Annex H

Prior Consultation

for the proposed
Don Sahong Hydropower Project
Mekong River

Draft Final
Technical Assessment Report

Potential
Transboundary Socio-Economic Impacts

(as contribution to the preparation of the
MRC Don Sahong PNPCA Technical Review Report)

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Preparation of this report

This report has been prepared following a preliminary screening of the Don Sahong Hydropower Project (DSHPP) documentation provided by the Mekong River Commission to undertake the PNPCA on the proposed scheme.

The report has involved some discussions with both the Basin Development Plan Programme of MRC and some expert groups of MRC contracted for the PNPCA related technical review, and a brief discussion with representatives of the developer during a DSHPP site visit.

This review represents only a provisional assessment of key facts and information provided and may be subject to alteration and clarification.

This work was financed by the Mekong River Commission as part of the Prior Consultation process for the DSHPP. While every effort has been to ensure the veracity of the content and recommendations, the views are those of the author. The author cannot be held responsible for any interpretations of the content, not directly inferred by the text.

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1 CONTEXT OF REVIEW

1.1 MRC technical review report on the DSHPP

For the preparation of the MRC Technical Review Report of the PNPCA Joint Committee Working Group (JCWG) for the Don Sahong Hydropower Project (DSHPP, subsequently also called "Project"), the MRC expert groups cover the following topics:

- Fish passage and fisheries ecology;
- Water quality, aquatic ecosystem health and environmental flow;
- Dolphin;
- Hydrology and hydraulics;
- Sediment transport and morphology;
- Navigation;
- Dam safety;
- Transboundary socio-economic impacts;
- Integrated water resources management.

1.2 Scope of this report

This report provides comments from the socio-economic expert contracted by MRC to assess aspects related to potential transboundary socio-economic impacts (T-SEI) based on a review of reports of the DSHPP dated 2013, together with supplementary documents and presentations provided by the MRC prepared as part of the notification procedure in 2014. Some MRC documents have also been considered with focus on basin development, fisheries and socio-economic topics (see Reference).

Furthermore, technical discussions with other expert groups took place, and a joint 4-days visit between 21 and 24 Nov. 2014 to the DSHPP site with the Fisheries Expert Group.

The review on potential T-SEI has its focus on potential impacts as indicated by the other expert groups for their technical areas, and complementary or other topics indicated by the socio-economic expert.

The review attempts to provide an indicative assessment on thematic areas of potential positive and negative T-SEI and related risks to the DSHPP. The review's objective is to:

- Evaluate whether information and data have been provided by the submitted DSHPP social safeguard documents, and adequately cover mitigation measures;
- Indicate gaps and/or missing information and data;
- Provide commentary about key issues to be addressed as part of the MRC's Prior Consultation review on potential T-SEI issues related to DSHPP;
- Propose areas, which may need further detailed discussion and support information.

For this consultancy a 20 working days duration has been allocated between November and December 2014 including national and international travelling days and the site visit.

2 SPATIAL CONTEXT OF THE DSHPP

2.1 DSHPP – a project with transboundary dimension

The Don Sahong Hydropower (DSHPP) is a national hydropower development project of Lao PDR. This Project has transboundary features, which have partly been considered in the preparation phase of the DSHPP, but will require more attention and substantial inputs during the implementation and operation phases. As this Project already started with its pre-construction phase through ongoing re-profiling in channels and construction of a bridge, there is an urgent need to put more focus on the transboundary aspects and its potential transboundary socio-economic impacts (T-SEI). Selected transboundary features with major relevance at the current stage of the Project are:

- In view of the transboundary character of the DSHPP, Lao PDR submitted its Notification (dated 30 Sept. 2014) under the MRC Procedures for Notification, Prior Consultation and Agreement (PNPCA);
- The physical implementation area is located in the Lao Siphandone area, however with the HPP's downstream reach of about 1.5 km very close to the Mekong River defined border between Lao PDR and Cambodia;
- In the socio-economic context of water resource uses of the Mekong River the potential benefits and impacts of the DSHPP are not limited to its physical implementation area, rather than the Mekong Basin at a both regional and national scale, and defined sub-areas;
- Flow modifications and re-engineering fish passages, both in the Lao Siphandone area, are related to the existing transboundary fish migration, and therefore, also related to potential T-SEI.
- The expected and/or potential benefits and impacts concern not only one country, such as (i) the Project site located in Lao PDR, but at the Cambodian border, (ii) provision of electricity for Lao and/or Thai population, and (iii) potential transboundary impacts mainly concerning fisheries' impacts.

2.2 DSHPP – a project in the Lower Mekong Basin

The DSHPP is a hydropower project in the Mekong River using one channel of the Mekong mainstream for construction, that does not block the whole Mekong mainstream, but planning to use two adjacent channels to be reengineered for potential alternative fish migration routes. It has been included in the 2009-2010 MRC assessment of basin-wide development scenarios.

3 SOME RELEVANT TRANSBOUNDARY SOCIO-ECONOMIC FEATURES

It has been regarded as useful to provide a selective background on some socio-economic aspects illustrating the socio-economic context at different scale (LMB, LMB-corridor, Project downstream Cambodian reach) for the DSHPP.

3.1 The MRC riparian countries

The BDP Programme's Planning Atlas of the Lower Mekong River Basin 2011 illustrates a wide range of information. The following features have been extracted to provide a selective socio-economic briefing:

- Population:
  Approximately 60.6 million people live in the LMB (national census 2005 to 2008) with 11.6 million (19%) in Cambodia, 5.3 million (9%) in Lao PDR, 23.0 (38%) in Thailand and 20.7 million (34%) in Viet Nam. Concerning proportions of countries' population residing in the LMB, there are 81% in Cambodia, 89% in Lao PDR, 36% in Thailand and 24% in Viet Nam. From available official statistics[1] it can be estimated that between 2.8 and 3.2 million households in the LMB are engaged in inland capture fisheries at some level.
- Households:
  In general, they include several generations, with an average number of people per household by province between 4.8 and 6 persons. The majority are men headed households, with locally varying portions of female headed households ranging from less than 3% up to 35% of all households.
- Consumption of inland fish and other aquatic animals (OAAs):
  The average per capita consumption of inland fish and OAAs is about 45 kg fresh whole animal equivalent weight per year or 34 kg actual flesh per year consumed. The country averages vary between 41-51 kg/capita, however for local reasons ranging between 61 kg/capita/year (and more) and 10 kg/capita/year (and less). Approximately 2.1 million tonnes of inland fish and 0.5 million tonnes of OAAs are eaten by the LMB people each year. Related to the LMB total, Thailand and Vietnam with 33% and 36% consume the most, followed by Cambodia with 25% and Lao PDR consuming only 8%.

3.2 The Lower Mekong corridor

The Environment Programme's (EP's) Social Impact Monitoring and Vulnerability Assessment (SIMVA, MRC Technical Note 2010) [2] elaborated as a pilot study on socio-economic, livelihood and vulnerability aspects of the population living in a corridor of 15 km either side of the Mekong River in the Lower Basin and its dependent wetlands. The following features have been extracted from this SIMVA report, as it has at least a baseline-referred relation with indicative information and data to the DSHPP implementation and its Lao impact area, as well as its potential transboundary impact area.

- Population living within reach of Mekong River resources:
  - About 29.7 million people live within this corridor composed of 13.9 million in Viet Nam (representing 16% of its national population and 47% of the total population living in the corridor) followed by Cambodia with 9.9 million (70%, 33%) and Lao PDR counting 3.4 million (53%, 12%), and completed by Thailand with 2.5 million (4%, 8%);

[1] CAMinfo, data from MAFF Agriculture Statistics; MoP, NIS Cambodia Socio-economic Surveys (CSES); Lao PDR Agricultural Census 2010/11; FAO, A review and synthesis of capture fisheries data in Thailand. From FAO website; MRC Socio-economic Database; Vietnam Agriculture, Forestry and Fisheries Census 2011."

[2] A follow-up survey of MRC will be published soon.

- The urban population has been estimated with about 4.7 million and considered to be less directly dependent on natural resources. About 25 million people are living in the rural area.

- Occupation and livelihood dependence on Mekong River resources:
  - Farming and fishing are the most important occupations of the households, however with different ranking, as farming with 73% and fishing with 8% have been ranked as the 1st most important occupation, whereas fishing represents with 27% and farming with 8% the 2nd most important occupation[3]. Another 15% of households fish on an occasional basis. Thus, the proportion who fish at some point in the year on a seasonal basis adds up to 50% (8+27+15). It should be noted, that for the Cambodian study sites about 26% and 28% indicated fishing as 1st and 2nd important occupation respectively. For the other study sites the percentages are less than 10% except for Laos, with 57% of households regard fishing as 2nd important occupation;
  - Concerning livelihood activities about 65% do irrigated (21%) and non-irrigated (44%) farming, followed by about 31% of households involved in fish processing (20%) and fish marketing (11%), and further 15% and 12% doing river bank gardening and aquaculture respectively.
- Dependence on fish:
  - About 60% of Lao fishing households use the mainstream as their preferred dry-season fishing area. In the Delta sites about 44% of the 11% of fishing households reported using one of the branches of the mainstream as their preferred fishing area. About 58% of Cambodian fishers used the Tonle Sap as preferred site, with the remainder using other ecosystems. About one-third of the Delta fishing households informed to use 'paddies, ponds and canals' as their most common fishing area;
  - The proportion of fishing households which use the mainstream as their most preferred fishing area drops from one-third in the dry season to one fifth in the wet season;
  - In general, the majority of the fish catch has been sold, although the fishing families use portions of their catch for their own consumption. This is of high importance for those households who have no other occupation.
- Food security
  - The dependence on purchased versus natural food items vary significantly between the study sites, with 90% of food eaten in a Vietnamese households are purchased, followed by 77% and 70% for households in Cambodia (people highly dependent on fish sales to purchase food) and Thailand (self-sufficiency through mixed farming) respectively, whereas Lao households are very contrary in this respect purchasing only about 3% of food items, indicating a very high level of dependence on farming and natural resources.
- Income and expenditure:
  - With 50% the major source of income is sale of rice for half of the rural population of the Mekong corridor. In a 2nd group are the income sources remittances from family members (31%), local irregular/seasonal employment (30%), full-time employment (25%), sale of livestock (25%), and/or sale of own fish catch (25%). Income through business profit (19%), credit (14%), and savings (13%) can be gathered in a 3rd group. In the 4th group of income source with a few households are sale of OAAs (6%), aquaculture (4%), sale of others' fish catch (3%) and other miscellaneous sources (less than 1% each);
  - One in four households across the study sites earns income from the sale of fish but significant variations were found between the study sites. In the Cambodia and Lao PDR study sites, fish

[3] "The proportion stating fishing to be their occupation is lower than in other surveys where the focus has been on fishing Communities, mainly because the objective of SIMVA has been to capture the broader dependence of the corridor population, not only that of fishing communities in 'sensitive' areas."

sales are a source of income for close to 40% of households, a far higher proportion than in either Thailand or Viet Nam, where the figure is less than 10% for each of these two countries.

3.3 MRC basin-wide development scenarios

The BDP Programme's Assessment of Basin-wide Development Scenarios provides a cumulative impact assessment on water resources development related to (i) a baseline situation (1985-2000: hydrology; 2008-2009: socio-economy) and predicting impacts for (ii) a definite future situation (constructed since 2000, ongoing and confirmed project by 2015), (iii) foreseeable future situation (2030), and (iv) long-term future situation (2050). As the cumulative impact assessments have included Don Sahong HPP with the foreseeable future situation scenarios (20 years) having assessed a group of 6 dams upper of Vientiane and another group of the Lao, including Don Sahong, and Lao-Thai dams (Lat Sua and Ban Koum) without the two Cambodian mainstream dams (Stung Treng and Sambor). The results are reported in the Assessment Report and include positive and adverse impacts on various key indicators, including fisheries. Subtracting the fisheries impact of these two scenarios will provide the fisheries impact of the Don Sahong, Ban Koum and Latsua mainstream dams.

In general, capture fisheries production in the LMB is estimated at 2.1 million tonnes per year[4]. This valuable resource is threatened by overfishing, the use of destructive fishing gear, habitat fragmentation and loss of riverine connectivity through dams, roads, drains, canals, barrages etc. Although catches are still high, the quality of the catch is decreasing. Small fish are increasing as a percentage of the catch, both in weight and numbers. Infrastructure development, such as dams, that alters the natural flow of the river and blocks migration routes, may further affect this valuable resource. Aquaculture production in the LMB, estimated at 2.6 million tonnes per year, has been growing steadily and is now larger than capture fisheries in three (Lao PDR, Thailand and Viet Nam) of the four LMB countries.

3.4 DSHPP potential immediate downstream transboundary impact area

According to national official statistics from Cambodia on people's involvement in fisheries, in 2012, 66% of households, or around 200,000 households, in the Plateau and Mountain Region (provinces of Kampong Speu, Kratie, Stung Treng, Preah Vihear, Rattanakiri, and Mondulkiri provinces), which includes the areas below Don Sahong, were engaged in fishing activities, a percentage 2% higher than the Tonle Sap Region. For comparison, in Lao PDR, 51% of the households, or around 500,000 households nation-wide engage in capture fisheries according to the Agricultural Census 2010/11.

Whether they will be exposed to changes in fisheries production is difficult to assess, but the FishMAP would be a very good basis for any design of such assessment, in particular when including some socio-economic monitoring indicator and secondary data into consideration. This should be implemented in parallel with the technical mitigation measures of optimising re-profiled two channels as fish routes.

[4] Basin Development Strategy 2016-2017 (the figure (2.1 MT/year) is based on some MRC documents).

4 STRATEGY FOR POTENTIAL TRANSBOUNDARY IMPACTS

4.1 Current DSHPP strategy for potential transboundary socio-economic impacts

The fish passage and fisheries ecology related impacts may have socio-economic impacts both at national level and transboundary scale. Therefore, high attention has been and will be given to fish and fisheries related technical mitigation measures as the major mitigation step to avoid or limit potential socio-economic impacts.

4.2 Current DSHPP approach on transboundary fish migration

The approach chosen by the DSHPP developer for this mitigation focuses on re-engineering the loss of fish-migrating conditions and a stepwise implementation of re-profiling the Sadam and Xang Peuk channels replacing the migratory role of the Sahong channel, which will be used as a combination of a power canal and head pond by the construction of the DSHPP.

Currently the following steps are undertaken in the ongoing pre-construction phase, and will be followed for both construction and operation phases:

- Continuous data collection: The DSHPP developer has started collecting information aiming at a clear picture in general, and about fish migration in the project area in particular, also including drift of larvae and juveniles. He has also started surveying fish migration;
- Re-engineering fish passages: Exploring the hydrological and hydraulic conditions of the three channels for re-engineering the proposed alternative fish migration pathways through construction works and modifications to be effective and functional fish migration facilities all year-round.

4.3 Commenced step-by-step approach by DSHPP

Any reduction of up-stream fish migration, past Khone Falls and up major tributaries such as the 3S basin, may adversely affect fish stock populations and biodiversity upstream and downstream. The severity of the impacts will not be known until after DSHPP is built.

The approach includes a Fisheries Monitoring and Action Plan (FishMAP) that proposes a package of mitigation measures. The resultant FishMAP document, generated during 2010-2012 and presented in the EIA, is considered a “living document” over the coming years aiming at “improving the models and mitigation efforts as understanding of how the system works evolves”.

Thus, the successful completion of this technical mitigation requires different sequences of technical and engineering measures combined with fisheries monitoring to provide necessary facts for further improvement most likely for a long period of at least 10 years during construction and operation phases, or even longer.

4.4 Preparedness for potential transboundary socio-economic impacts

The re-engineering of the physically affected channels started already in the ongoing pre-construction phase, and will continue through necessary re-profiling during the DSHPP construction phase and final adjustments assumingly during several years of the operation phase of the DSHPP. They all aim at a satisfying, partly new fish migration during the DSHP operation phase with new hydrological conditions combined with channels now partly characterized through new morphological, sedimentation and hydraulic conditions.

Potential T-SEI could occur in case the re-profiling and operation of the new Sadam and Xang Peuk channels would not minimise negative impacts on fish migration. For this scenario a transboundary socio-economic impacts risk assessment would indicate the potential socio-economic scale, even by only using available

secondary data (geographic area, population, districts, villages, etc.).

At current stage, this has not been included or mentioned in the DSHPP officially submitted social safeguard reports. It is understood, that this would require additional challenging steps, such as, but not limited to:

- Assessing the impact on fish migration and related local, regional and transboundary socio-economic impacts including impacts on fish productivity;
- Extending the M&E approach from a purely FishMAP approach to a multi-disciplinary M&E approach including complementary and other topics, such as fish trade/marketing and socio-economy respectively, at least on a secondary data basis;
- Initiating and supporting work groups in this matter, for which, besides daily cooperation, events can be organized and financed, such as “providing funds for annual transboundary fishery workshop” (see EMMP) to develop linkages between Cambodian and Lao fisheries line agencies to promote an exchange of information and explore possible joint study opportunities and funding;

5 POTENTIAL TRANSBOUNDARY SOCIO-ECONOMIC IMPACTS

The review of T-SEIs refers mainly to those topics covered by the different expert groups taking into consideration their socio-economic aspects. In addition, other topics have been raised because of their transboundary importance in the context of the DSHPP, such as tourism, regional planning, coordination and cooperation.

5.1 Selected engineering items

5.1.1 Dam safety

No potential adverse T-SEI for water users are expected by the dam located in the proximity to the Cambodian border. The dam safety issues are in compliance with the MRC Preliminary Design Guidelines.

5.1.2 Navigation

This technical component has not been included in the Project and, therefore, does not need to be reviewed.

5.2 Water resources

5.2.1 Water flow and hydrology

No potential adverse T-SEI for water users are expected, as there is:

- No change to transboundary flow regimes and the cross border delivery to Cambodia for all seasons;
- A minor local change between western (increase) and eastern channels (decrease) in the immediate vicinity of the Lao-Cambodia border;
- A redistribution of flow in channels within the Lao Siphandone Section of the Mekong River only.

5.2.2 Water quality and sedimentation

No potential adverse T-SEI for water users are expected, as there is:

- Unlikely a change in water quality during operation phase;
- Unlikely a change in water quality during construction phases assuming the implementation of environmental protective and prepared emergency measures as defined in Environmental Management and Monitoring Plans (EMMPs) for different project stages;
- Temporary increase of sedimentation during certain periods of the construction phase in dry season, but unlikely to significantly impair the use or the Mekong River. This risk is to be minimized through good construction supervision and environmental management practice.

5.2.3 Sediment and morphology

No potential adverse T-SEI for water users are expected, as there:

- Can be occasional sediment and turbidity pulses through continual reservoir management, but limited to the immediate downstream area, which will have to be confirmed through the first operation years of the DSHPP;
- Will be no or very little cumulative impact on the Mekong Delta or Cambodia.

5.3 Fisheries

Fisheries receive a high attention because of its importance for food and income activities in the LMB. As the DSHPP is located in Laos but adjacent to the Cambodian border, fisheries become automatically by nature a transboundary issue. There are potential positive and negative T-SEI:

- A change on local fish migration by (i) loss of Hou Sahong fish migration route, and (ii) re-engineering Hou Sadam and Hou Xang Pheuak channels as alternative migration routes;
- A possible change on wider fish migration in the LMB upstream and downstream of the Project site depending on modified local fish migration. In this context is should be noted, that insufficient attention has been paid to potential cross border impacts on fisher communities in Cambodia at least for a to be defined stretch of the River Mekong;
- The DSHPP preparation reports indicate that there could also be positive transboundary fish-migration impacts through the DSHPP by making the Khone Falls fault less of an obstacle to the migrating fish through the two re-profiled channels.

A potential risk on socio-economic conditions and fisheries in the LMB, if fish passages are not implemented successfully, may concern the different hydro-geographic and social zones of the LMB, as illustrated by Figure 1 (see chapter 6.4).

5.4 Tourism

The Champassak Province with its Siphandone Area is a well-known, famous and popular destination attracting both Lao citizens and international travellers. There are potential positive and negative T-SEI related to tourist activities, as there will be:

- No change of the Champassak Province as a major tourist region in Lao PDR[5];
- No change of the overall attraction of the Siphandone area;
- No or minor changes of the local tourism potential, and therefore no or minor change for the local tourism sector providing business and employment;
- Change accessibility in the Siphandone area might lead to more tourists visiting these islands. This concerns (i) a new, operated bridge between mainland and Khone Island, opened through the Government of Lao PDR in Nov. 2014, (ii) a public bridge, crossing the Phapheng channel, currently under construction, and providing also future access to the DSHPP dam site, and (iii) the DSHPP powerhouse-bridge/dam connection in the Sahong channel which would serve as a public access between two islands. Consequently, the new road accessibility will reduce the water-based transport through boats and the related occupation for their Lao or Cambodian owners and/or operators.
- The appearance of the Khone Water Falls will change, as they will throughout the hydrological year be below the pre-project conditions of the DSHPP leading to “lower upstream water level scenarios” and, therefore, losing its spectacular attraction at higher flows during some months of the year. To which extent this might have an impact on both the tourism and visual amenity cannot be predicted, as visitors and tourists have beside their subjective judgment on impressiveness of water falls, also different reasons and timing for travelling to Southern Laos including the Siphandone area and the Khone Falls;

[5] As background information can serve the annual statistical reports on tourism in Laos prepared by the National Tourism Development Department, Vientiane, indicating annually increasing tourist arrivals in Laos from 895,000 in 2004 to 3779,000 in 2013, including a continuous increase of tourist for the Champassak Province, assumingly, therefore, also including the Khone waterfalls and Siphandone area as some of the major attractions in Southern Laos.

- The 6 dolphins-site is located in the downstream vicinity of the dam construction site, and probably be impacted through construction related noise and activities, but less or not through noise from turbine operation. In addition, there is a need for including sedimentation indicator in an environmental monitoring program for the downstream area including the adjacent dolphin watching area aiming at limiting the potential impacts for this area.

5.5 Current and future regional-transboundary development

The DSHPP probably requires a more regional perspective combined with some transboundary elements, as currently the potential to manage adverse impacts, and provide fully or contribute to positive impacts, have not been taken into consideration, although it would probably have some benefits for the Project. The DSHPP will have regional and transboundary, direct and indirect, positive and/or negative socio-economic impacts. Below are some examples, which are partly included as mitigation measures mainly related to the implementation of the RAP, however more rural development in the regional-transboundary area around the DSHPP could be studied aiming at a more multipurpose use of the Project's infrastructure and development potentials to the extent possible, under the assumption of their economic-financial feasibility.

5.5.1 Transport Infrastructure

The Government of Lao PDR has started with the construction of a bridge over the Phapheng channel as part of its efforts in improving the transport conditions in the Siphandone area, and serves also as a pre-construction infrastructure for the DSHPP. This ongoing construction is obviously connected to the DSHPP, which would provide a powerhouse-bridge/dam connection over the Sahong channel. This provides direct, smooth and independent movement of people and goods between the islands and the main land with potential benefits for the residents of theses and neighbouring islands concerning their livelihood and related income activities, but also better access to district and provincial public services. It will also help reducing transport costs and travel times, and facilitating business and trade links to the main land in a regional and/or transboundary economic development context.

In addition, the new accessibility offers the potential for new income and business activities on these islands, which have partly been indicated and integrated to a certain level in both the RAP covering the physical implementation area of the Project, and the SMMP concerning the same and some adjacent area (district/s), but not incorporated in regional and/or transboundary socio-economic perspective.

5.5.2 Rural electrification

Beside its infrastructure to improve rural transport, the Project's EIA mentions the more reliable generation and provision of electricity. However, this concerns only the existing electricity net. Therefore, a Project related rural electrification component should be designed and implemented in parallel with the DSHPP construction phase. From a transboundary perspective the questions arise, although not dependent but related to the DSHPP, whether there will be a similar rural electrification program for the downstream reach of the Project, and thus located in Laos only, or also for some Cambodian communities. This might require a specific technical installation right at the HPP site and no connection to the public grid.

5.5.3 Rural public health and water supply services

People living on the islands in the Project area face not only the common health risks, but also some specific local diseases, and experience the disadvantage of their isolation from health services on the mainland. The DSHPP can improve this situation and reduce the risk from these diseases to both local residents and expected temporary workers by implementing mitigation measures as outlined in the SMMP. The Project plans to assist local and regional health agencies to maintain and improve the existing public health standards and their infrastructure, and will implement its own programs to educate the local population of potential health risks, change of dangerous behaviour and to improve the standards of

sanitation and potable water quality within the Project area, but possibly also in part of the immediate downstream Lao and Cambodian communities along the Mekong River.

5.5.4 Tourism

The general situation with some detailed information has been described mainly in the EIA in which it has been assessed, that (i) there are no/minor impacts expected for the local tourism sector, and (ii) new infrastructure provided by the Project would facilitate tourism. However, these statement are too general for both negative and positive impacts, as it is (i) a subjective opinion, and (ii) limited to the provision of infrastructure required by the Project, which can also be used by local tourism activities. If the Project would like to ensure, that tourism activities on the project affected islands are a serious alternative for occupation and income activities, then there is a need to define precise tourism components as either part of the livelihood restoration program and/or as a Project supported development component.

This requires the incorporation of ongoing local and regional development projects in the regional-transboundary tourism sector supported by national and international financed tourism supporting projects. In such a context, the focus might still be the “Lao upstream tourism area”, but should also incorporate a ”Cambodian downstream tourism area” in a transboundary Siphandone tourism development.

5.5.5 Job and labour market

The job and labour market will change on a temporary and permanent basis for the (pre-) construction and operation phase respectively. This concerns (i) immediate changes caused by the Project on the affected islands concerning fishery and agriculture occupation, (ii) the local, regional and transboundary labour market mainly during construction, and (iii) the occupation of upstream and downstream fishermen and their families combined with fish market and trading activities. This needs at least a baseline descriptions and a first assessment of positive and negative socio-economic impacts including potential transboundary aspects.

It will be of high interest for the DSHPP Project, and also for both Lao and Cambodian local authorities, to reduce, minimize and avoid environmental pollution by employing locally resident non-skilled, semi-skilled and skilled labour from the Lao-Cambodian Project area, as there would then be a reduced need for camps and related water supply, sanitation and waste facilities. In will also reduce the influx of workers which can lead to health, social and culture problems for the local communities.

5.5.6 Other potential development activities

Other potential development activities are not mentioned or incorporated in at least a (sub-) region or regional-transboundary development planning. This will require a review of completed, ongoing and planned provincial and national programmes. It should regard regional development in the context of the Greater Mekong sub-region as a natural economic area bound together by the Mekong River, where local governments should consider the Project’s infrastructure and related development components at least in a (sub-)regional development scheme.

6 CONCLUSIONS AND RECOMMENDATIONS

6.1 Selected thematic key requirements

The following overview has been prepared concerning the DSHPP social safeguard reports with respect to potential transboundary socio-economic impacts.

Table 1: Preliminary Review Matrix on Potential T-SEI and Proposed Requirements

Proposed Key Topics / Items		Preliminary assessed Coverage Levels by Social Safeguard Reports (RAP, SIA, SMMP,				Indicative Remarks
		Satisfying	Acceptable	Partly	Missing	
Safeguard Reports	Provision		x			RAP, SIA and SMMP, in addition CIA
						To be upgraded and/or updated
					x	Gender Action Plan (GAP), Indigenous People Plan (IPP)
	Potential trans-boundary socio-econ. impacts (T-SEI)				x	T-SEI are not included
						To be assessed mainly related to fisheries aspects
						Proposing potential measures
						Proposing strategic planning and implementation by the Project
Tourism	Description	x				Concerning local tourism features and situation
	Tourism supporting infrastructure		x			Only referring to project infrastructure for future public use
						Need for addition specific facilities by Project to be studied
	Tourism Development Component				x	Incorporation in ongoing international/national tourism projects
						Specific support activities to be described
	Assessing impacts / planning mitigation				x	
						To be prepared (joint study opportunities (see EIA))
Transboundary Perspective	Use of term "transboundary"				x	Not in RAP, SIA, SMMP, only once in CIA
	Scoping matrix		x			But complementary explanation could be useful
	Assessing impacts / planning mitigation				x	To be prepared (joint study opportunities(see EIA)
	Implementation of mitigation measures			x		Indicating the need for transboundary management.
						Will require more elaboration on related aspects.
Regional - Transboundary Planning and Implementation Aspects	Development			x		For some development potential used (transport (road), rural health, education and water supply)
					X	For other components (tourism, rural electrification, etc.)
						Detailed planning
	Cooperation		x			Project internal construction management structures refer to execu-ting/ implementing agencies and developer as Project stakeholders
					x	Project construction management structures to include external MRC riparian project partners as observers and/or technical specialists.
					x	Communication Plan
			x			M&E with focus on FishMAP indicating cooperation with Cambodian fisheries authorities
					x	Multi-disciplinary M&E (incl. fisheries, but also water resources, socio-economy, others)
						Multi-disciplinary M&E Adaptive Management Plan
						Required agreements between national authorities/administrations
			x			Adaptive Management with focus on M&E and FishMAP
					x	Detailed preparation on surveys, teams, funding sources, others
						Multi-disciplinary M&E Adaptive Management Plan
Others		If required or necessary, to be considered and included as part of next steps to be agreed.				
Note:	This overview indicates only selected topics/items and does not provide a detailed analysis					

6.2 Social safeguard and related reports

If a risk assessment would be required as part of a SIA and/or SMMP, then these documents would have to be upgraded to allow a comprehensive review of potential impacts and proposed mitigation measures, as these two documents do currently not include an assessment of potential transboundary socio-economic impacts.

Other documents concern a Gender Action Plan and an Indigenous People Plan, which both have not been prepared and/or formally submitted. For many reasons, including having self-standing documents in case the Project would like to have or has to prepare bankable documents, these reports will be required, or chapters with these titles to be incorporated in existing social safeguard reports of the Project, so that they could be reviewed also with respect to transboundary aspects.

Furthermore, a Project Communication Plan shall be prepared including a chapter about transboundary communication, related tasks and responsibilities, necessary resources, and the provision of costs for the implementation during pre-construction, construction and operation phases. There is a need to define the approach, steps and mechanism not only for resettlement related grievance procedures, but also to cover PR national/international complaints.

No potential transboundary socio-economic positive and negative impacts have been indicated neither for the construction nor the operation phase. Thus, no initial or preliminary assessment and related mitigation steps are described. Even in a scenario assuming no transboundary impacts, the risk for potential impacts on the water resources has to be covered by environmental construction supervision including emergency management plans and HSE plans for both construction and operation, as well as the obligatory operation manual of the future DSHPP. These plan will have to include a DSHPP defined Lao-Cambodian downstream stretch of the Mekong River. For certain environmental accident scenarios with related socio-economic impacts, mitigation measures will have to be prepared and ready for immediate use, if necessary or required.

6.3 Regional-transboundary cooperation

The current spatial focus of the Project is the local implementation and impact area and the immediate neighbouring areas (sub-region). According to its preparation documents, the Project would not have a significant transboundary impact in terms of changes in hydrology, fisheries, environment etc. that would lead to socio-economic impacts. As a consequence, the social safeguard related SIA and SMMP do not assess transboundary socio-economic impacts.

However, the Project might have several advantages to take a more regional-transboundary perspective, as the Project's current strategy takes the risk of not expecting any potential socio-economic transboundary impacts, although this will have to be confirmed by facts obtained through a monitoring approach currently limited to the crucial FishMAP only.

6.3.1 Management structures

It appears necessary, that the DSHPP shall incorporate a regional-transboundary management component in its organizational and institutional set-ups. This should include, but not be limited, to:

- Working groups and/or others to be proposed for the construction phase;
- Resident site management during the construction phase could include an office for representatives of the MRC riparian countries, at least under an observer status, to collaborate for example with the Project Environmental & Social Management Unit (PESMU);
- This could also include specialists of the MRC riparian countries seconded to the Project in different fields, such as socio-economy, fishery, water resources and others all concerning the implementation of EMMP and SMMP, but also engineers with regard to construction related matters;

- Others, possibly also concerning operational matters of the DSHPP.

6.3.2 Communication mechanisms

The Project has mainly followed the study related communication mainly with the involved Lao project stakeholders. Related to the submission of the Notification of the DSHPP by Lao PDR to MRC through the LNMC the Project developer has undertaken substantial efforts to ensure their contribution in applying the PNPCA. This could serve as an initiating starting point to include the transboundary communication in a Project overall communication approach still to be defined in a communication plan. This has already proven to be necessary and can expected to be of more importance taking, among others, into account:

- Consultation and participation of local up- and downstream communities;
- Coordination and cooperation with local up- and downstream authorities and administration;
- Extended grievance procedures, which are currently limited to the RAP related possible complaints, but not considering transboundary related complaints concerning local up- and downstream problems, but also LMB wide issue expected to be raised by any individual or organized private complainant, or national and/or international organizations and activists;
- Others.

6.3.3 Transparent M & E and adaptive management

There is an agreed understanding and need for specific monitoring and evaluation (M&E) which should lead to remedial actions. In this context, the components to be considered by such a management task concern:

- Preparing and/or updating baseline data during pre-construction phase including socio-economic baseline, at least through secondary data at district level;
- Continuous Project related mitigating planning and implementation including livelihood restoration measures;
- Regular social and environmental safeguard monitoring;
- Regular Project related performance and compliance M&E, also aiming at assurance of major mitigation measures;
- Conducting impact assessment during construction and operation phases including socio-economic impacts;
- Others.

At the current stage of the Project, the Fisheries Monitoring Action Plan (FishMAP) has started and provides first results. The Project developer designed the FishMAP to fully mitigate the potential impacts to the fisheries resource and to fish migration through the Project area. This is the only activity towards such an approach. Improving fisheries management in area up- and downstream of the Khone Falls has been indicated in the Project's EIA as a major aim of the Project's FishMAP, and could contribute to a coordinated transboundary management of the aquatic resources of the Khone Falls.

However, this FishMAP should also include other complementary monitoring areas, such as socio-economic, (income generating occupations, livelihoods, food security and nutrition security), water resources, and other related topics. The different surveys could be conducted by different teams, such as:

- Independent survey teams;
- Independent M&E teams;
- Periodic independent panels;
- External auditing mission;
- Others.

These tasks shall be carried out in cooperation with the Project developer providing their support and assistance, and/or support and funding by project external organizations, such as national or international development agencies, or possibly MRC, or others, but all to be accepted and agreed upon by the MRC

riparian countries. From an institutional point the involvement of local administration of relevant ministerial departments will be required and could be integrated in such survey teams. Such project components could, for example, support a Lao-Cambodia fisheries monitoring programme. It is noteworthy that there is need (i) to keep this M&E approach independent and transparent, and (ii) to make collected and generated information and data available to the public to prevent misperception about impacts and provided mitigation by the Project. In this context is should also be noted, that this does not replace the formally required technical M&E mission of the Lao Ministry of Natural Resources and Environment (MoNRE).

Such a Project overall M&E Action Plan would probably be a very important and supportive step for the Project. It could also be required as urgent, because of ongoing pre-construction works including first physically affected channels. Such an overall M&E Action Plan will require annual updating, and shall not be regarded as a timely limited rather than "open" plan, as the construction, but even more, operational features of the DSHPP will require a continuous implementation of M&E and related actions very likely during at least 10 years during construction and operation phases, ideally linked to fisheries management and other programmes in at least the Lao-Cambodian Mekong border area.

6.3.4 Benefit sharing

In addition to the power plant, the DSHPP will create significant infrastructure including two bridges, several roads, and water, sanitation and waste facilities. The Project can therefore be seen as an element of a larger sub-regional development scheme that could extend well beyond energy and might cover the further development of (eco) tourism (tourism in the Cambodian part of the Siphandone area is much smaller than in the Lao part), the establishment of a transnational park, trade, transport, preferential electricity rates, and other sub-regional development opportunities.

6.4 Opportunity for first transboundary experience by a HPP project in the LMB

The DSHHP Project has completed its study stage and is expecting the signed concession agreement. In addition, the project is currently applying the MRC PNPCA. However, the Project is actually in the pre-construction phase, where (i) first physical modifications of the proposed alternative fish migration routes through two channels were made with further re-engineering expected, and (ii) first physical modification in the Sahong channel have taken place, and (iii) a public bridge is constructed by the Government of Lao PDR, which has also a pre-construction function for the Project accessing the future dam site.

For the case of the DSHPP, there are obligatory requirements to comply with national regulations and laws. This concerns many disciplines such as environmental construction supervision through technical monitoring of environmental indicators concerning water quality, hydrology, sedimentation and others.

Due to its consideration under the PNPCA process, it certainly has to examine fisheries and transboundary fish migration combined with socio-economic rural livelihood. It can be seen in the context of main fish migration systems and social zones along the Mekong River as schematically illustrated in Figure 1, which could serve as a basis of an initial M&E and adaptive management planning.

In general, through a transboundary perspective a project can possibly plan and implement the construction and operation phases in an efficient way. In addition, it could also react effectively on actual and potential, positive and negative impacts. This requires facts provided through transparent M&E resulting in mitigation measures, if proving that the Project caused fully or partly the adverse impacts, but also no actions in case the M&E could indicate and confirm no Project responsibility for encountered changes.

Figure 1: Schematic Overview of Mekong Main Fish Migration Systems and Social Zones

Fish Migrations Pattern			Geographic Borders Location			Integrated Basin Flow Management	
Name		Features	(MRC BDP Planning Atlas, 2011)	(MRC SIMVA, TP No. 30, Dec.2010)		Features	Name of Social Zone
		[masl]		From	To	[km]	[no]
Upper	Mekong Main Fish Migration Systems	200-500	China Chiang Saen Other towns / cities Xayabury Vientiane	Source	within China / border	15 km wide…	1
				China / border	Vientiane		2
Middle		150-200	Vientiane Other towns / cities	Vientiane	Pakse incl. Nong Khai, Songkhram, Chi and Mun River Basins (north-eastern Thailand / central region Laos)	…corridor either side…	3
			Pakse Siphandone Islands in Laos and north eastern province of Cambodia along the Mekong River	Pakse	Kratie incl. Siphandone Islands in Laos and north eastern province of Cambodia along the Mekong River		4
Lower		0-150	Downstream of Siphandone Area and the Khone Water Falls Other towns / cities	Kratie	Phnom Penh incl. northern part of the Cambodian Flood Plain incl. Tonle Sap system (Great Lake and Tonle Sap River in central parts of Cambodia)	…of the Mekong	5
			Phnom Penh Other towns / cities An Giang / Dong Thap	Phnom Penh	Sea covering areas in Cambodia and Viet Nam that make up the Delta		6

Note 1	Systems are not closed, they are interconnected with many species migrating between them	Note 3	Zones correspond to biophysical changes, and hydrological and ecological characters
Note 2	The shown colours corresponds to the ones used in the Atlas	Note 4	The shown colours corresponds to the ones used in the MRC technical Paper No. 30
Note 5	The listed systems and zones do only indicate approx. areas and borders, and therefore, do not claim spatial correctness related to maps		

This could also provide the methodology and approach to not only assess impacts, but also to plan, prepare, implement and monitor socio-economic mitigation measures. Next steps towards assessing and mitigating socio-economic impacts would have to take into consideration:

- There have been relevant fisheries and socio-economic surveys and studies in Laos and Cambodia including the Project area and the Lao-Cambodian border, whose available results and findings could be used;
- In addition, the Project's FishMAP provides very recent and new findings;
- MRC will publish further findings of updated social impact monitoring and vulnerability assessment of the Mekong corridor for all four MRC riparian countries of the LMB;
- To include more recent national fisheries programmes of the national Mekong committees;
- Another source to use are more recent national statistics.

As the DSHPP will have to take a transboundary perspective for some construction and operation obligations in any case, it may have technical and managerial challenges to demonstrate the effectiveness of the preventive and mitigation measures during the current final stage of the (study) preparation and pre-construction phases, as well as the future construction and operation phases. But a multi-disciplinary M&E and adaptive management plan will certainly support the Project owner and developer in their efforts to avoid, limit and define mitigation measure for actual and potential impacts including potential transboundary socio-economic impacts.

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MRC documents[6]

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DSHPP related PNPCA supporting reports prepared by MRC:

Assessment Report (Dec. 2013).

Scoping Assessment Report (Aug.2014).

Background Report (Sept. 2014).

Draft Technical Report / Interim Progress Report (Nov. 2014).

Documents for Second Meeting of the PNPCA JW of DSHPP, Siem Reap (Nov. 2014).

Briefing Note for Public Stakeholder Consultation, Pakse (Dec. 2014).

[6] This list includes only main MRC documents of major relevance for this review. Other used documents are named either in the text or footnote.