

Clean Technology Fund
Chile Large-Scale Photovoltaic Program (IDB/IFC)
Comments by Edward C. Kern, and Government/IFC/IDB Responses

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1.	<p>“A power system operations issue where the proposal could, but does not, anticipate and mitigate a future threat to sustainable solar electric power deployment in the Atacama (SING) region is the dispatch of the conventional (existing) power plants given the daytime only availability of solar power. Unless there is some way to store power to meet nighttime demand (assuming the mine electric loads are 24 hours per day), with increasing solar deployment it will become increasingly expensive to serve nighttime demand with conventional resources. I recall learning that seawater is pumped inland for industrial use in processing copper ore. Would this allow for synergistic pumped storage for the electric system?”</p>	<p>The long-term solution to this issue in the North of Chile will consist of a combination of several elements:</p> <ul style="list-style-type: none"> • Renewable energy technologies with higher plant factors, such as concentrated solar power (CSP); • interconnection with other grids (both within Chile with SIC, and with other countries), in order to profit from the complementarity with other technologies, such as wind or hydropower; • the electric power system operator’s knowledge to optimally accommodate intermittency power; • energy storage technologies, such as seawater pumped storage; • demand-side management solutions to enable the demand curve to be shifted (for example, by having hourly electricity pricing, some applications can be timed to match lower-cost energy supply time periods), and • Some applications can be driven directly by solar systems (an example is PV-driven water pumping systems coupled with water storage - the IDB-sponsored Atacamatec study is looking into these solutions).

2.	<p>“Another long term issue worthy of early consideration is the supply of electricity from the Atacama to the main population center of Chile in and around Santiago. Since the SING and SIC are not interconnected, there is no path for the huge solar resource in the Atacama to be exported to Chile’s main load center to the south. (This is similar to the development of solar power in North Africa to serve load centers in Europe.) Is such a north-south interconnection being planned? What would be its impact on the value of electricity generated with solar power in the Atacama?”</p>	<p>The interconnection between SING and SIC is indeed planned. It was proposed by the National Energy Commission (Comisión Nacional de Energía, CNE). Nowadays, it is being assessed by an expert panel that will determine its feasibility.</p> <p>Taking into consideration a forecasted annual demand increase of 5%, an interconnection would certainly benefit the mines since it would increase their energy supply security. It would also benefit the development of renewable energy technologies across the country.</p>
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<p>3. "The Program properly identifies studies that should accompany these projects to capture knowledge gained and share it with others. An additional suggestion is that if such studies can be carried out by faculty and students within graduate schools in Chile, in collaboration with Chilean utilities, the resulting pool of graduates from such schools would likely support the growth of the solar power sector in the Chilean economy.</p> <p>(...)</p> <p>Chilean utility and academic institutions should conduct the studies suggested and in the process develop human resources (graduating students) for opportunities in growing Chilean solar power deployment."</p>	<p>The following activities will promote training and knowledge creation and dissemination:</p> <ul style="list-style-type: none"> • The CSP project to be developed with CTF support (see http://bit.ly/CTFCSP) will include applied research; strengthening of solar energy capacity building programs, through already existing postgraduate degrees in Chile's northern region; and technology transfer to support building a local supply chain for parts and components and establishment of a local technology center to promote the development of a local auxiliary industry for solar energy. • The GEF/IDB project "Promotion and Development of Local Solar Technologies in Chile" will fund activities aimed at fostering the local markets for solar technologies, including PV. • The knowledge management component included in the CTF CSP Project will (i) support the generation and dissemination of information about the performance, lessons learned, and impacts of the solar projects in Chile; (ii) support other solar power-related activities; (iii) support the effective transfer of solar energy knowledge, experiences and technologies for the training of human capital and for the development of local supply chains, and (iv) assist the Government of Chile in managing the tender and knowledge management processes. The IDB and the Government of Chile confirm that this knowledge management component will cover both technologies, namely, CSP and PV
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