

Independent Expert Review of

Environmental Impact Assessment on the Cambodian Side of the Srepok River due to Hydropower Development in Vietnam prepared by SWECO Groner for Electricity of Vietnam, Draft January 2006 and Final November 2006.

January 2007

The SWECO environmental impact assessment (EIA) on the Cambodian side of the Srepok River due to hydropower development on the Vietnamese side of the river (hereafter referred to as ‘the SWECO report’) recognizes that the Srepok river is a critical resource for at least 11,000 people in communities along the river in Ratanakiri, Stung Treng, and Mondulakiri provinces. The SWECO report predicts that hydro development as currently planned will have serious negative impacts on people’s livelihoods and food security. It also describes possible mitigation measures to reduce or avoid impacts from construction and operation of the Srepok dams, five of which are now under construction.

The report notes that baseline data for the Srepok River is inadequate. It fails to present information needed to support many of its conclusions and its analysis of mitigation options are incomplete.

The report acknowledges that more detailed EIA studies, analysis of mitigation options, and consultations with affected people and other concerned parties, should be done before approval and construction of each hydropower project, in accordance with international standards.

However, the reality is that five out of six hydro dams planned by SWECO and Electricity of Vietnam are now under construction on the Vietnamese side of the Srepok river. The largest hydro dam in the Srepok cascade has been under construction since 2003. This means that serious negative impacts can be expected to have already materialized or will occur in the near future.

The reviewers find the SWECO report incomplete and inadequate as a basis for project approval and investment decision making. Further work is required for the SWECO report to meet international EIA standards for planning and building large-scale hydropower projects on an international river. The SWECO report should not be considered final until the comments of the 12th January consultation are incorporated.

Additional comments are provided as follows:

1. Inadequate EIA Process

The January 12th workshop in Phnom Penh was requested by NGOs and community representatives and will mark the first time affected people in Cambodia have the opportunity to meet with the Srepok hydro project developer and relevant government representatives on both sides of the border to provide feedback on SWECO’s draft EIA report, and convey their concerns about Srepok hydro development to the project proponents directly. This is an important first step but still inadequate for addressing imminent project impacts and increased poverty along the international Srepok river.

The Srepok EIA report is based on the experience with hydropower development along the Se San River but the Se San EIA report, also prepared by SWECO in 2005, has still not been released to Cambodians even in draft form. No information about upstream impacts and stakeholders in both Se San and Srepok EIA reports has been provided. Comments and feedback from downstream Cambodians has not yet been incorporated into SWECO's report. Until this point, the burden has been on affected Cambodians to request the consultants' two EIA reports, to request its release and translation into local languages, and to request the opportunity to review the report in Cambodia with the project proponent and consultants responsible. This does not meet the requirements of an international EIA process.

EIA process does not meet Vietnam standards

The quality of an EIA depends upon timely public input, comments, and feedback from affected people and all concerned parties at all stages of project development. SWECO's 2-week visit to northeast Cambodia in 2005 does not constitute adequate consultation for a transboundary EIA.

Vietnam's 2005 Law on Environmental Protection specifies the following:

During the EIA preparation process, comments and feedback from commune-level People's Committees (PCs) and representatives of local communities within the project area as well as opposition to project implementation or environmental protection measures must be incorporated as key contents of the EIA report;

During the EIA appraisal process, local organizations, communities and individuals are entitled and encouraged to provide comments, feedback and requests on environmental protection issues to the project appraisal and approval authorities. The project appraisal and approval authorities are then responsible for taking into account all these comments, feedback and requests before any conclusion/decision is made;

The approval of the EIA report must be reported to the local PC where the project will be implemented. Information on waste types, treatment technologies, environmental standards and environmental protection measures must be made public and posted at the project site for the purpose of public access, inspection and supervision.

International and Vietnamese standards for EIA require public consultation before project approval and start of construction in order for public comments to be taken into account in project design and operation. Now that construction is underway, further consultation on design, operation and mitigation is required, in accordance with international standards.

2. No Assessment of Compensation and Benefit-Sharing Options

The SWECO report acknowledges that there will be significant downstream impacts while the electricity benefits are intended for Vietnam. In accordance with international and regional standards recognizing that dam affected people are entitled to fair and timely compensation for damages to their resources and livelihoods, the report fails to include a downstream compensation plan and budget over the project's life, including construction phase. Without an accurate assessment of compensation and revenue-sharing options (i.e., provision of electricity to affected

communities or revenue-sharing), as well as environmental mitigation costs, decision makers in Vietnam and Cambodia do not have an adequate basis for decision making.

3. No Cost-Benefit Analysis

The SWECO report fails to demonstrate that the six dams proposed by SWECO and EVN are the least-cost and most reliable options for providing peak power to Vietnam, particularly in the dry season when demand is highest and hydro output is least reliable.

This is a standard component of EIAs for any major power project investment. The cost-benefit analysis should include the cost of providing backup power in the likely event that production at any one of the Sre Pok dams is curtailed by drought or water shortages due to other factors (i.e., reservoir leakage, competing water supply demands on the reservoirs and river).

The economic rationale for the proposed Duc Xuyen dam warrants particular scrutiny given its dam height (71 metres high) and relatively large-scale reservoir (55 square kilometres) with only 45 MW of installed generating capacity.

4. Inadequate Data and Environmental Impact Assessment

The water quality survey presented in the EIA report, conducted by MOWRAM between May 2004 and May 2005, provides a basic picture of the Srepok River's water quality. The survey results should be taken as rudimentary, however, because only basic water quality parameters are measured, sampling is infrequent, samples were collected at only one sample point, and a limited number of samples were collected. The EIA notes that water quality data from the Vietnam side of the border was also collected as part of the National Hydropower Plan, although this data is not presented in the EIA report.

During the Srepok water quality survey Suspended Sediment (SS) loads were not measured despite the importance of this parameter to water quality and ecological systems such as fisheries. The empirical methodology presented in the report to extrapolate SS from turbidity measurements is not rigorous, and turbidity measurements were not made during the rainy season leaving a gap in the data (May – Nov 2004). Turbidity measurements should be collected during the rainy season to complete the data set and included in the final SWECO report. SS measurements should also be made for the baseline case.

A baseline survey of periphyton and bottom dwelling animals (aquatic organisms) has not been conducted and should be included in the final SWECO report. These animals are susceptible to increased sediment loads as a result of dam-induced erosion, with consequent negative impacts on fisheries production. Baseline data is important if negative ecological impacts from erosion are suspected and need to be verified.

The operation of Srepok 3 to generate peak power will result in significant erosion along the Srepok River between Srepok 3 and 4, leading to sediment accumulation in the Srepok 4 reservoir. This will result either in a decreasing capacity of the Srepok 4 reservoir itself or downstream impacts from occasional flushing of the Srepok 4 reservoir to remove settled sediment.

As well, if Srepok 4 is operated as a re-regulation reservoir, during normal operation water discharges can be expected to have a low sediment load. This water, known as ‘hungry water’, will cause erosion downstream of the dam even without significant diurnal water variation. The EIA does not take into account this phenomenon.

The report fails to analyze sediment transport before or after hydropower development, and its impact on downstream water levels, fish habitat, water quality, and the ability of Srepok 4 to function effectively as a re-regulating dam. This analysis should be included in the final SWECO report.

Misleading claims about water quality improvement

The SWECO report suggests that because the hydropower reservoirs will trap nutrients and bacteria, this may result in improved water quality downstream. This statement is misleading, as nutrient trapping in the reservoirs could lead to blue-green algae blooms that would release toxins into the reservoir water that will be transported downstream.

5. Mitigation Measures

The report proposes the following measures to mitigate impacts:

- Using Srepok 4 as a re-regulating dam
- Prolong the wet season filling of the reservoir
- Reduce the nutrient inputs to the reservoir
- Consider establishing fish stocking program
- Develop program for aquaculture
- Protected area – artificial nesting and breeding sites; warning system
- Mitigation of socio-economic impacts in the downstream area
- Planning of social mitigation

The SWECO report is not clear which mitigating options, if any, will be implemented, by which responsible agencies, and at what cost. Also, the technical and economic feasibility of the proposed options, and public acceptability, has not been established. This should be clarified in the final SWECO report.

No environmental management and monitoring plan

We note that downstream environmental mitigation plans, which should be a part of any cross-border EIA, are not presented in this report although Solution 5 in the Vietnamese Prime Minister’s 5 Solution plan (2000) for the Se San River stipulates that an environmental mitigation plan must be completed.

Chapter 7 of the SWECO report describes the need for an Environmental Management Plan and Environmental Monitoring Plan. The proposed parameters for water quality monitoring appear comprehensive to monitor basic river characteristics. The sample schedule should take account of the timing of water releases from the dams during construction and operation.

The monitoring themes for Land Use and Biodiversity, and Social Consequences (sections 7.2 and 7.3) lack detail however. Considering that construction has already started on 5 dams in the cascade, there is an urgent need to immediately proceed to consultations with affected communities in order to develop a publicly acceptable and effective environmental management and monitoring program, in accordance with international standards.

6. Inadequate Modelling and Analysis of Different Operating Scenarios and Downstream Impacts

No modelling of Srepok cascade

The EIA report does not provide any discussion or modelling of the combination of the four or six hydro dams operating in combination, as would be required in an international standard EIA, and how this might affect the size of the proposed re-regulating reservoir and its capacity to regulate flows, particularly if all dams are operating for peak load (high water volume discharge) at the same time.

Re-regulating dam analysis misleading and incomplete

The proposed operational regime for Srepok dams, including Srepok 4 as a re-regulating reservoir, will result in downstream flows during the dry season that are higher than normal and wet season flows will be lower. This operational regime also reduces the amount of land available for river bank agriculture during the dry season and is likely to be a significant cause of migratory disorientation in migratory fish, among other ecological changes. The SWECO report incorrectly assumes that a re-regulating dam will reduce impacts on riverbank erosion and agriculture to insignificant levels.

The report should clearly present the new dry season flow (expressed in cubic metres per second) month by month based on operating Srepok 4 dam as a re-regulating reservoir. A comparison with the natural dry season flow before hydro development is also not presented.

There is also no discussion provided on the performance of the re-regulating reservoir during the wet season and under extreme conditions where releases are being made for flood control purposes through the cascade of Srepok dams.

Inadequate analysis of operating modes

Best practise for power companies worldwide now requires that power production objectives be balanced with downstream flow requirements to protect migratory fish and other environmental considerations identified by downstream water users and residents. The study should examine a full range of operating scenarios, taking into account critical fish migration times, public safety, and other downstream flow requirements, in accordance with international standards.

The SWECO report fails to complete objective #2 – describing possible positive and negative impacts arising from different operating scenarios. Taking steps to modify peaking operations or redesign as a run-of-river cascade to reduce downstream impacts can be done and is practised in

many countries. Analysis is required to assess best options for mitigating damages and should have been included in the SWECO report as part of the transboundary EIA.

For example, the report does not consider operating the proposed dams for base load during the dry season. This option would provide the most stable flow with Srepok 3 and Srepok 4 producing power evenly over a 24-hour period. This analysis should be included in the final SWECO report.

The SWECO report also recommends avoiding dry-ups of the river channel but the project maps indicate that flows in long (but unquantified) stretches of the river will be “strongly reduced” due to diversion of water from the river to the powerhouse. International standards for power plant operation stipulate that dry-ups should be avoided due to the significant ecological damage expected. Therefore, further analysis of different operating scenarios is warranted.

7. Dam Operating and Licensing Agreements

Best practise requires that operating and licensing agreements include definitions and terms for water releases, and terms for financial liability in the event that agreements are breached. Such agreements need to be developed and made publicly available to all stakeholders, in order to protect the interests of both the project owner and affected communities along the Srepok river.

The EIA does not provide adequate information for developing transboundary operating agreements for Srepok dams, in accordance with international standards (i.e., Swedish government/industry-approved guidelines for dams signed by SWECO and SIDA in 2005).

Definitions of operation criteria not provided

The report states that Srepok 4 dam can be operated to keep flow “as equal to natural flow as possible” but does not provide a definition of acceptable deviation from natural flow in the dry or rainy season.

The report also refers to “accidental flooding” and recommends that EVN compensate people suffering property damage in the event of “accidental flooding.” No definition is provided of what constitutes “accidental flood” versus increased or sudden releases caused by regular operations.

8. No Analysis of Viable Power Supply Alternatives

The report contains no cost and reliability comparison with viable power supply alternatives for both meeting national grid demand and for serving communities in central highland provinces, which could include private sector and off-grid rural energy options.

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