



THE 2ND VALIDATION OF SOCIAL CARBON REPORT

210 MW Musi Hydropower Plant, Bengkulu



COMPANY NAME	MUSI HYDROELECTRIC POWER PLANT <i>(PT. PLN (Persero) Sektor Bengkulu, Unit Pembangkit Listrik Tenaga Air Musi, Bengkulu)</i>		
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2	4	25	June 20-22, 2013	3	Sigit H. Prabowo & Abdul Rahman

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AUDIT CRITERIA (standard)	Social Carbon Standard	
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1. Introduction

South Pole Carbon Asset Management Limited commissioned Mutucertification International (PT Mutuagung Lestari) to validate a 210 MW Musi Hydropower Plant located in Bengkulu, Indonesia.

1.1. Objective

The purpose of this validation is to have an independent third party assessment in order to evaluate the accuracy and consistency of the indicators of the Social Carbon Standard.

1.2. Scope and Criteria

The validation is based on an independent site visit and evaluation as well as on document evaluation and review. There are three reference documents:

- “Approved Indicators for Hydroelectric Power Plants” – Version 4.1, June 2011.
- “210 MW Musi Hydro Power Plant, Bengkulu” – Social Carbon Report.

1.3. Social Carbon Project Description

The project activity is a new, run-of-river hydropower plant. The total installed capacity of the project is 210 MW, consisting of three 70 MW turbines. The project is owned and developed by PT PLN (Persero), a state-owned electricity company. The project supplies electricity to the connected Sumatra grid. The electricity currently generated by the grid is relatively carbon intensive. The proposed project will increase the utilization of renewable energy sources (in this case hydro energy) by operating a new hydropower plant.

The project area of the Musi Hydroelectric Power Plant is situated in Bengkulu Province about 30 km northeast of Bengkulu city, the capital of the Province. It involves the inter-basin transfer of water from the Musi River in Rejang Lebong Regency to the Simpangaur River in North Bengkulu Regency via a 7.5 km long waterway and an underground powerhouse. The main reservoir is 1.14 km² in size. To avoid sudden floods in the downstream river, there is a 25 ha regulatory reservoir. The regulatory pond is small for a power plant of this magnitude. Thus, its impact on the surrounding natural area is minimal. CDM project activities are not allowed with a power density of less than 4 W/m². The power density of this project is 184 W/m². For project activities with power densities higher than 10 W/m² no project emissions from the reservoir occur. The underlying power density exceeds the 10 W/m² almost twenty fold.

1.4. Validation Team

The Validation team consists of the following personnel:

- Sigit H. Prabowo – Mutucertification International Team Leader and Auditor of Social and Environmental Responsibility, Environmental Specialist
- Abdul Rahman – Mutucertification International Auditor of Social and Environmental Responsibility, Sustainability Specialist

2. Methodology

The validation of the project was carried out from June 2013 to July 2013.

Preparations : June 2013.

On-site visit : June 20 – 22, 2013.

Draft report : June 24 – July 12, 2013.

Final report : July 15, 2013

2.1. Method Used for Obtaining Information

The method used for obtaining the Social Carbon Methodology indicators involved four stages:

Stage 01 : A questionnaire was elaborated.

Stage 02 : The Hydroelectric Power Plant was visited.

Stage 03 : Direct interviews and phone interviews were conducted with several local stakeholders during site visits.

Stage 04 : Evidence (pictures and documents) was obtained during the site visit.

3. Validation Result

3.1. Social Resources

1. Population Displacement

Evaluates if the project requires people, activities or services to be displaced due to the implementation of the project, as well as the measures adopted during the planning and implementation stages, in order to minimize negative impacts or maximize positive impacts.

Previous index (in the social carbon report): 6

Observation:

During the Planning stage

Since the last audit in 2010 (Social carbon “year 0” validation) it was known that the compensation for displacement population has been completed. Compensation given for several farmland owners because Musi HPP was constructed on their land.

Upon interview with Mr. Yayat Ruhyat (Head of Ujan Mas Sub – district) it was known that the compensation for displacement population for several farmland in Ujan Mas Sub – district has been completed.

During Implementation / operation stage

Upon interview with Mr. Asep Saefudin (Musi HPP Staff) it was known that there are no population displacement and their activities during the implementation stage.

Mr. Asep Saefudin further stated in 2012, several farmlands claimed the Musi HPP land that has been compensated for other farmland during the planning stage. There is a government regulation (Permen PU no 63/PRT/1993) issued by the Minister of Public Service Republic of Indonesia that regulates the use of river banks and river management. This regulation makes clear that the river banks are government-owned areas. Therefore, any occupation inside the river banks area is considered an illegal occupation.

Index after validation: 6

Status: Appropriate

Perspective:

Since in the planning stage several farmlands has been compensated and in the implementation stage there are no population displacement so the index is appropriate.

2. Communication with Stakeholders

Evaluates the process for contacting stakeholders in the planning, implementation and operation stages.

Previous index (in the social carbon report): 4

Observation:

Via interview with Mr. Ayat Ruhyat (Head of Ujan Mas Sub – district) it was known that the Forum Ujan Mas has been deactivate since the leader of this forum (Mr. Lukman Hakim) has passed away in 2011.

During the implementation / operation stage, a discussion forum name “Forum DAS Musi Hulu - Lemau” was formed and approved by Governor of Bengkulu Province No. J.2304 / XXIII / 2010 dated August 20, 2010 to communicate the management of Musi River. Mr. Asep Saefudin from Musi HPP is a member of this forum. There are several stakeholders involved such as BP DAS Ketahun, BLH Bengkulu, Dishutbun Bengkulu, Dis ESDM, and Bengkulu University. The next meeting planed in 2013.

Index after validation: 4

Status: Appropriate

Perspective:

The interviews revealed that there was a meeting held at the time the hydropower plant was constructed. And, during the operational stage, the new forum was establishing called Forum DAS Musi Hulu Lemau to maintain communication with local stakeholders. The meetings were held once per year.

3. Acceptance

Evaluates the level of support or acceptance from the neighboring population in regard to the project construction or management of the reservoir.

Previous index (in the social carbon report): 6**Observation:**

During interview with Mr. Rusdi (Head of Lubuk Pendam Village) it was known that local people felt that impact of Musi HPP on the local community was positive. The following examples were given by Mr. Rusdi: Musi HPP had provided an access road and repairing the bridge that is strong impact to the villagers regarding their role on daily activities. Also the repairing bridge increased local incomes because they are involved in the project construction.

Via interview with Mr. Yayat Ruhyat (Head of Ujan Mas Sub – district) it was known there are insignificant opposition during the planning stage. Now there is no opposition because the people felt Musi HPP give a strong impact for their role activities especially the access road and the bridge provided by Musi HPP also construction for the construction of mosques.

During interview with Mr. Edi Suardi (Head of 'Sumber Sari' Joint Farmer Groups) it was known that Musi HPP make a positive impact to their community. Mr. Edi Suardi said: Musi HPP provided training to making compost from water hyacinth and how to sell the products also the composting machine. Now the Sumber Sari Joint Farmer Groups can sell the products and increase their income.

Index after validation: 6**Status: Appropriate****Perspective:**

An index of six was the most appropriate acceptance indicator primarily because of the high acceptance and strong support from community. Insignificant opposition only in the planning stage. Until implementation stage there are no opposition regarding the existence of Musi HPP.

4 Social Demands

Social Demands may be understood as institutional or civil society interests: demands made by institutions, agencies, NGOs, municipalities or other institutions which aim to improve the human development and/or the environment near the project. This item evaluates which social demands the entrepreneur addresses.

Previous index (in the social carbon report): 5**Observation:**

Upon interview with Mr. Edi (General and Secretariat Musi HPP) it was known that Musi HPP has received several proposals from surround villages. Every year Musi HPP will carry on a social program based on the submitted proposal. There is internal regulation from Human Resources and Administration Manager PLN No. 158/074/KITSBS/2012 dated April 12, 2012 regarding the systematic CSR Proposal addressed to PLN SBS Power Sector Bengkulu (Include Musi HPP). From the

regulation stated the program target is the most significant social return to the communities will carry out.

No complain from community(s) why their proposal can not carry on by Musi HPP. The community(s) understands that Musi HPP has limited capacity and budget to fulfill the social demands.

Index after validation: 5

Status: Appropriate

Perspective:

Musi HPP was committed to implement a CSR (Corporate Social responsibility) which made them need to bring extra benefit to surrounding communities. Index of 5 (five) was estimated as the most appropriate to the condition. The survey showed that Musi HPP has policies and rules to execute voluntary social actions.

5. Social Programs

Evaluates the quality and results of additional social programs, such as:

- Social and Environmental Communications Program
- Community development / income generation
- Ethnic integration
- Other social areas (please specify).

Previous index (in the social carbon report): 5

Observation:

From social demands received by Musi HPP, a program of budgeting was carried out in order to fulfill the demands after determine which demands(s) is priority. All of the social demands and realization of the social program were all reported in Musi HPP's CSR (corporate social responsibility) report.

During 2010 until May 2013 Musi HPP has a carry out CSR. Such as:

1. Repair the primary bridge of Lubuk Pendam Village.
2. Repair the bridge of leisure space called "Danau Tenang" in Suroilir Village.
3. Construction the mosques in Ujan Mas Village, Mubai Village, Turun Ginting Village, etc.
4. Provide a training to make compost from water hyacinth and how to sell the product in Bumisari Village.
5. Give a composting machine in Bumisari Village.
6. Drilling well for a drinking water in Lubuk Pendam Village.

The local community(s) felt that the impact of the programs has positive influence on everyday behavior.

Index after validation: 5

Status: Appropriate

Perspective:

The interviews revealed that some social programs had a positive impact on local communities. An index of 5 (five) in the social program indicator was the most appropriate index since some programs had a positive influence on daily behavior.

6. Social Benefit

Evaluates the additional benefits to local stakeholders, when these benefits are measurable or evident. These benefits may include:

- Improvements in health system (new installations, enhanced water and electricity systems, support for health programs, and others)

- Additional economic activities (industry, commerce, and others)
- Improvements in the infrastructure (roads, energy provision, leisure spaces, and others)

Previous index (in the social carbon report): 5

Observation:
 During interview with Mr. Heri & Mr. Asep (Musi HPP staff) it was known that Musi HPP provided two major areas to a large number of local stakeholders. Such as:

1. **Additional Economic Activities.** Musi HPP provided a fund to make composting from water hyacinth and provided training how to sell the composting products also giving a composting machine in Bumisari Village.
2. **Improvement in infrastructure.** Musi HPP provided the road and allowing the people to use this road for their daily activities also repair several bridges such as the bridge in Lubuk Pendam and the bridge of leisure space in Suro Baru Village. Musi HPP also constructs several mosques.

Current index: 5	Status: Appropriate
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Perspective:
 Interviews revealed that social benefits were delivered in two major areas: economic, religious, and infrastructure. An index of 5 (five) in the social benefit was the most appropriate index since some benefits had delivered in two major areas.

3.2. Human Resources

7. Human Resource Availability & Capacity Building Initiatives

Implementation: Evaluates the availability of human resources as well as their competence for executing the project, including the research, planning and implementation stages. Uncertainty regarding the availability of human resources may be described as the absence of qualified professionals in the market, reduced numbers in the working team, and need for international support, among other alternatives that may compromise the execution of the project.

Operations and Maintenance: Level of experience and capacity of people involved in the operation and maintenance of the project.

Previous index (in the social carbon report): 6

Observation:
 During interview with Mrs. Isti (Musi HPP HRD Staff) it was known that there are two ways to improving the competence of Musi HPP employees. First is regular training and second is competency examination (Bahasa Indonesia: Uji Kompetensi). Each employee is allotted training twice in one year. Example: Mr. Iwan (Musi HPP Staff) conducted 2 (two) training in this year. The trainings are General OHSAS expert (Bahasa Indonesia: Ahli K3 Umum) training and power generation management training (Bahasa Indonesia: Diklat Tata Kelola Pembangkit Listrik).

Current index: 6	Status: Appropriate
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Perspective:
 Musi HPP had already in the stage of maintenance and operations. And all of the personnel involved in the operational and maintenance stages of the HPP were competent on their basis of competence standard issued by PLN. Certificate of competence were also available issued by PLN in coordination with external parties. More than once training is usually conducted.

8. Health and Safety

Evaluates health and safety procedures, monitoring of occupational accidents, adherence to labor laws and specific management programs or systems.

Previous index (in the social carbon report): 6

Observation:

Musi HEPP has an emergency preparedness and response procedure in place (PT-SBKL – 15 dated January 1, 2013).

A certificate of Indonesian Health and Safety Management System (SMK3) issued by the Ministry of Labor and Transmigration. Currently the certificate has not been available due to waiting for a decision letter from the ministry published. The Audit was carried out by independent parties in December 2012.

Current index: 6

Status: Appropriate

Perspective:

Musi HPP was carried out an audit from independent parties for their health and safety management system. So this indicator was appropriate.

9. Benefits

Evaluates existence of additional benefits (not required by law) to workers regarding the following:

- Education (support for studies)
- Health (medical and hospital assistance)
- Retirement assistance
- Other (leisure, sports, and meal vouchers, among others).

In cases where the services for implementation, operation and maintenance are outsourced, the indicator evaluates the outsourced employees. The indicator also considers the existence of programs to evaluate employee satisfaction in regard to their benefits.

Previous index (in the social carbon report): 6

Observation:

During interview with Mrs. Isti (Musi HPP Staff) revealed that Musi HPP had provided additional benefit to its workers. Such as:

1. Musi HPP encourages employees to continue their study and provided the scholarship. The scholarship will give if the employees pass the examination. Example: Mr. Kurniawan Andrianto continues his study in master program (Master Engineering program ITB). Only permanent employee is offered this benefit.
2. Musi HPP provided an annual medical check up for their employees collaborated with third party (Kimia Farma). The last annual medical check up conducted in November 2012. Musi HPP also provided insurance to their employee. such as: Jamsostek (covered accident insurance and die insurance) and health assistance collaborated with Rafflesia Hospital in Bengkulu and Permata Bunda Clinic in Curup. Only permanent employee is offered this benefit.
3. Retirement assistance provided to Musi HPP employee. Retirement assistance like retirement fund only paid 1 (one) time. But employee received benefit fund paid every month also health assistance if getting sick. Only permanent employee is offered this benefit.
4. Sport facilities and family gathering provided to all employees (both of permanent employee and outsourced employee).

Current index: 3

Status: Lowered

Perspective:

Benefits such as education, health assurance and retirement funds were given only to permanent employee(s) of Musi HPP. Other benefits such as access to the sports facility were open for both permanent and outsourced personnel. The index score for this indicator was inappropriate. Therefore, lowered from 6 (six) to 3 (three) (benefits are offered to all employees involved in the project into one of the area).

10. Transfer of New Technology

Evaluates the level of technological innovation and the technologies employed in the project, the origin of the equipment, existence of royalties and technological licenses, and the necessity of international technical assistance. In cases where the technology employed is already known (a common scenario for hydropower plants), it evaluates if there are innovations regarding operational procedures and maintenance, actions for mitigation of impacts, or other aspects that show a break from the common practice of the sector. The existence of research and development projects (R&D) related to the project are also considered in this indicator.

Previous index (in the social carbon report): 3

Observation:

During Interview with Mr. Yuri (Musi HPP Staff) revealed that Musi HPP implemented several innovation programs every year. Such as:

- a. In 2011, Musi HPP implemented automatic Watergate system in Reservoir and Reregulating Intake innovation. This innovation competed in a “PLN Innovation Competition Region National” and won 4th (fourth) place with the scope of technical supporting.
- b. In 2012, Musi HPP implemented modified shaft seal system innovation. This innovation competed in a “PLN Innovation Competition Region Province” and won 2nd with the scope of technical supporting.

Current index: 4

Status: Upgraded

Perspective:

Musi HPP implemented several innovation technologies programs and the results gain efficiency and reduced environmental impacts. Example: Modified shaft seal system technology innovation. The reason to modify the shaft seal is better water quality before it comes to shaft seal. If the water quality dirty, it can be accelerate weird / broken the shaft seal. Therefore the index upgraded from 3 (three) to 4 (four).

11. Involvement of the Employees in the Carbon Project

Evaluates the internal communication process of the entrepreneur in relation to project emission reductions.

Previous index (in the social carbon report): 3

Observation:

Upon interview with Mr. Asep Saefudin it was known that several employees of Musi HPP participated in a social carbon training workshop given by South Pole Carbon in February 07, 2012 involved 14 employees from all division. Musi HPP created a team called “VCS Team” with 20 personnel came from different areas within Musi HPP. One of the team's tasks is to communicate to all employees about the carbon project and information on climate change. In May 2013, VCS Team invited all employees to attend an internal meeting called “Knowledge Sharing”. In this meeting VCS Team explained some materials about carbon project also about climate change.

Current index: 6

Status: Upgraded

Perspective:

Since Musi HPP is not such a large scale group of employees, it was not difficult to inform all of the employees about the implementation of Carbon Project. Musi HPP made a team called VCS Team with several personnel came from different areas. One of the team tasks is to communicate to all employees about the carbon project and information on climate change. VCS Team was held several meeting about the carbon project and invited all employees.

Therefore it was evident that the information regarding the implementation of carbon project was not only received by management and employee(s) directly involve in the carbon project.

3.3. Financial Resources

12. Economic Performance

Evaluates if the economic performance of the project met the expectations of the shareholders and directors regarding goals for energy generation, stated periods for executing jobs, and operational and maintenance costs, etc. It evaluates if the goals were met or if they did not meet the expectations for the given period.

Previous index (in the social carbon report): 4

Observation:

Musi HPP project is running in line with expectations. From 2011 to 2012, power generation reached the expected target.

Index after validation: 4

Status: Appropriate

Perspective:

The flow of river water strongly affects the electrical energy generated. As water flow is reduced, so too is the amount of generated electricity. From 2011 to 2012, there was an excess supply of electrical energy due to normal stream flow.

13. Market

Evaluates eligibility of credits to CDM market or to other voluntary markets as well as their attractiveness to potential buyers.

Previous index (in the social carbon report): 3

Observation:

All project activities are eligible under the VCS.

Index after validation: 3

Status: Appropriate

Perspective: none

14. Sale of Credits

Evaluates uncertainties regarding the value of commercialized credits generated by the project.

Previous index (in the social carbon report): 4

Observation:

To date, it was known that CER from Musi HPP Carbon Project was selling in the right value carbon market.

Index after validation: 4

Status: Appropriate

Perspective:

None

3.4. Natural Resources

15. Sustainability Principles

Evaluates the existence of specific policies and programs geared toward project sustainability and the applicability of the principles, values and objectives regarding sustainability.

Previous index (in the social carbon report): 5

Observation:

Musi HEPP implemented a policy documenting environmental and quality issues. The policy was distributed to all sectors of Musi HEPP. An environmental and quality objective to ensure a consistent environmental and quality performance was also made available.

To maintain the natural resource sustainability, Musi HPP has an environment working and monitoring plan called RKL/RPL (Bahasa: Rencana Pengelolaan Lingkungan dan Rencana Pemantauan Lingkungan). It was known that the RKL/RPL program has stipulated all of environment potential impacts regarding the operational activity of Musi HPP and countermeasures of the negative impact. Every year, Musi HPP would plan an environment sustainability program based on the RKL/RPL.

The RKL/RPL monitored and reported to the local environment office (Badan Lingkungan Hidup Daerah) every 6 (six) months. To maintain their hazardous waste also water and wastewater quality, every 3 (three) months Musi HPP reported to the local environment office too.

Current index: 5

Status: Appropriate

Perspective:

Objectives, targets, and programs regarding quality and environmental matters were consistently implemented. Monitoring data on the objective's achievement were available.

Project owner are effectively incorporated by some collaborators (i.e. Local Stakeholders, Local Environment Office of the Kepahiang Regency, and the Bengkulu University) to achieve the goals and objectives.

16. Environmental Management

Evaluates environmental management procedures adopted by the project, including organization, coordination of actions, documentation of impacts identification, monitoring, periodic emissions reporting, and the existence of regular certification.

Previous index (in the social carbon report): 6

Observation:

In December 2012 Musi HPP gained an environmental management system certification ISO 14001:2004 (Certificate Number EMS 00159). The certificate was issued by independent certification body (Sucofindo) and valid until April 25th, 2016.

Current index: 6

Status: Appropriate

Perspective:

Musi HPP implemented an environmental management system that has yet to be

certified by an independent certification body. Given this, an index of six is the most appropriate score.

17. Environmental Legislation

Evaluates accordance of the project with environmental laws and norms, including agreements with public authorities, such as environmental licenses, requested authorizations for installation, terms of conduct adjustment, etc.

Previous index (in the social carbon report): 5

Observation:

During interview with Mr. Asep Saefudin (Musi HPP Staff) it was known that Musi HPP identified and compiled all of the relevant and existing environmental regulations. Musi HPP evaluated the compliance status with regard to all identified environmental regulations. It was evident that the majority of the regulations had been complied though the not complied regulation had been addressed as environmental programs so a full compliance will be achieve. Musi HPP gained operational permits (valid for five years) from the Ministry of Environment for temporary hazardous storage (Decision Letter No. 168 / 2009).

Current index: 5

Status: Appropriate

Perspective:

The amount of hazardous waste (e.g. used lubricants) produced by Musi HPP was insignificant. No other HPP activity associated with environmental impact needed a license or permit from relevant government agencies. Musi HPP identified all of the legal environmental regulations and evaluated whether company actions complied with them.

18. Legal Procedures

Evaluates if the project was involved with any lawsuit or administrative sanctions executed by public organs, person or people, aiming the environment and human health protection or repair.

Previous index (in the social carbon report): 6

Observation:

During interview with Mr. Asep Saefudin (Musi HPP Staff) made clear that no lawsuit had been filed regarding environmental and human health issues since the initial stage of HEPP construction.

Current index: 6

Status: Appropriate

Perspective:

No lawsuit regarding environmental and human health issues had been filed or received. A conflict regarding scraped land did arise, but it was settled out of court and never became a legal issue.

19. Environmental Impacts

Evaluates magnitude of environmental impacts of the project, existence of environmental impact statements/studies, and maintenance of environmental evaluation procedures.

Previous index (in the social carbon report): 5

Observation:

In addition to the Environmental Impacts Assessment made by Musi HPP, a periodic

evaluation on the significance of environmental impacts was carried out (on the form “Daftar Aspek dan Dampak Lingkungan”). Musi HPP maintained a list of all environmental variables associated with operational activity and determined via an ongoing impact study whether any of these activities negatively impacted the environment and/or human health. From the list, it was evident that several impacts were categorized as insignificant impacts (total 376 insignificant impacts) and the most of it was significant impacts (total 896 significant impacts). An environmental impact procedure, identification, monitoring and evaluation program was in place.

Current index: 4

Status: Lowered

Perspective:

From the periodic identification of environmental aspects and evaluation of the significance of environmental impacts (“Daftar Aspek dan Dampak Lingkungan”), it was evident that the majority of the impacts were significant. As many as 70.44% of the impacts were significant. Given the above, an index of four is lowered.

20. Environmental risk management

Evaluates the definition, implementation and maintenance of procedures relevant to potential emergencies and accidents related to the project, as well as those relevant to the preparation of answers for such situations, in case of emergency.

Previous index (in the social carbon report): 5

Observation:

Musi HPP adopted a potential emergency procedure that specifies actions to be taken by its personnel in the event of an emergency situation (procedure PT-SBKL-15). A simulation test of the emergency procedure was scheduled to be conducted annually. The next simulation is scheduled to take place in July 2013.

Current index: 6

Status: Upgraded

Perspective:

Musi HPP committed to carry out a periodic simulation on emergency situation according to emergency preparedness and response procedures. Accordingly, an index score of six is appropriate.

21. Reservoir and Marginal Areas Management

Measures the effectiveness of the Reservoir and marginal areas management, considering:

- a) Existence of invasions in the marginal and adjacent areas and mitigation measures adopted
- b) Existence of plan or program for use of the reservoir and surrounding areas, considering its coverage and efficacy for assurance of the planned uses.

Previous index (in the social carbon report): 4

Observation:

During an Interviews with Mr. Asep Saefudin (Musi HPP staff) revealed that community safety is a priority concern of Musi HPP management. Therefore, potentially harmful (in terms of human health and environment) activities that take place around the reservoir (i.e., re-regulating pond) and marginal areas are prohibited. Musi HEPP set a perimeter fence and posted warning signs to prevent unauthorized personnel from entering the pond and/or marginal areas.

Current index: 5

Status: Upgraded

Perspective:

Due to Musi HPP management policy regarding the restricted area of the reservoir,

there were no invasions or inadequate uses of Musi HPP's reservoir.
Given the above, the index score was upgraded from four to five (satisfactory plan but it only contemplates monitoring, safety, and control activities).

22. Erosion, Landslides, Silting and Floods

Evaluate the current stage of erosion and silting of the reservoir and if the operations are a major cause of the problem and the existence of programs to manage these risks, such as monitoring, and erosive processes control (ex: protection and reforestation programs for reservoir protection zone).

Previous index (in the social carbon report): 5

Observation:

Musi HPP did not negatively impact or magnify any erosion/silting problem in the reservoir and downstream areas. As HPP, they are very relying on water debit so they implemented any action to minimize erosion and silting.

To manage and avoid the erosion, Musi HPP has re-forested about 20 Ha with several types of wood tree plants focused along the Musi River also Musi HPP did sediment – dredging. Musi HPP has a CSR Program with its main purpose was to reduce the population of water hyacinth at their downstream area which caused silting and erosion.

Current index: 5

Status: Appropriate

Perspective:

An index of five is the most appropriate score for the current condition.

23. Water Resources

Evaluate the current stage of water quality of the reservoir or downstream water and if the operations are a major cause of the problem and the existence of programs to manage these risks, such as monitoring data and measures of control implemented (ex: sewage treatment station eventually implemented in local communities due to construction of the hydroelectric plant, actions taken for sanitary vigilance, etc).

Previous index (in the social carbon report): 4

Observation:

Monitoring and measurement of river water quality was conducted once every three months and reported to relevant agencies in the RKL-RPL document.

Current index: 4

Status: Appropriate

Perspective:

The last water quality monitoring report (monitoring the main intake, regulatory pond, and final outlet) revealed that Musi HPP was not polluting the water and was, in fact, enhancing water quality.

3.5. Biodiversity Resources

24. APP (Permanent Protected Areas) and Legal Reservation

Evaluates state of conservation of the areas around the reservoir including Permanent Preservation Areas - APP and legal reserve areas whether owned by the project or not.

Previous index (in the social carbon report):3

Observation:

During an interview with Mr. Asep Saepudin revealed that the project is partially located in a protected area, namely "Protected Forest Bukit Daun Register 5".

Index after validation: 3

Status: Appropriate

Perspective:

During a site visit it was determined that less than 50% of APP and legal reservation areas are degraded.

25. Recovery of Degraded Areas

Evaluates existence of reforestation projects in marginal areas of the reservoir, procedures for planting, maintenance, control measures and surveillance. It also evaluates extent of actions: limited legal obligations, areas of the company, riparian forest in the incremental basin, and so on.

Previous index (in the social carbon report):4

Observation:

Upon Interview with Mr. Asep Saepudin revealed that Musi HPP had reforested several areas. The reforestation action is only limited to the area surround the project location.

Index after validation: 4

Status: Appropriate

Perspective:

Reforestation on Musi HEPP is progressing. Musi HPP carried out voluntary action of reforestation in several areas owned by Musi HPP.

26. Biodiversity Conservation

Evaluates actions of biological monitoring developed in surrounding environmental areas and influence of the power plant; assesses specific programs developed for flora and fauna on the banks of the reservoir or in surrounding areas for conservation and research.

Previous index (in the social carbon report): 3

Observation:

Monitoring of flora and fauna was done when the EIA report was prepared. It was clear that reforestation was taking place in several areas of Musi HPP.

Index after validation: 3

Status: Appropriate

Perspective:

The monitoring of flora and fauna was linked to an obligation by Musi HPP to provide an EIA report that focused on the monitoring of flora and fauna.

27. Ichthyofauna

Evaluates existence of procedures for monitoring the Ichthyofauna, partnerships for research, and management actions (restocking, culture in ponds, net).

Previous index (in the social carbon report): 4

Observation:

In 2010, Musi HPP introduced fish species (grass carp) to control an aggressive water plant.

Index after validation: 4

Status: Appropriate

Perspective:

Musi HPP had a fish restocking program in 2010 conducted at the downstream area. However there is no monitoring mechanism regarding the existence of Ichthyofauna.

3.6. Carbon Resources

28. Additionality

Consists of reduction of greenhouse gas emissions or increase in removal of CO₂ beyond what would occur in absence of project activity. This item evaluates tools used for assessing additionality and compliance with national and international standards.

Previous index (in the social carbon report):6

Observation:

Additionality is validated.

Index after validation: 6

Status: Appropriate

Perspective: none

29. Emission Reductions Calculations & Monitoring

Evaluates methodologies used to calculate emissions and monitor compliance with national and international standards.

Previous index (in the social carbon report): 6

Observation:

ACM0002/Version 10, Sectoral Scope: 1, EB 47 was used

Index after validation: 6

Status: Appropriate

Perspective: none

30. Validation & Verification

Evaluates existence of total or partial validation/verification of project by a third party, if third party is accredited by UNFCCC, and compliance procedures for validation/verification with national and international standards.

Previous index (in the social carbon report): 6

Observation:

Project was validated by Tuv-Rheinland, India.

Index after validation: 6

Status: Appropriate

Perspective: none

31. Project Performance

Evaluates performance of project, verified by comparison with estimates of emissions reductions under the PDD.

Previous index (in the social carbon report): 4

Observation:

The project reduces emissions by 1,743,705 tCO₂ from the 1st April 2010 up to 31th of March 2013 (36 months) or about 581,233 tCO₂ annually. The expected annual reduction according to the PDD is 847,020 tCO₂ annually.

The Musi HEPP has reasonable VCS Project performance by resulting 68.6% of carbon credits predicted for the monitoring period of 2010 – 2012

Index after validation: 4

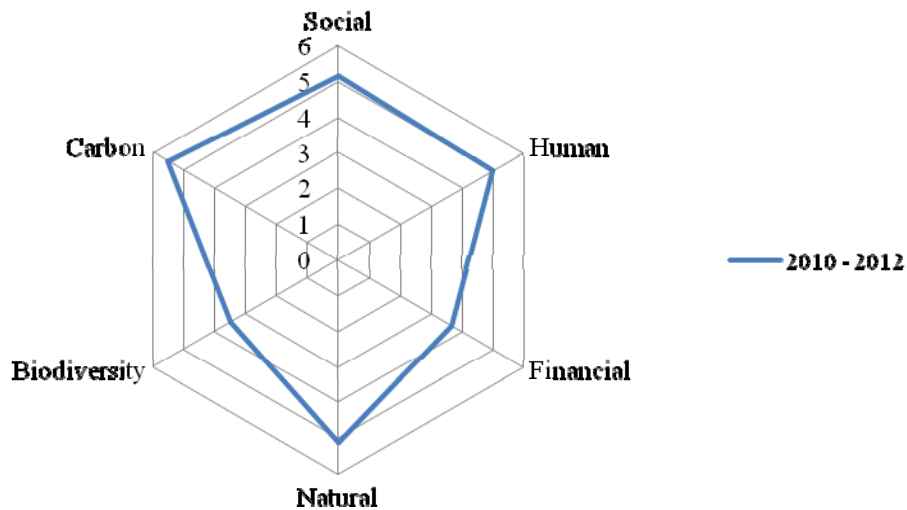
Status: Appropriate

Perspective: none

3.7. General Performance

Table 1 Performance by resource

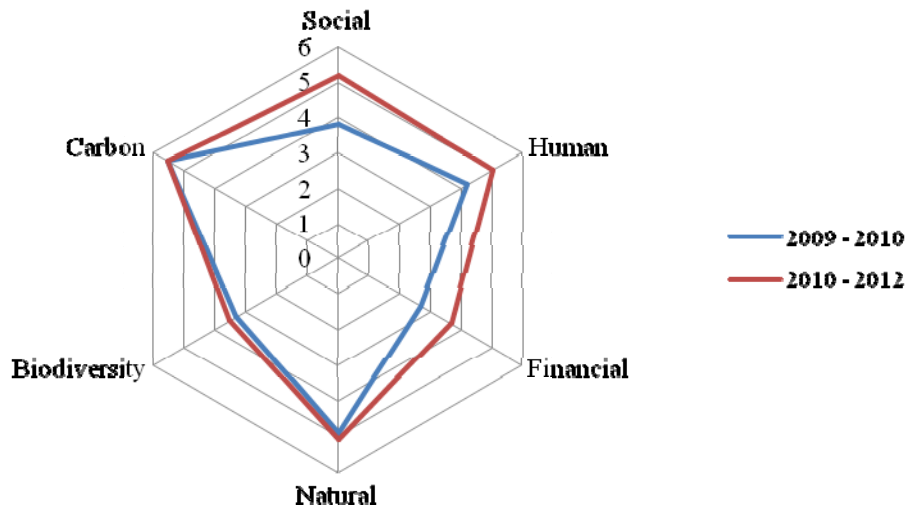
Resource	Critical	Satisfactory	Sustainable	Average	General Performance
Social	0.0%	16.7%	83.3%	5.17	Sustainable
Human	0.0%	40.0%	60.0%	5.00	Sustainable
Financial	0.0%	100.0%	0.0%	3.67	Satisfactory
Natural	0.0%	22.2%	88.9%	5.11	Sustainable
Biodiversity	0.0%	100.0%	0.0%	3.50	Satisfactory
Carbon	0.0%	25.0%	75.0%	5.50	Sustainable
Total	0%	51%	51%	4.66	Sustainable



3.8. Historical Performance and Comparative Analysis

Table 2 Historic Performance (compared to year zero)

Resource	2009 - 2010	2010 - 2012
Social	3.8	5.2
Human	4.2	5.0
Financial	2.7	3.7
Natural	4.9	5.1
Biodiversity	3.3	3.5
Carbon	5.5	5.5
Total	4.1	4.7



4. Conclusion

The validation review of relevant documents and interviews made clear that Musi HPP had undertaken actions to improve performance according to the Social Carbon Standard.

Social Resources – Musi HPP was establishing new forum called Forum DAS Musi Hulu Lemau to maintain communication with local stakeholders. The meetings were held once per year. More social benefits provided to the local stakeholders.

Human Resource – Currently, benefits that cover health insurance, retirement assistance, and education are limited to permanent workers. With few exceptions (access to leisure and sports) outsourced personnel are excluded from most benefits provided by Musi HPP (but some do receive benefits from other companies). In addition, Musi HPP should provide proper benefits to both permanent and outsourced employees. Musi HPP implemented several innovation technologies programs and the results gain efficiency and reduced environmental impacts

Financial Resources – Because the produced electricity is distributed to the Distribution Section of National Electricity Company (a separate part of the HPP, and not being directly sold to market) it was not possible to calculate the economic benefit of their operation. The electricity price is centrally standardized by the government. It is possible to calculate Musi HPP electricity production (production depends on the force of the flow of river water).

Natural – Musi HEPP undertook sustainable actions and adopted policies to protect the natural environment. Musi HPP was certified by an external party on their Quality Management System, Environmental Management System, and SMK3 (Indonesian Occupational Health and Safety Management System). A higher performance average can be reached by Musi HEPP if it takes action on reservoir and marginal areas management. According to the Social Carbon Standard a higher performance score

can be given if there are multiple uses of the reservoir and adjacent areas that benefit the local population.

Biodiversity Resources – The biodiversity resources score was satisfactory, mostly due to the condition that Musi HPP had a fish restocking program.

Carbon – already validated by Tuv – Rheinland India.

Validation of the Social Carbon Report indicated that scores were lowered for indicators 9, and 19. Four indicators — 10, 11, 20, and 21 — had their scores upgraded. 25 indicator scores remained the same.

5. Persons Interviewed

- Mr. Asep Saefudin, worker at Musi HPP
- Mr. Syafi'i, worker at Musi HEPP
- Mr. Iwan, worker at Musi HPP
- Mr. Edi, worker at Musi HPP
- Mr. Heri, worker at Musi HPP
- Mr. Yuri, worker at Musi HPP
- Mrs. Isti, worker at Musi HPP
- Mr. Rusdi, head of Lubuk Pendam Village
- Mr. Yayat Ruhyat, head of Ujan Mas Sub District
- Mr. Edi Suardi, Head of "Sumber Sari" Joint Farmer Groups

6. References

- "Approved Indicators for Hydroelectric Power Plants" – Version 4.1, June 2011.
- "210 MW Musi Hydro Power Plant, Bengkulu" – Social Carbon Report.
- www.socialcarbon.com
- www.southpolecarbon.com

7. Validation Statement

THIS SOCIAL CARBON REPORT ESTABLISHED BY SOUTH POLE CARBON INCLUDES ALL CHANGES REQUESTED IN THE FINAL VALIDATION REPORT (LAST REVISION WAS SENT ON JULY 11, 2013).

THIS STATEMENT WAS ISSUED WITHOUT ANY PRESSURE OR INTIMIDATION FROM ANY PARTIES, AND UPON AN OBJECTIVE VALIDATION AUDIT. THIS VALIDATION REPORT SHALL NOT BE EDITED BY UNAUTHORIZED PARTIES WITHOUT PERMISSION FROM VALIDATOR PERSONNEL OF MUTUCERTIFICATION INTERNATIONAL AS SOCIAL CARBON APPROVED CERTIFYING ENTITIES.

8. Attachment

8.1 Corrective Action Request Form (CAR)
Resolved by the Project Owner

8.2. Index of Photos

8.1 CAR Form Resolved by Project Owner

Several non conformances were observed between the Social Carbon Report and field conditions. These non conformances shall be corrected by project owner by revising the Social Carbon Report. Details of the non conformances can be seen below. Project owner shall fill in the column of “summary of project owner response” and “revised sections “.

NC #:	1 of 6	Reference:	SCR Section 4.b, Indicator 9
Non conformance detail:			
During the interview with Musi HPP staff it was known benefits such as education, health assurance and retirement funds were given only to permanent employee(s) of Musi HPP. The outsourced employee(s) only get sport facility benefit.			
Summary of response, e.g. what caused the non conformance, if any (filled by project owner):			
With the current provide benefits for outsource, the appropriate score for this indicator is 3 (benefits are offered to all employees involved in the project in to one of the areas whereas the outsources received the sport facility benefit)			
Revised sections (filled by project owner):			
To have better information on benefit received by direct and non-direct staff, an interview was conducted during Verification Site Visit with Mrs. Isti from Musi HEPP as the Interviewee.			
According to her statement, the permanent staff will receive benefit such as scholarship; health and life insurance; and retirement assistance. The outsource staff will received facilities such as sport facilities and family gathering from Musi HEPP. The outsource staff will be supported by their contracted employer.			
Musi HEPP conducted survey in order to evaluate worker satisfaction in regard to benefits received. However, since benefit only provided for the permanent staff, hence this Indicator is scored 3.			
Conclusion (filled by validator):			
Project owner had revised the SCR. CAR is resolved.			

NC #:	2 of 6	Reference:	SCR Section 4.b, Indicator 10
Non conformance detail:			
During the interview with Musi HPP staff it was known that Musi HPP has implemented several innovation technologies programs and the results gain efficiency and reduced environmental impacts.			
Summary of response, e.g. what caused the non conformance, if any (filled by project owner):			
Since the implemented innovation on technology has proven to gain efficiency and reduced environmental impacts, hence the score is upgrade from 3 to 4.			
Revised sections (filled by project owner):			
The Project will use proven technology in electricity generation and transmission. The essential equipment used in the Project was procured from another country.			

According to Mr. Yuri (Musi HEPP staff), Musi HPP has implementation programs, which proven to be effective to increase energy efficiency and reduced environment impacts. Hence, the Indicator is score 4.

Conclusion (filled by validator):

Project owner had revised the SCR. CAR is resolved.

NC #:	3 of 6	Reference:	SCR Section 4.b, Indicator 11
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Non conformance detail:

During interview with Musi HPP staff it was known that Musi HPP created a team called "VCS Team" and one of the team tasks is to communicate to all employees about the carbon project and information on climate change. Several internal meeting was held and involved all employees.

Summary of response, e.g. what caused the non conformance, if any (filled by project owner):

Based on interview with one of the musu HEPP staff during Verification site visit, the score is upgraded from 3 to 5 →Internal seminars and explanatory materials were distributed among employees.

Revised sections (filled by project owner):

Indicator 11, SC Report page 15:

Annual VCS training held at the project site and attended by project related staff of Musi HEPP. However the general knowledge regarding VCS and some information materials have distributed to employees who assigned as the VCS Team by the Head of Bengkulu Sector Office. In addition, the VCS Team also held internal meetings regarding project carbon started since 2010 onward¹.

Conclusion (filled by validator):

Project owner had revised the SCR. CAR is resolved.

NC #:	4 of 6	Reference:	SCR Section 4.d, Indicator 19
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Non conformance detail:

During the document review and interview with Musi HPP staff it was known that the majority of the environmental impacts were significant.

Summary of response, e.g. what caused the non conformance, if any (filled by project owner):

Based on the Verification result, the indicator score is lower from 5 to 4 : Studies show high environmental impact, yet compensation and mitigation measures for such impacts are satisfactory (i.e. Efficient execution of environmental programs).

Revised sections (filled by project owner):


Indicator 19. Environmental Impacts, page 18 SC Report:

An EIA was conducted and all negative environmental impacts are subject to mitigation action. The quarterly monitoring report shows that most of the environmental impacts are significant. However, the mitigation measures are available.

Conclusion (filled by validator):

Project owner had revised the SCR. CAR is resolved.



¹Internal meeting as evaluation on the implementation of Carbon Project in Musi HEPP

	PT. MUTUAGUNG LESTARI
	VALIDATION REPORT

NC #:	5 of 6	Reference:	SCR Section 4.d, Indicator 20
Non conformance detail:			
<p>During the document review and interview with Musi HPP Staff it was known that Musi HPP had a emergency procedure and a periodic simulation on emergency situation plan. Musi HPP had carried out periodic an internal audit and external audit by third party regarding environmental risk and management.</p>			
Summary of response, e.g. what caused the non conformance, if any (filled by project owner):			
<p>Based on interview with one of the Musi HEPP staff during verification site visit, the score for this indicator is upgrade from 5 to 6.</p>			
Revised sections (filled by project owner):			
<p>Indicator 20, SC Report page 18 The company has an Emergency Response System team/organization under ISO 14001 and SMK3. To train this team, every year the company conducts an 'Emergency Response Simulation' like Fire Simulation, Earthquake, riot and oil spills. As explained on the point 16, Musi HEPP has developed a Quarterly Monitoring Report title, 'Laporan Implementasi Pengelolaan Lingkungan dan Pemantauan Lingkungan'. All environmental emergencies are documented and monitored. Moreover, Musi HEPP under its Sectorial Manager has received their latest ISO 14001:2004 Certificate with serial number of EMS 00159 which valid from April 26th 2013 until April 25th 2016. An annual internal audit process was conducted in order to assure the application of the ISO. An eternal audit conducted periodically to renew the ISO Certificate. Hence this indicator is scored 6.</p>			
Conclusion (filled by validator):			
Project owner had revised the SCR. CAR is resolved.			

NC #:	6 of 6	Reference:	SCR Section 4.d, Indicator 21
Non conformance detail:			
<p>During the interview with Musi HPP staff and site visit it was known that Musi HPP had a priority concern regarding the community safety. Therefore, potentially harmful activities that take place around the reservoir and marginal areas are prohibited.</p>			
Summary of response, e.g. what caused the non conformance, if any (filled by project owner):			
<p>Based on latest interview result with one of Musi HEPP staff regarding the reservoir and marginal areas mangement plant, hence the score is upgrade from 4 to 5</p>			
Revised sections (filled by project owner):			
<p>Indicator 21, SC Report page 18-19: Based on interview with Mr. Asep Saefudin (staff of Musi HEPP), community safety is a priority concern for Musi HEPP Board of Management. Musi HEPP set a perimeter fence and warning signs are posted surround the reservoir area to avoid invasions or inadequate activities which have potential harm to human health and environment. Since Musi HEPP has plan to contemplate the reservoir and marginal areas management, hence this Indicator is score 5.</p>			
Conclusion (filled by validator):			
Project owner had revised the SCR. CAR is resolved.			

8.2 Index of Photos

 <p>20/06/2013</p>	<p>Interview with Mr. Rusdi – Head of Lubuk Pendam Village</p>
 <p>20/06/2013</p>	<p>Interview with Musi HPP Staff</p>
 <p>21/06/2013</p>	<p>Interview with Mr. Edi Suardi – Head of "Sumber Sari" Joint Farmer Group</p>
 <p>21/06/2013</p>	<p>Interview with Mr. Yayat Ruhyat – Head of Ujan Mas Sub District</p>



Site visit – Suro Ilir Bridge



Site visit – Reforestation in access road owned by Musi HPP



Site visit – Intake dam Musi HPP



Site visit – Composting machine given by Musi HPP to Sumber Sari Joint Farmer Group