

Clean Development Mechanism

Sustainable Development co-Benefits Description Report¹

CDM project activity or programme of activities (PoA) information	
Title	Santana I SHP CDM Project (JUN 1118)
Pre-registration reference no.	
Reference no.	2793
Type	Project Activity
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Host Party	Brazil

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Overview of sustainable development co-Benefits

A. The extent of environmental co-Benefits:

		N/A	No	Slightly	Partly	Highly
Air	Reducing Sox	•				
	Reducing Nox	•				
	Reducing Fly ash	•				
	Reducing suspended particulate matter (SPM)	•				
	Reducing Non Methane Volatile Organic Compounds (NMVOCs)	•				
	Reducing Noise Pollution	•				
	Reducing Odors	•				
	Reducing Dust	•				
	Other air quality improvements	•				
	Land	Preventing end of life products/equipment (solid waste)	•			
Producing/using compost		•				
Producing/using manure, mineral fertilizer or other soil nutrients		•				
Irrigation		•				
Preventing soil erosion						•
Minimum tillage		•				
Other means to improve land quality						•
Water	Improving management/control of wastewater	•				
	Saving/conserving of water					•
	Improving reliability/accessibility of water supply	•				
	Purification/cleaner water supply	•				
	Improving ecological state of water bodies	•				
	Other means to improve water	•				
Natural Resources	Protecting mineral resources	•				
	Protecting/enhancing plant life	•				
	Protecting/enhancing species diversity					•
	Protecting/enhancing forests	•				
	Protecting/enhancing other depletable natural resources	•				

B. The extent of social co-Benefits:

		N/A	No	Slightly	Partly	Highly
Jobs	New long-term jobs					•
	New short-term jobs					•
	New sources of income generation					•
	Other employment opportunities					•
Health & Safety	Disease prevention	•				
	Reducing accidents	•				
	Reducing crime	•				
	Preserving food	•				

	Reducing health damaging indoor air pollution	•			
	Enhancing health services	•			
	Improving sanitation and waste management	•			
	Other health and safety improvement	•			
Education	Job-related training	•			
	Enhanced educational services	•			
	Project-related knowledge dissemination	•			
	Other educational benefits	•			
Welfare	Improving working conditions		•		
	Community or rural advancement		•		
	Poverty alleviation (more people above poverty level)		•		
	Improving wealth distribution/ generation of income and assets		•		
	Increased municipal revenues				•
	Optimized women's empowerment		•		
	Reduced traffic congestion		•		
	Other welfare benefits				•

C. The extent of economic co-Benefits:

		N/A	No	Slightly	Partly	Highly
Growth	New investments					•
	New industrial/commercial activities		•			
	New infrastructure		•			
	Enhancement of productivity		•			
	Reduction of production costs (services)		•			
	New business opportunities					•
Energy	Other economic benefits		•			
	Improvement in supply of energy					•
	Access to energy		•			
	Affordability and/or reliability of energy		•			
Technology	Other energy improvements		•			
	Introducing/developing/diffusing imported technology	•				
	Introducing/developing/diffusing local technology	•				
	Adaptation of new technologies to local circumstances	•				
	Know-how activities for a technology	•				
Balance of payments	Other technological benefits	•				
	Reduction of foreign dependency	•				
	Other macro-economic benefits	•				

D. Further information:

Information required

	Yes	No	N/A
			•

Detailed description

A. Environmental co-Benefits

	Indicator	Specification	Extent
Land	The CDM improves the soil quality and/or avoid soil pollution, waste disposal as follows:		
	Pollution prevention		N/A
	Compost		N/A
	Manure, mineral fertilizer or other soil nutrients?		N/A
	Irrigation		N/A
	Soil erosion	<p><i>The project activity has a program to predict the appearance of erosive processes around buildings and their maintenance roads. Register and control the outbreaks of erosion processes already installed prior to the beginning of the works, during the installation phase and after the construction ends. Preserve and give subsidies for maintenance and conservation of the soil and vegetation that is associated with important actions, which contribute to the development of the projected works. Equipments used by the technicians: GPS; Camera; Computer with printer; Field worksheet; Referenced maps; Letters with geological and pedological diagnostics; Vehicle. Method: Visit to the site of the Santana I, observing and determining the critical points of the installation of erosive processes and their magnitude, followed by detailed photographic records and their geographical coordinates. The registered data are transferred to the event registration office, Company Seiva Engenharia e Projetos Ambientais, analyzed, interpreted and completed in the form of technical report. Results: For the campaigns, the field inspections were carried out in order to observe the changes in the landscape resulting from the construction / reconstruction and operation of the Santana I SHP and its internal access roads, since the external roads are no longer used. Due to observations at the place of installation of the works and in the internal accesses, the erosive processes provoked by the personnel traffic and the soil exploitation are few expressive, highlighting surface erosions type furrows, contributed by the current rainy season. More details in "7º Rel. F.Op. P.Erosivos (Consolidado) - PCH Santana I MAR2017.pdf"</i></p>	Highly
Tillage		N/A	
Other means to improve land quality	<p><i>An area of 216 ha has been enhanced with new arboreous species and also controled revegation has been done since the enterprise construction start and must be kept until the end of the project activity lifetime. More details in the document "7º Rel. F.Op. Prad (Consolidado) - PCH Santana I MAR2017.pdf"</i></p>	Highly	
Water	The CDM improves the quality of water and access to water as follows:		

	Waste water		N/A
	Conservation of water	<i>The project activity has several programs to monitor the water quality of the Santana river in the interference area of the Santana I SHP in order to maintain the natural productive potential of the aquatic ecosystem. Specific: To evaluate the physical, chemical and biological conditions upstream, downstream and the own lake of the reservoir of the Santana I SHP, in order to analyze the influence of the operation phase before and after the system To form a database on the water quality of the Santana river in the section considered. Identify the structure and composition of biological communities (phytoplankton and zooplankton). More details and the water quality results in the document "7º Rel. F.Op. Limnologia (Consolidado) - PCH Santana I - MAR 2017.pdf" and "Relatório de Fito PCH SANTANA I MARÇO 2017.pdf"</i>	Highly
	Distribution		N/A
	Purification or a cleaner supply		N/A
	Water bodies		N/A
	Other means		N/A
Natural Resources	The CDM protects or enhance depletable natural resources as follows:		
	Mineral resources		N/A
	Plant life		N/A
	Species diversity	<i>There are fauna and ictiofauna currently active programs, being: - Wildlife (fauna) Monitoring - Monitoring the Ichthyofauna -Rescue of Ichthyofauna OBJECTIVE Know the ichthyofauna and monitor the possible impacts resulting from the operational phase of the Santana I SHP - Arenópolis and Nortelândia - Mato Grosso Municipalities, Brazil. Specific: - Identify and monitor the fauna and fish species occurring in the areas affected by SHP; - To evaluate the effects of the SHP operation processes on the spatial and temporal distribution of the fauna and ichthyofauna; - To evaluate the effects of the SHP operation processes on the composition and structure of the fauna and ichthyofauna; - Propose measures and actions to mitigate the possible impacts caused to fauna and ichthyofauna. See document "6º Rel. F.Op. Ictiofauna (Consolidado) - PCH Santana I ABR2017.pdf"</i>	Highly
	Forests		N/A
	Other depletable natural resources		N/A

B. Social co-Benefits

	Indicator	Specification	Extent
Jobs	The CDM creates new job opportunities including income generation as follows:		
	New long term jobs	New long-term jobs > 1 year - 9	Highly
	New short term jobs	New short-term jobs < 1 year - 140	Highly
	Income generation	<i>The distribution of income is directly related to the generation of direct and indirect jobs. The project</i>	Highly

	<p><i>requires skilled labor for its design - knowledge of engineers and specialists. However, a large part of the work is carried out by low-skilled operators, who needed special training to understand basic mechanisms of project operation, either in the generation of electricity from small hydroelectric dams or in the operation of the project. By doing so, it provides access to decent work and stable income to people who might eventually be marginalized, thus contributing to income distribution. The installation of Small Hydroelectric Plants as well as other types of ventures allows the regional economic development and brings with it the possibility of increasing the wealth produced by a given municipality. Normally the most used method to quantify the income distribution is the GDP per capita that can be applied in the analysis of a municipality or region. For the current project, it was hoped that the distribution of income would be linked only to the generation of direct jobs. However, in addition to the income provided to contract workers, there is a local wage increase for the trade that is closer to the construction sites, causing a positive impact, although temporary. However, a better distribution of income in the region where the project activity is located also results from increased income in the municipality, through taxes levied on energy generation. As for example, the Tax of Circulation of Goods and Services (ICMS), since the installation of a power plant in these regions will increase the energy sales, also will increase quality and reliability of energy, providing conditions for the installation of new industries, increased trade and leisure and consequently improving the standard of living and well-being of the citizen. At federal level, the increase in revenues occurs due to the payment of the Distribution System Use Tariff (TUSD). Other taxes are levied on energy generation, such as PIS, COFINS and Corporate Income Tax. All these taxes, in a certain way, must be applied with a view to improving the quality of life of the population. The project's monthly tax collection, a positive balance for the region, can be translated into investments in improving infrastructure, productive capacity and coverage of basic needs of the population (education and health). Such investments benefit the local population, and indirectly also lead to a better distribution of income. In this way, the contribution of the project is expected to occur through the creation of jobs that must be occupied by inhabitants who are seeking to insert in the market or qualification to re-enter the labor market.</i></p>	
<p>Other employment opportunities</p>	<p><i>The construction of energy projects is associated with the intensive use of labor during the construction phase of the plants, but the relatively small scale of during the operation and maintenance phase of these plants. However, it is important to note that such plants located in small towns are important to local communities as they increase the creation of formal jobs as well as the increase in income, which would not happen in the absence of these projects. In addition, it is important to note that such plants, located in small a significant</i></p>	<p>Highly</p>

		<p><i>impact on working conditions and the net generation of jobs, especially when the number of jobs generated by the number of jobs is relativised. inhabitants of these cities. In addition to the direct jobs generated by the projects that make up this project activity, indirect jobs are also generated, both during construction and during the operation of the exchanges. The construction of the SHP generated around 100 (one hundred) direct and forty (40) indirect jobs during a period of approximately one (1) year. In order to facilitate contracting and generate the necessary stimulus to the local tertiary sector, the construction of the enterprise prioritized the hiring of workers and workers located in the region of Nortelândia and surroundings. The increase in the general level of education and the supply of formal labor contributed directly to a better distribution of income, which in turn indirectly contributes for the country to achieve the eight millennium goals (United Nations, 2005): eradicate extreme poverty and hunger; achieve universal primary education; promote gender equality and women's autonomy; reduction of infant mortality; improve maternal health; combating HIV / AIDS, malaria, and other diseases; ensure environmental sustainability and world partnership for development. The average profile of the civil construction employee is a few years of formal education. This profile would make it difficult to find high-level formal employment for these workers. In addition, the city of Nortelândia presents HDI Relatively low, thus, job creation in regions of this type has brought considerable improvements to the local population. Therefore, the generation of energy from the Santana I SHP represents the creation of a significant number of jobs, both during construction and during the operation and maintenance period.</i></p>	
Welfare	The CDM improves local living and working conditions as follows:		
	Improvement of working conditions		No
	Community or rural upliftment		No
	Poverty alleviation		No
	Changes in distribution and/or generation of income and assets		No
	Increased municipal revenues	See "New sources of incoming generation"	Highly
	Empowerment of women		No
	Reduced traffic congestion		No
Other welfare benefits	<p><i>Investment in the consolidation of the local economy in Nortelândia Firenze Energética entered into a partnership, sponsoring the renovation and expansion of sheds in the agroindustrial park, which houses several projects to generate local employment. Was made a partnership with a local group of women who have launched own pants brand in cooperative system sew for industry. Firenze Energética, which operates the Santana I Small Hydroelectric Power Plant (SHP) in the municipality of Nortelândia (237 km from Cuiabá) has been maintaining productive partnerships from an economic point of view, supporting initiatives developed by the Nortelândia Municipality , which aim to transform</i></p>	Highly	

		<p><i>the economy and generate jobs and income for the low-income population. The company's decision to support social projects reflects the awareness of an organization's commitment to society, which in the specific case crystallizes through acts and attitudes that positively affect the community in which it operates, acting effectively and coherently in relation to its specific role in society, contributing greatly to economic and social development. The Chief Executive Officer Anderson Fumagalli stressed that the company's social responsibility is to contribute to economic development while improving the quality of life of its employees, their families, and especially the local community and society as a whole. "We are always supporting the initiatives presented, not only by the municipal administration, but also by organized civil society, as long as these projects focus directly on the life of the population as a whole, such as the Agroindustrial Park and the Is Mary Jeans Project" said Fumagalli. Firenze Energética entered into a partnership, sponsoring the renovation and expansion of sheds in the agroindustrial park, which houses several projects to generate employment. In the building renovated by the company were invested approximately R\$ 100,000 reais, and is home to the IS MARY JEANS Project, touched by a group of women who sew to large companies in Mato Grosso and Brazil. Women were no longer economically inactive and started to contribute to family income, achieving gains that exceed R\$ 800 reais per month, transforming their lives and their families, improving the quality of life and moving the economy of Nortelândia.</i></p>	
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C. Economic co-Benefits

	Indicator	Specification	Extent
Growth	The CDM supports economic development and/or stability as follows:		
	New investments	See "New sources of incoming generation"	Highly
	New industrial/comercial activities		No
	New infrastructure		No
	Enhancement of productivity		No
	Reduction of production costs (services)		No
	New business opportunities	See "New sources of incoming generation"	Highly
	Other economic benefits		No
Energy	The CDM supports economic development and/or stability as follows:		
	Supply of energy	<p><i>Brazil is considered a country with abundant water resources according to its continental proportions. As a result of this fact, it is also observed that these hydroelectric potential, being one of the largest in the world. While large hydropower plants are concentrated and generally in isolated regions, small farms have distributed generation characteristics and are locally developed. The generation by Small Hydroelectric Power Plants allows the generation of energy in a decentralized way geographically, not requiring large investments in transmission lines, energy losses, among other factors. The infrastructure industry for SHPs in Brazil has been</i></p>	Highly

	<p><i>innovative and continues to register rights and patents. Although the Santana I SHP does not create new technology, which already developed and available, an important fact to be mentioned is the investment in technologies that allow the use of the water resource involved with greater efficiency and effectiveness translated into smaller areas of flooding than would be traditionally flooded. These technologies then allow for a lower wattage / wattage ratio (power density) than for technologies used in the past. In addition, the project promotes an increase in the sector, which may result in more research and greater industrial competitiveness. Additionally, they create the local capacity of action necessary for the correct management of the projects. The Small Hydroelectric Plant will require operators for several shifts during the power generation period. Operators hired by enterprises hydroelectric power plants must undergo training and capacity building to perform such function and to be prepared for adverse situations and to escape their activities and routine tasks, ie safety training, accident prevention, minor repairs and maintenance, etc. Another relevant point is that the SHP will demand a maintenance and repair service by a specialized company which consequently indirectly adds value to the human capital of the contracted company.</i></p>	
Access to energy		No
Affordability and/or reliability of energy		No
Other improvements to energy		No