to low productivity and lack of market orientation. The many units of small farms with outdated equipment and farming practices are the main problem.
Unification of the small farms into larger ones would create the possibility for the modernization and mechanization of the agricultural sector. This would increase productivity and the competitiveness of Albanian products in the region.

3.4 Tourism

Transport infrastructure is also an important factor in realising the tourism potential in the region.

The Korçë city and district sees the use of its historical, cultural and natural resources to improve the mid- and long-term revenues from the tourism sector.

The lower part of Devoll catchment has less to offer in terms of historic and cultural monuments and the development of the nature based tourism is today obstructed by the poor quality of the roads in the mountainous areas. However, the Elbasan Regional Authorities particularly mention tourism based on ecotourism and hiking, as a focus area for future economic development in the region.

3.5 Industry

The main industrial development prospects are related to the food processing industry. Food processing is, however, an industrial sector with a high potential for water pollution.

The coal mines at Lozhan have been closed for several years and are not likely to be reopened in the future. Thus the primary basis for the settlements of Lower Lozhan including its military post has been lost. This village is therefore or in urgent need of new economic activities.

3.6 Spatial Planning

There is a new Law on Spatial Planning which would enter into force in March 2010. This new law provides that the local authorities are in charge for developing Local Land Use Plans of their administrative area. Such Spatial Plans shall be compiled within a period of 12 to 24 months. The Devoll Hydropower SEA will provide important input to such plans for the communities influenced by hydropower development.

4 ANALYSIS OF ALTERNATIVES

4.1 No-Development Alternative

The present situation shows that the electricity balance in Albania has become critical. Albania has become net importer of considerable quantities of power. Unless new power plants are constructed it is expected that the import will continue to increase if the growing demand is to be satisfied.

A “no-development” alternative for hydropower in Devoll would make the efforts to improve the energy situation in Albania difficult and consequently have serious negative impacts on economic and social development in the country.

With a decision to not implement the Devoll Hydropower Plans the negative impact of inundation and construction work will be avoided in the local communities. The river ecosystems will also be more or less kept in its natural condition. On the other hand, the opportunities for district and local development through job creation, improved transport and generally increased economic activity in the project area will not materialise.
Figure 1: Alternative power plant sites and dam sites studied
4.2 Technical Alternatives

A series of different dam sites and reservoir alternatives as well as location of power plants has been investigated. The most relevant combinations of elements have been identified for more detailed assessment. These element groups or concepts are:

- EVN BC. This concept was developed by EVN and is identical with the concept described in the Concession Agreement.
- SK BC. An alternative concept developed by Statkraft
- NC 1-4. Different alternatives analysed by Norconsult for the EST Team.

An overview description of the basic features of these concepts is shown in Table 1. The alternative dam sites and power station locations are indicated on Figure 1.

Table 1: The Alternative Combinations of Dams and Power Stations in Devoll River Basin

<table>
<thead>
<tr>
<th>Alternative Concepts</th>
<th>Upper part</th>
<th>Lower part</th>
<th>Water Flow Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>EVN BC</td>
<td>136 m dam at Lozhan</td>
<td>70 m dam at Skenderbegas</td>
<td>About 65 km reduced water flow in river and tributaries</td>
</tr>
<tr>
<td>SK BC</td>
<td>56 m dam at Lozhan</td>
<td>40 m dam at Skenderbegas</td>
<td>About 65 km reduced water flow in river and tributaries</td>
</tr>
<tr>
<td>NC 1</td>
<td>71 m dam at Lozhan</td>
<td>40 m dam at Kokel and 5 m weir at Tomorrice</td>
<td>About 80 km reduced water flow in river and tributaries</td>
</tr>
<tr>
<td>NC 2</td>
<td>140 m dam at Moglice</td>
<td>40 m dam at Kokel and 5 m weir at Tomorrice</td>
<td>About 60 km reduced water flow in river and tributaries</td>
</tr>
<tr>
<td>NC 3</td>
<td>136 m dam at Lozhan</td>
<td>40 m dam at Kokel and 5 m weir at Tomorrice</td>
<td>About 80 km reduced water flow in river and tributaries</td>
</tr>
<tr>
<td>NC 4*</td>
<td>140 m dam at Moglice</td>
<td>40 m dam at Kokel and 5 m weir at Tomorrice</td>
<td>About 60 km reduced water flow in river and tributaries</td>
</tr>
</tbody>
</table>

* NC 4 is similar to NC 2 except for the location of the power plant

Technical alternatives of the Banjë project have also been discussed but the basic lay-out is similar to the earlier plans. The final design of the Banjë plant will not be influenced by the upstream hydropower plants and its design features are independent of the choice between the upstream “Concepts”.

From an environmental and social perspective, the dominating differences between the different group concepts are associated with inundation and dewatering of river reaches. Thus the main design factors of importance are the location and heights of dams and nature of rivers directly affected by the diversion of water for power production.

Table 2 shows a preliminary assessment of a few crucial environmental and social impacts associated with hydropower project of this character.

It must be noted that the assessment is based on only preliminary field surveys and is at this stage, based on purely qualitative judgement. The potential positive environmental and social impacts of the project alternatives are not addressed. Positive impacts are primarily of regional character and will therefore not differ significantly between the scheme alternatives.
Table 2: Assessment and Ranking of Environmental and Social Impacts of the Main Project Concepts

<table>
<thead>
<tr>
<th>ESIA Criterion</th>
<th>Scheme Alternative</th>
<th>EVN BC</th>
<th>SK BC</th>
<th>NC 1</th>
<th>NC 2</th>
<th>NC3</th>
<th>NC4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Displacement of people and compensation for properties</td>
<td></td>
<td>+ + +</td>
<td>+ +</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Re-settlement needs</td>
<td></td>
<td>+ + +</td>
<td>+ +</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Impact on socio-cultural values</td>
<td></td>
<td>+ + +</td>
<td>+ +</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Risks of socio-economic upheaval</td>
<td></td>
<td>+ +</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Productive land lost</td>
<td></td>
<td>+ + +</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Ecosystem Impacts - aquatic</td>
<td></td>
<td>+ + +</td>
<td>+ +</td>
<td>+ +</td>
<td>+ +</td>
<td>+ +</td>
<td>+ +</td>
</tr>
<tr>
<td>Ecosystem impacts – terrestrial</td>
<td></td>
<td>+ +</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Forest lost and need for replanting</td>
<td></td>
<td>+ +</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Water user impacts</td>
<td></td>
<td>+ +</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Environmental and social ranking of project alternatives</td>
<td></td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>4</td>
<td>1</td>
</tr>
</tbody>
</table>

In the ranking the impacts the following categories and symbols have been used: High negative – – –, Medium negative – – , Small negative –, Insignificant 0.

The preliminary conclusion is that the Devoll Hydropower Project can be developed to the positive benefit of the local population and their environment - provided appropriate mitigation is put in place. All alternatives seem to be acceptable from an environmental and social viewpoint.

5 BASIN CHARACTERISTICS

![Figure 2: Devoll River Basin](image)

Figure 2: Devoll River Basin
5.1 Devoll River Basin

Devoll River is the largest tributary of Seman River. At its confluence with Osum, where it changes name to Seman, the size of the Devoll watershed is about 3,140 km² (Figure 2).

Several secondary tributaries join the main Devoll River, the largest being Tomorrice River joining Devoll just upstream of Gramsh. Other major tributaries are Malsise River in the middle reach and the Dunavecit River in the upper reach.

5.2 Hydrology and Water Quality

The flow regime of Devoll River is determined by precipitation and snow melting. This has resulted in two periods of high flow maximums; one in November/December and one in March/April. At the Kokel gauging station upstream of Gramsh, the highest mean monthly flow is observed in April (approximately 45 m³/s). The lowest flow is observed in August (approximately 7 m³/s). Devoll is characterised by heavy floods. These events occur from September until April. No floods are observed during the summer months. The largest observed flow at Kokel station was in October 1982 (422 m³/s).

The hydrology of the Korçë Plain is complex due to the intensive withdrawal of water for irrigation and the manipulations of the natural flow pattern by a maze of channels and seasonal pumping from one drainage zone to the other. Presently the irrigation network system is partly defunct and thus the flow volumes and directions are even more difficult to comprehend than when it was fully functional.

In the mountainous areas groundwater provides for an important part of the water supply and is extensively used for domestic water supply, irrigation and even small hydropower. The smaller tributaries to Devoll and its main branches appear to generally being groundwater fed during the dry season.

The sediment content in the river water is very high in particular in flood periods. At Gramsh, after river Verces and Tomorrice have joined, the annual load is calculated to 4.4 mill. m³. Until Kozare the annual load is doubling again to 8.8 mill. m³.

According to the UNEP “Post-Conflict Environmental Assessment - Albania” (UNEP, 2000) Devoll River at its Korçë plain section, is suffering from agriculture based pollution (nutrients and pesticides?) and from Maliq and about 20 - 25 km downstream is indicated industrial/mining pollution. The discharge of domestic waste water from Gramsh seems not to have had a major impact on the general water quality. The lower section of Devoll is heavily polluted from the run off of oil fields of Kuçovë. The intensive agriculture in this part also indicates significant load of agrochemicals to the river in this reach.

5.3 Climate

The catchment of the Devoll River covers a large area from the east border of the country to the confluence with Seman River. Thus the river passes through zones with different climatic conditions. According to the categories of climatic regions in Albania, the upper reaches of the river belongs to the South-East Mountain Mediterranean zone, the middle reaches to the South Pre-mountain Mediterranean zone, while the downstream reaches belongs to the Central Hilly Mediterranean zone. The main characteristic of these climatic zones is dry summers and wet winters.

5.4 Topography

The Devoll valley lies within the mountainous region of the country and has a diversified topography.
In its first section Devoll River transverses the Korçë plain. Downstream Maliq the river runs through a relatively broad valley with smooth flanks. West of Lozhan the valley narrows into a V-shaped gorge. Only on a few places does the valley widen and form smooth, gently inclined slopes. The surrounding landscape has an alpine character with predominantly narrow valleys and peaks of up to 2,100 m altitude. The steep and narrow character of the valley prevails until Kokel, around 9 km east of Gramsh.

Downstream of Kokel the river meanders in a wide valley with a broad gravel body in the river bed, the flanks of the valley becoming increasingly smooth as it leaves the mountainous region. This smooth character of the Devoll Valley with voluminous sediment deposits in the riverbed prevails almost down to Kuçovë.

5.5 Mining

Lozhan was a centre of coal mining in Devoll Valley. With the changing of the political and economic system after 1990 the mines were closed only allowing operation at a minimal scale for local consumption.

As Devoll River widens downstream of Kokel, the riverbed as a whole is used as a gravel resource, where numerous small pits, private and commercial, are operated. Sand and gravel are found well sorted in the riverbed. At Gramsh small industries for producing concrete building elements have been established based on river deposits. A few kilometres downstream Banjë large scale gravel mining and concrete industries are established on the river deposits.

5.6 Fish

11 fish species have been positively identified in the part of Devoll River considered for Hydropower development. There is a clear dominance of different species of the Carp family. In addition, European eel has been documented upstream of the Banjë dam (Rakaj, 1992). Of the identified species only the Eel is able to carry out long distance migration.

All fish species are harvested (sometimes by dynamite fishing) and consumed locally. In a less subsistence-type economy, however, the economic value of the fish stock would be marginal.

5.7 Terrestrial Flora and Fauna

The region has forests of Black pine and other conifers as well as Oak forests (mostly low and underdeveloped). Slopes are partly covered with a degraded Mediterranean maquis.

At higher altitudes are found natural meadows with associations of bushes and shrubs.

No systematic overview of the terrestrial fauna in the Devoll catchment or the Project Area has been produced so far. Scattered information and reports from local informants have included the mammals; Brown bear, Wolf, Golden jackal, Wildcat, Red deer and Chamois. Tracks and droppings of Otter had been found in the whole length of the River.

The Karavasta Lagoon at the estuary of Seman has a particularly rich birdlife. The species includes the Dalmatian Pelican and the Pygmy Cormorant, both listed as endangered species.

5.8 Nature Protection

No National Parks or formally protected areas are found in impact zone of the Devoll Hydropower Project. However, some protected areas are found within or close to the catchment of Devoll River. These are:

- Tommori, National Park
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- Prespa Lake, National Park,
- Maliq Wetlands

Between the estuaries of Seman and Shkumbini Rivers is located the Karavasta Lagoon, which is part of the Divjaka-Karavasta National Park and it is a RAMSAR site. It contains a number of habitat types and is regularly supports high numbers and diversity of waterfowl.

5.9 Municipal Waste Water and Solid Waste

The waste water discharges within the Devoll catchment area mainly are generated in the centres Korçë, Bilisht, Miras and Maliq in the upper breaches, and Gramsh and Gostimë in the lower part of the project area. In Korçë, a sewer system is about to be completed. In the other villages or settlements, either the sewage system is either insufficient or missing.

Just outside Maliq is found a major waste disposal site on the left bank of Devoll River. The deposits seem to consist of mixed municipal and industrial waste and leachate is likely to reach into the Devoll River.

5.10 Cultural Heritage

This whole area of the Korçë plain and the upper Devoll River Valley is particularly rich in prehistoric sites. It is considered to contain some of the most important sites for the prehistory of the country. The sites have been extensively studied and have produced not only a large body of data, but also a detailed chronological and typological sequence starting with the early Neolithic and continuing up to the late medieval period.

According to the Institute of Cultural Heritage the central Devoll Valley is low in cultural monuments. There are few remains of old castles on higher elevations surrounding Devoll River and 2 stone bridges in the Devoll River valley. It is however not yet identified if these monuments might be impacted by the planned hydropower development.

5.11 Administrative Structure and Settlements

The Devoll catchment belongs to three regions. Most of the area is within Korçë and Elbasan region and a small mountainous part of Berat region.

Korçë is the name of a District and its largest town. The plains of Korçë District have the second largest surface area of agricultural land in the country. The plateau is highly fertile and is one of Albania's main wheat-growing areas. Thus Korçë has a long history of being a commercial and agricultural centre. It has also redeveloped a substantial industrial capacity in particular related to food preservation and processing and textiles.

The Devoll Valley between Maliq in the East and Kokel in the West is part of a mountainous, relatively sparsely populated region in the Southeast of Albania and belongs to the province of Korçë. With only a few exceptions all settlements and villages are situated on the higher flanks of the roughly E-W striking Devoll River valley.

The economy in the Devoll valley is dominated by agriculture. Wherever possible the land is cultivated by local farmers, mostly for self supply or to sell the agricultural products in nearby marketplaces.

Gramsh is the District covering most of the lower part of the Project Area. It is also the name of the largest town and most important town in the central Project Area. It has a population of around 11,500 and is located near the upper part of the partially constructed Banjë reservoir.
The main industrial activity in Gramsh was initially dominated by military production. This has disappeared and trade and industry is today largely linked to agriculture, farming implements and other input provision as well as market place.

Gramsh is one of the poorest Districts in Albania. 80% of the town’s citizens are unemployed partly due to the loss of factories although Gramsh’s geographical position and poor roads is a factor in its poverty.

5.12 Irrigation Infrastructure

The irrigation situation on the Korçë Plain is very complex. In the past there was an advanced network of channels and pumps. The system is today partly defunct but some elements and sections are still operational. The system consists of formal Government schemes (both active and abandoned), private surface and shallow groundwater pumping and irrigation based on tributaries with and without reservoirs.

According to a Ministry of Agriculture inventory there are 51 pump schemes in the river valley between Maliq and Banjë. However, all except one of these are today non-operational. The last time of operation was in 1991. Private gravity schemes are found on tributaries and on springs in Devoll Valley and some 10 irrigation reservoirs exist in the headwaters.

There has been a major and repeated concern that the plans for Banjë hydropower plant will be in conflict with the maintenance of 90 million m³/yr demand to the downstream Lushnjë and Fier irrigation areas via the 8.5 km² Thana Reservoir. The irrigation assessment indicates that the figure of 90 million m³ is much more than what can be supplied today. Many of the downstream channels are in disrepair and clogged by silt.

6 POTENTIAL IMPACTS AND MITIGATION

The different hydropower alternatives considered for Devoll River development have a wide spectre of environmental and social impacts. A detailed and quantified assessment will, however, require a high level of technical specification in terms of localisation, constructional arrangements and operational details, which is not available at this strategic level. At this stage the majority of the impact predictions are “generic” in the sense that they are impacts which normally are associated with hydropower and other larger water related infrastructure projects.

A preliminary assessment of the severity of various forms of impacts that might result from development of hydropower schemes in Devoll River Basin is presented in Table 3. An indicative listing of most relevant mitigation measures is also given.

Table 3: Preliminary Summary of Impacts

<table>
<thead>
<tr>
<th>Issue</th>
<th>Preliminary Impact Ranking</th>
<th>Relevant Mitigation Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Climate</td>
<td>+</td>
<td>None</td>
</tr>
<tr>
<td>Geology, Topography, Seismology</td>
<td>0</td>
<td>None</td>
</tr>
<tr>
<td>Soils</td>
<td>0</td>
<td>None</td>
</tr>
<tr>
<td>Mining</td>
<td>0</td>
<td>None</td>
</tr>
<tr>
<td>Hydrology and Flow Regime</td>
<td>–</td>
<td>Environmental flow release; Reservoir operation rules</td>
</tr>
<tr>
<td>Issue</td>
<td>Preliminary Impact Ranking</td>
<td>Relevant Mitigation Measures</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>----------------------------</td>
<td>------------------------------------------------------------------</td>
</tr>
<tr>
<td>Water Quality and Pollution</td>
<td>−</td>
<td>Environmental flow release; Selective withdrawal at intakes; Construction pollution control</td>
</tr>
<tr>
<td>Fish and Aquatic Ecosystems</td>
<td>− − −</td>
<td>Environmental flow release; Habitat enhancement; Reservoir fisheries enhancement</td>
</tr>
<tr>
<td>Terrestrial Fauna</td>
<td>−</td>
<td>Habitat protection and enhancement</td>
</tr>
<tr>
<td>Flora – Terrestrial Vegetation</td>
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<td>Habitat protection and enhancement</td>
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<tr>
<td>Nature Protection</td>
<td>0</td>
<td>Compensatory protection initiatives</td>
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<tr>
<td>Forest</td>
<td>−</td>
<td>Reforestation; Compensation</td>
</tr>
<tr>
<td>Cultural Heritage</td>
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<td>Salvage; Chance find procedures</td>
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<td>Regional Development Impacts</td>
<td>+ +</td>
<td>Local and regional employment</td>
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<tr>
<td>Land Use</td>
<td>−</td>
<td>Compensation; Support Projects</td>
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<td>Resettlement</td>
<td>− −</td>
<td>Compensation; Support Projects</td>
</tr>
<tr>
<td>Water Rights and Water Use</td>
<td>−</td>
<td>Compensation; Support Projects</td>
</tr>
<tr>
<td>Access and Infrastructure</td>
<td>− (+)</td>
<td>Compensation; Support Projects</td>
</tr>
<tr>
<td>Local Job Creation</td>
<td>+</td>
<td>Contractual conditions; Capacity building support</td>
</tr>
<tr>
<td>Water Use Conflicts within CA</td>
<td>−</td>
<td>Replacement projects; Reservoir operation rules</td>
</tr>
<tr>
<td>Downstream Irrigation</td>
<td>++</td>
<td>Improved security for inflow to Thana Reservoir</td>
</tr>
<tr>
<td>Coastal Geomorphology</td>
<td>−</td>
<td>Release of sediments from the dams</td>
</tr>
<tr>
<td>Upstream Irrigation and Water Abstractions</td>
<td>− −</td>
<td>Impact by environment on project; Negotiations</td>
</tr>
<tr>
<td>Emission of Green House Gases</td>
<td>0</td>
<td>None; Documentation of net emission</td>
</tr>
</tbody>
</table>

In the ranking the impacts the following categories and symbols have been used: High negative − − −, Medium negative − − , Small negative −, Insignificant 0, Small positive +, Medium positive + +, High positive + + +, Uncertain ?. 

7 TRANSBOUNDARY ISSUES

The whole of Devoll River catchment belongs to the territory of Albania. Thus the River can not be classified as an international or trans-boundary river. The ESPOO Convention "On Environmental Impact Assessment in a Transboundary Context" and the Helsinki Convention "On the Protection and Use of Transboundary Watercourses and International Lakes" do not apply for development projects in Devoll River Basin.

The Devoll River hydrology has, however, a few linkages to neighbouring countries that is worth commenting. In the upper part the artificial channel and pumping schemes on the Korçë Plain have allowed for some interaction between the Devoll basin and the Prespa Lake basin (shared with Greece and FYR Macedonia). In the downstream end the impacts on water flow and water quality of Devoll might have an impact on Seman River and consequently on costal areas and the international waters of the Adriatic Sea.