Reference: Clarifications on issues associated with registration request for review, EB40 – Brasil Central Energia S.A. – Sacre 2 Small Hydro Power Plant Project (Ref.: 1328)

All requests for review have exactly the same content and, therefore, the comments of the Project Participants are valid to all requests. In the following text, the reasons for request are *italicized and bolded*.

1. The start date of the project activity should be as per the CDM glossary of terms.

According to the PDD, the SHPP Sacre 2 was predicted to start the commercial operations of its first unit generator on September 14th, 2006 and become fully operational on September 30th, 2006. However, the real dates were:

- Starting of the first unit generator operation: September 13th, 2006 (ANEEL dispatch nr. 2,104, Annex 1);
- Starting of the second unit generator operation: October 11th, 2006 (ANEEL dispatch nr. 2,360, Annex 2);
- Starting of the third unit generator operation: October 20th, 2006 (ANEEL dispatch nr. 2,403, Annex 3).

In that way, Sacre 2 SHPP became fully operational only on October 20th, 2006, when its third unit generator started operations.

According to the CDM glossary of terms:

> *"The starting date of a CDM project activity is the earliest date at which either the implementation or construction or real action of a project activity begins…"*

Considering the CDM glossary of terms, the starting date of the project activity cannot be the date in which the first unit generator of Sacre 2 SHPP started operations.

In that way, considering that any company that wants to perform its activities in Brazil must have inscription in the Federal Revenue Service - Registration of Corporate Taxpayers (in Portuguese *Cadastro Nacional de Pessoas Jurídicas – CNPJ*), the real action of a project can be considered as the date of this registration were accepted and made published by the Brazilian Government. Then, the start date of Sacre 2 project is May 20th, 2003, when Brasil Central Energia S.A inscribed itself on this government registry (Annex 4).

Brasil Central Energia S/A, the owner of Sacre 2 SHPP, was created with the specific purpose of explores the hydraulic potential of Sacre 2 SHPP[1] (Annex 5). Its main activity is the commercialization of electric energy as can be seen at the company registration and cadastral situation (Annex 4).

Considering comments above, the starting date of the project activity is May 20th, 2003, being this date the one that best represents the real action for the implementation of the project activity.

2. If the main demonstration of additionality is the low returns, then this should be demonstrated by means of a transparent and validated investment analysis.

Considering comments above, following investment analysis (step 2 of the Tool for the demonstration and assessment of additionality):

Step 2. Investment analysis

Sub-Step 2a. Determine appropriate analysis method

To demonstrate that the project activity is not financially attractive without the revenue from the sale of certified emission reduction (CERs), is conducted an investment analysis applying benchmark analysis – option III.

Sub-Step 2b – Option III. Apply benchmark analysis

The financial indicator identified is the Project Internal Return Rate (IRR), and the relevant benchmark is the Brazilian Prime Rate, known as SELIC rate, which is the measure of value in the credit market. If the project return on investment or the investor's internal rate of return (IRR) for a particular project is above capital market returns of similar risk, then it is expected that the sponsors will decide to invest their capital in the project. At the time of project inception, the sponsors had the alternative to invest in debt instruments of similar maturity to the hydro plants concession.

Given a small hydro power project is a much riskier investment than a government bond, it is necessary to have a much higher financial return, compared to the SELIC reference rate.

Sub-Step 2c. Calculation and comparison of financial indicators

The identified benchmark, SELIC Rate, has been oscillating since 1996 from a minimum of 14% p.a. to a maximum of 49 % p.a. in November 1997 (Figure 1). At the time of the decision to the implementation of the project activity (first semester of 2003), SELIC rate was set on the level of **25 – 26 %**.

[1] Available at: http://www.aneel.gov.br/aplicacoes/AgenteGeracao/ResumoEmpresa.asp?lbxEmpresa=4064:Brasil%20Central%20Energia%20S/A

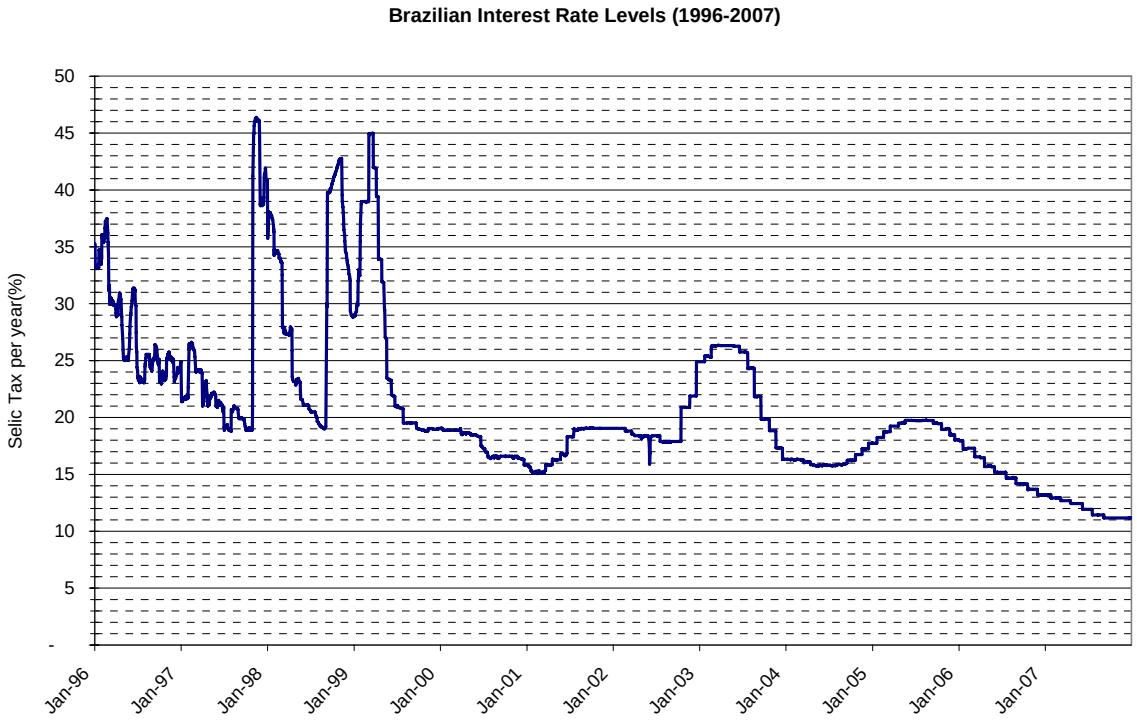


Figure 1 – SELIC rate
Source: *Banco Central do Brasil*[2]

The project has a financial IRR (Internal Rate of Return) of **20.8%**, lower than **SELIC** rate of **25%** in the first semester of 2003. Although the project is a much riskier investment as compared to Brazilian government bonds, project sponsors chose to invest in the power plant construction, because of the several forms of revenues that carbon credits.

Sub-step 2d Sensitivity analysis

To support the conclusion that the project activity is unlikely to be financially attractive, a sensitivity analysis is done increasing the electricity sale revenue and decreasing the operational costs in 10%.

Scenario	**Variation**	**IRR**
Reference	--	20.8
Increase Income	+ 10 %	24.2
Decrease Costs	- 10 %	23.8

[2] Available at: <http://www.bacen.gov.br/?SELICDIA>

For the sensitivity analysis calculation, see annexes 6 and 7. As demonstrated above, even with a 10% increase in the electricity sale revenues, or a 10% decrease in the operational costs of the project, the project IRR remains lower than Selic rate, thus the activity is not financially attractive.

Outcome

The IRR of the project activity without being registered as a CDM project is below SELIC rate, evidencing that project activity is not financially attractive to investor.

Making a comparison with the IRR with and without carbon credits, the IRR with CERs will be 22 % closest to SELIC rate. The inclusion of the revenues from CERs makes the project's IRR increase by approximately 1.2 points from 20.8% to 22 %. In that way, Brasil Central Energia S/A decided to carry out the project considering the possible CER's revenues and other benefits that it could revert to the company (e.g. improving its image with costumers). The knowledge of possible CDM registering benefits were the key points to decision-making to implement the project activity.

3. Further clarification is required on how the DOE has validated the prior and serious consideration of the CDM; considering the project activity started construction three years prior to start of validation. This information should also be included in Section B.5 of the PDD.

Please see Annex 8.

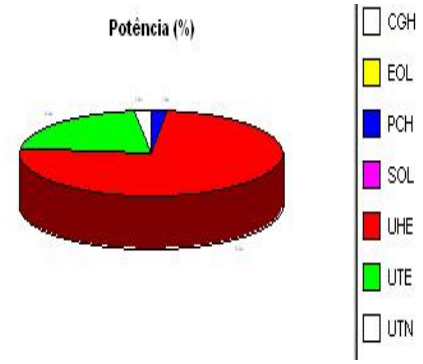
4. Further details regarding the common practice should be provided in accordance with the requirements of step 4 of the additionality tool, i.e. similar project activities should be described and the differences between each of these activities and the project should be clearly indicated.

Additional to the explanations described in the PDD, PPs add the following:

Step 4. Common practice analysis

Sub-step 4a. Analyze other activities similar to the proposed project activity:

Regardless of the risks and barriers mentioned in Step. 3, the main reason for the reduced number of similar project activities is the economic cost. Project feasibility requires a PPA contract with a utility company, but utilities usually do not have incentives or motivation to buy electricity generated by small hydro power projects.



Legend	
CGH	Hydroelectric Generator Center
CGU	Undi-Eletric Generator Center
EOL	Wind Generator Center
PCH	**Small Hydroelectric Power Plant**
SOL	Solar Generation Center Photovoltaic
UHE	Hydroelectric Power Plant
UTE	Thermoelectric Power Plant
UTN	Thermonuclear Power Plant

Figure 1 – Operational types of project
(Source: ANEEL, 2008[3])

According to the PDD, most of the developers which funded their projects outside of Proinfa have taken CDM as decisive factor for completing their projects. Therefore, to the best of our knowledge, the vast majority of similar projects being developed in the country are participating in the Proinfa Program, and those not are participating in the CDM. Additionally, the Brazilian government has endorsed that the projects under the Proinfa Program will also be eligible to participate in the CDM, in accordance with the decision of the UNFCCC about eligibility of projects derived from public policies. The legislation which created Proinfa took into account possible revenues from the CDM in order to proceed with the program.

The barriers mentioned in Step 3 could be seen as common practice, representing the majority situation of small hydros in Brazil. They required some source of financial incentives to be constructed in the last years. Also, it is demonstrated that the construction of small hydros WITHOUT financial incentives are specific cases and that a NEED to financial incentives is the common practice.

Project participants (PPs) held a research about the small hydro power plants (SHPPs) that started operation since 2004. It was identified the number of SHPs that received any kind of financial incentive (Proinfa or CDM).

Table 1 – Operations start of SHPs from 2004 to 2007.

[3] Source: Agência Nacional de Energia Elétrica (ANEEL). Banco de Informações de Geração - BIG. Capacidade de Geração. Available at: <http://www.aneel.gov.br/>.

Operations starting in 2004

	Name	State	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	CDM	Proinfa
1	Cachoeira da Lavrinha	GO					1,44									
2	Cach. Encoberta (Ormeo J. Bot	MG				11,35									X	
3	Paina II	PR							1,30							
4	Pai Joaquim	MG			23,00											
5	Paraíso I	MS		21,60											X	
6	Rio Branco	RO												6,90	X	
7	Rio São Marcos	RS												2,20		
	PARTIAL TOTAL		-	**21,60**	**23,00**	**11,35**	**1,44**	-	**1,30**	-	-	-	-	**9,10**	3	0

TOTAL = 67,79 MW

Operations starting in 2005

	Name	State	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	CDM	Proinfa
1	Camargo Corrêa	MT												2,00		
2	Comendador Venâncio	RJ			0,77											
3	Cristalino	PR								4,00					X	
4	Faxinal II	MT											10,00			
5	Furnas do Segredo	RS										9,80			X	
6	Ivan Botelho III	MG	12,20	12,20											X	
7	Ombreiras	MT							26,00						X	
8	Porto Góes	SP											14,30			
9	Salto Corgão	MT						13,50	13,50						X	
10	Santa Clara I	PR								3,60					X	
11	Santo Antônio	RS										4,50				
	PARTIAL TOTAL		**12,20**	**12,20**	**0,77**	-	-	**13,50**	**39,50**	**7,60**	-	**14,30**	**24,30**	**2,00**	6	0

TOTAL = 126,37 MW

Operations starting in 2006

	Name	State	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	CDM	Proinfa
1	Aquarius	MS/MT									4,20				X	X
2	Camargo Corrêa	MT	2,00													
3	Canoa Quebrada	MT												28,00		X
4	Carlos Gonzatto	RS				9,00										X
5	Comendador Venâncio	RJ					0,84									
6	Esmeralda	RS												22,20		X
7	Fundão I	PR												2,48	X	
8	Garganta da Jararaca	MT											14,65	14,65	X	
9	Mosquitão	GO												30,00		X
10	Piranhas	GO												18,00		X
11	Rio Palmeiras I	SC							1,50							
12	Rio Palmeiras II	SC											1,38			
13	Sacre 2	MT									10,00	20,00			X	
14	Saldanha	RO			4,80										X	
15	Santa Edwiges I	GO											10,10		X	
16	Santa Edwiges II	GO	13,00												X	
17	São Bernardo	RS								15,00						X
18	Senador Jonas Pinheiro	MT									6,30					X
	PARTIAL TOTAL		15,00	-	4,80	9,00	0,84	-	1,50	15,00	20,50	20,00	26,13	115,33	7	8

TOTAL = 228,1 MW

Operations starting in 2007

	Name	State	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	CDM	Proinfa
1	Braço Norte IV	MT											14,00		X	
2	Buriti	MS		30,00											X	X
3	Caju	SC						3,20								
4	Contestado	SC											5,55			
5	Coronel Araújo	SC											5,55			
6	Faxinal dos Guedes	SC		4,00											X	
7	Flor do Sertão	SC							16,50							X
8	José Gelásio da Rocha	MT		23,70												X
9	Ludesa	SC								30,00						X
10	Mafrás	SC											2,16			
11	Primavera	RO		13,65	4,55										X	
12	Rondonópolis	MT												26,60		X
13	Santa Laura	SC										15,00				X
14	São João (Castelo)	ES				25,00									X	
	PARTIAL TOTAL		-	71,35	4,55	25,00	-	3,20	16,50	30,00	-	15,00	27,26	26,60	5	6

TOTAL = 219,46 MW

Source: Agência Nacional de Energia Elétrica (ANEEL), 2008. Resumo Geral do Acompanhamento das Usinas de Geração Elétrica - Versão abril de 2008. Available at: <http://www.aneel.gov.br/>.

United Nations Framework Convention on Climate Change (UNFCCC), 2008.

In number of SHPs, there were 50 that started operations from 2004 to 2007, where 21 received CDM incentives and 14 from Proinfa, totalizing 35 projects with some kind of incentives, which represents 70 % of the total SHPs. Considering the state of Mato Grosso, among 17 SHPs which started operations, 15 received incentives. In terms of installed capacity, it represents 94.5 % from the total of 259.10 MW.

For the specific year of 2006, when Sacre 2 started operations, among the 18 SHPs that started operations, 15 received incentives. In terms of installed power represents 97.5 % from the total of 228.1 MW. Considering the state of Mato Grosso only, among the 5 SHPs which started operations in this year, 4 SHPs received incentives. In terms of installed capacity, it represents 97.9 % from the total of 95.6 MW.

From this result, it is clearly demonstrated that common practice for SHPs in Brazil is the implementation of the activity through CDM or Proinfa incentives. Through numbers presented above, it can be proved that it is required a strong incentive to promote the construction of renewable energy projects in Brazil, where it includes SHPs.

Sub-step 4b. Discuss any similar options that are occurring:

As described in the PDD, the power sector suffered with more than one year (2003-2004) without regulation, and even today the legislation is not clear yet for all the investors and players. Considering information of the PDD and comments above, this project cannot be considered common practice and therefore is not a business as usual type scenario. And it is clear that, in the absence of the incentive created by the CDM, this project would not be the most attractive scenario.