



Global Environment Facility

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May 5, 2008

Dear Council Member:

The World Bank, as the Implementing Agency for the project, *Mexico: Solar Thermal Project Agua Prieta II* has submitted the attached letter proposing a major project amendment to this project in accordance with World Bank and GEF procedures. This project was endorsed by the CEO on September 1, 2006.

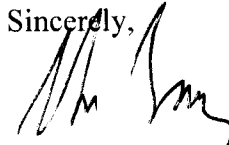
The Secretariat has reviewed the project document. The amendment involves reducing the size of the solar field associated with the Agua Prieta II project from 31 MW as targeted in the project design to between 12 and 15 MW. This reduction in scale of the requested size of the solar field is being requested based upon the fact that this project has already undertaken two failed bidding procedures—one initiated in September 2006 and another in February 2008. In both cases, the proposed cost of the solar field exceeded the amount available in the budget and no bidders submitted acceptable proposals. By law, the Mexican Comision Federal de Electricidad (CFE) is prohibited from allocating fiscal resources to projects that are not considered to be “least-cost”. Interested suppliers are quoting prices for the 12-15 MW solar field that are consistent with the cost per watt being paid for the solar fields in the recent projects supported by through the World Bank with GEF resources in Egypt and Morocco. The costs are also in line with a recently completed concentrating solar power plant built in Nevada.

Although we consider these changes to be major amendments to the original project document endorsed in September 2006, the overall project budget has not changed. What will change, however, is the size of the solar field being purchased for that sum of money. In keeping with GEF procedures, the Secretariat has reviewed the proposed changes and has ascertained their appropriateness in light of the project’s objectives.

If by June 2, 2008 I have not received requests from at least four Council Members to have the proposed project reviewed at a Council meeting because in the Member’s view the project is not consistent with the Instrument or GEF policies and procedures, I will endorse the proposed project document.

We have today posted the proposed project document and the attached letter on the GEF website at www.thegef.org. If you do not have access to the Web, you may request the local field office of the World Bank or UNDP to download the document for you. Alternatively, you may request a copy of the document from the Secretariat. If you make such a request, please confirm for us your current mailing address.

Sincerely,



Monique Barbut
Chief Executive Officer and Chairperson



Copy to: Alternates, GEF Agencies, STAP, Trustee

OFFICE MEMORANDUM

DATE: April 25, 2008

TO: Monique Barbut, Chief Executive Officer, GEF

FROM: Steve Gorman, (ENVGC)



EXTENSION: 35865

SUBJECT: **MEXICO: Solar Thermal Project Agua Prieta II**

1. This memo seeks GEF formal approval to use the approved grant of US\$ 49.3 Million to finance a solar field capacity in the range 12-15 MW, rather than the originally targeted 31 MWs. As described below, over the last 2-3 years the power industry has been significantly impacted by changes in the costs of equipment, which have led to the failure of the two first bids launched by the Federal Electricity Commission (CFE) for the Agua Prieta II project.

2. Given the interest of the Government of Mexico (GOM) in being able to test a solar thermal plant, CFE is launching a third bidding process next June 2008 and it is formally requesting GEF approval to use the grant for a solar field of 12-15 MW. CFE has kindly requested a quick response from GEF, as the internal process for approving the launching of the third bidding is complex and the schedule is tight.

3. Consistent with GEF's role as the source of financing for barrier removal for the introduction of innovative renewable energy technologies, the GOM hopes that the GEF will show flexibility with regards to serious market impacts on the original incremental cost assessment and provide the grant despite the lower capacity of the solar field that could be accommodated today.

Background

4. The Mexico STP Project supported by GEF experienced problems in the two bidding processes that has launched between September 2006 and February 2008, due to the considerable global escalation of prices of raw materials and equipment that has affected not only renewable energy power projects but all types of power generation technologies.

5. CFE has informed the Bank that a third bidding for the Agua Prieta II plant will be launched in June 2008, and that they would like to include the solar field. The third bidding will adjust for the changing conditions of the market for generating equipment.

6. Based on this, we would like to seek your approval to provide the grant to the bid winner if the third bid is completed successfully, despite the fact that the expected capacity for the solar field is in the range of 12-15 MW, rather than the originally targeted 31 MW (peak).

7. CFE has repeatedly demonstrated and stated its interest in pursuing this project, both because it would represent the first solar field in a project connected to the national grid and also because of the technological innovation in blending a thermal plant with a solar field. On March 12, 2008, Mr. Alfredo Elias Ayub (Director General CFE); stressed to a visiting delegation from the Bank led by the Energy Cluster Manager the high strategic importance of the solar/thermal project for the electricity sector in Mexico and requested the Bank to seek approval from GEF to use the US\$ 49.3 Million grant for a 12-15 MW solar component.

8. This project is aligned with Mexico's low carbon development path. On May 25, 2007 President Calderón launched the National Climate Change Strategy, which places climate change at the heart of the country's national development policy. The strategy identifies options for decoupling GHG emissions from economic growth proposing key initiatives for climate change mitigation activities including the promotion of renewable energy in the electricity sector.

Impact of global cost escalation

9. At appraisal in 2005, it was estimated that the US\$49.3 million grant by GEF would be sufficient to cover the incremental cost of about 31 MW (peak) of a solar addition to a net 485 MW combined cycle gas turbine to be built in Agua Prieta by the *Comision Federal de Electricidad* (CFE). However, in the first bidding held in May 2007, none of the 16 participating companies submitted bids; instead all signified to CFE that the cost of the thermal component was higher than the ceiling established by Treasury and CFE. With regards to the solar component, the participants noted that a 31 MW solar addition could exceed US\$93 m or nearly US3,800/kW installed. If the budget for the solar component is limited to \$49.3 million, it is anticipated that the capacity to be offered would be in the range of 12- 15 MW (peak), which is currently considered a realistic range.

10. This large cost escalation is consistent with the results of the recently completed bids for the Morocco and Egypt STP projects, and other current projects using parabolic trough technology (see comparative table below).

	Mexico	Morocco	Egypt	Nevada Solar One
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Solar MW (peak)	12	15	20	20	64
Capital cost, \$m	49.3	49.3	74.6	98.7	250
\$/kW installed	4,108	3,287	3,730	4,935	3,906

Constraints to CFE imposed by the Mexican Constitution

11. In the cases of Morocco and Egypt, the respective governments decided to maintain the original plans for 20 MW solar component each, despite the almost doubling of the budget requirements, by providing additional funding. This option is not available to CFE. While the CFE remains committed to realizing this important demonstration project in Agua Prieta, it is constrained by the Mexican Electricity Law (*Ley del Servicio Publico de Energia Electrica*, Article 36 bis) which prohibits allocation of fiscal resources to projects that are not determined to be “least cost”. For the Agua Prieta hybrid, the least cost plant configuration identified by CFE is the configuration under which the solar component is fully funded by the available \$49.3 m GEF grant, without additional CFE funding. In other words, the solar component must reflect the available GEF funding as CFE cannot provide additional financing for this component. At present prices, this suggests a solar component of only about 12-15 MW capacity, not 31 MW (peak) as originally planned.

Bidding Outcomes

12. CFE has launched two bidding processes for the Agua Prieta II project. The first bidding process was launched on September 2nd, 2006 and was completed on August 8th, 2007. However, it was unsuccessful as the ceiling for the capital investment associated with the thermal component established by the Ministry of Finance (SHCP) was considered too low for the participant bidders (US 326.47 Million).

13. Following this unsuccessful bidding, CFE increased the capital investment ceiling by 25% of the thermal component and launched a second bidding process on September 20th, 2007. The second bidding process completed February 28th, 2008 and proved unsuccessful, again as the ceiling was considered still too low for the thermal component. Both bidding processes had the participation of leading national and international companies.. The anticipated sizing of the solar component at 12-15 MW given the envelope of \$49.3 M was confirmed in several sessions with participant bidders.

14. Both of the bids have failed mainly due to the difficulty in predicting changes to the cost of generation equipment that arose from dramatic increases in the prices of stainless steel, aluminum and copper. Two factors contributed to the difficulty in predicting an appropriate range for the total required capital investment: i) the global changes in the cost of generating equipment have been unprecedented and ii) the annual cycle and process associated with the budgeting of new investments requires State owned enterprises in Mexico to submit economic proposals to the ministry of finance (SHCP)

almost a year before biddings are launched. Bidding processes are therefore completed about 18 months after SHCP has approved an investment.

15. The Federal Budget Law (*Ley de Presupuesto y Responsabilidad Hacendaria*) allows State-owned enterprises to re-launch biddings without a formal approval from SHCP when the approved capital investment has increased by less than 25%. In the particular case of Agua Prieta II, the increases to the cost of generating equipment exceeded this ceiling. The lags associated with the annual budgetary cycle have posed a constraint on CFE's ability to adjust to the changing circumstances in the market for generating equipment.

Next Steps

16. To continue, CFE has proposed to re-launch the bidding process of the Agua Prieta II Project next June 2008 under the same technical conditions in terms of the size of thermal component and the siting. The financial terms would be adjusted to increase the prospects for a 'financially conforming' (i.e., successful) bid. The process would be completed by February, 2009. CFE expects final bids to have a solar component in the range of 12-15 MW (peak).

Impact on project objectives

17. The ultimate objective of the GEF supported solar thermal projects is to reduce the long term costs of low GHG emitting technologies, by stimulating demand for equipment and expertise in the global solar industry, and by engaging governments and utilities in the design and installation of these new technologies. The proposed technical changes in the solar component of the Agua Prieta II project do not affect to any significant degree the capability of the project to support the above objectives. The difference in GHG abatement levels, equipment requirements and expertise needs between a 20 MW (peak) STP, as in Morocco and Egypt, and a 12-15 MW (peak) STP in Mexico is also not significant.

18. The more important benefits of an STP getting built in Mexico now are in the continued engagement of the GOM and capacity building of CFE officials and staff in solar technology. Both are crucial to the potential replication of solar thermal projects in lieu of coal-based power plants and the adoption of other large-scale renewables in the country in the future.

19. The described change in capacity for the solar component will not affect the results framework as originally proposed. However, the change in solar field capacity will affect proportionally the values proposed in the table on "arrangements for results monitoring" (see an updated results framework in Attachment 1).

20. On this basis, we seek GEF approval to provide the grant to the bid winner despite the fact that the solar field capacity will be in the range of 12-15 MW, rather than the originally targeted 31 MWs. If you need any further clarification, we will be pleased to provide them. Assuming that your review of this matter results in a favorable view of CFE's situation, we request that GEF kindly provide its formal approval to utilize the \$49.3 incremental cost grant under the modified conditions.

Cleared with and cc: J. Albert (LCSSD), G. Satiel (LCSSD)

cc: Messrs./Mmes. P. Benoit (LCSEG), G. Elizondo (LCSEG), R. Khanna (ENVGC), C. Govindarajalu (ENVGC), D. Boyce (LCC1C), E. Terrado (LCSEG), A. Araujo (LCSPT), F. Pacheco (LCSEG), , K. Kashiwamoto, A. Gonzalez (LCC1C), D. Aryal (LCSEN); Project files; IRIS 4

Attachment 1

Updated Results Framework and Monitoring

PDO / Global Environmental Objective	Project Outcome Indicators	Use of Project Outcome Information
<ol style="list-style-type: none"> 1. Demonstrate the operation of an ISCCS in Mexico 2. Reduction of CO₂ emissions, which contribute to global climate change, relative to business as usual. 3. Reduction of long-term costs of ISCCS technology 	<ol style="list-style-type: none"> 1. Total electricity generated from the solar hybrid project (GWh/y) and Annual average efficiency of solar input to electric output (%) Has the integration between the thermal and solar components been successful? 2. Reduction of annual CO₂ emissions (a minimum of 20kt of CO₂/year). 3. Solar Thermal Power Plant costs in ¢ / kWh Energy levelized costs 	<p>Monitor generation output (production and dispatching)</p> <p>Monitor solar generation cost and determine if change in operation of solar/ISCC plant is necessary to maximize solar output.</p> <p>Report annually experiences and lessons learned</p> <p>Calculate CO₂ emission reductions</p> <p>Report energy levelized costs</p>
Intermediate Outcomes	Intermediate Outcome Indicators	Use of Intermediate Outcome Monitoring
<p>Component One:</p> <p>The operational viability of solar thermal power generation is demonstrated in Mexico.</p>	<p>Component One:</p> <ol style="list-style-type: none"> 1. Yearly global production of electricity of the ISCC plant 2. Yearly contribution of solar electricity 	<p>Component One:</p> <p>Show that solar thermal plant – a high-end technology - can be constructed and operated efficiently under the conditions of a country such as Mexico</p> <p>Low generation from the solar component or from the ISCC as a whole is symptomatic of management, incentives and operational problems that need immediate resolution</p>

The information will be used to track progress towards project development and global objectives and to adjust or improve the operation of the project if necessary during implementation.

Arrangements for Results Monitoring

		Target Values					Data Collection and Reporting		
Outcome Indicators	Baseline	YR1	YR2	YR3	YR4	YR5	Frequency and Reports	Data Collection Instruments	Responsibility for Data Collection
Reductions in main air pollutants emissions (tons/yr) for CO2.	0	0	0	5,800	7,500	7,500	Semiannual	Continuous monitoring by CFE	CFE
Annual average efficiency of solar input to electric output	0	12%	12%	12%	12%	12%	Semiannual		
Results Indicators for Each Component									
Component One :									
Yearly production of electricity (GWh)	0	0	0	1,450	1,790	1,790	Semiannual	Continuous monitoring by CFE	CFE
Yearly generation of solar electricity (GWh)	0	0	0	17	34	34			