



solairdirect



Renewables in the Mainstream

Competitive renewables markets: Chile Case Study

March 2015

Solairedirect today: a global solar power company

Corporate



€156m in revenues for FY 2014
(45% CAGR over last 5 years)



A presence on **4 continents**, focused on competitive solar markets



c. 200 employees worldwide



Uninterrupted MW growth, with only **€26m** capital raised since inception⁽³⁾

Projects



c. €1bn of equity and debt raised for project financing



57 solar parks^(1, 2) in operation or under construction



486 MW in operation or under construction⁽¹⁾



4.1 GW⁽¹⁾ of projects in pre-construction development pipeline

(1) As of 31st January 2015

(2) Solar parks include large rooftop projects over 1 MW

(3) Based on MW built per fiscal year

Chile solar market overview




Competitive solar market dynamics

- One of the **most attractive countries worldwide** in terms of solar resources
- **Chile is driving PV growth** in the region with more than 0.5 GW of PV projects under construction
- **Deregulated power markets** offer huge possibilities for alternative energy solutions and providers
- Solar in Chile is already **cheaper than wholesale power prices**, and is based on **merchant projects**
- Solar established as the **response to unmet power demands** first in areas with few other alternatives (Northern Chile) and then to supply major population centers

Energy prices in Chile

(in \$/MWh)

	Solar PPA level (\$/MWh)	Alternatives sources prices (\$/MWh)	Wholesale prices (\$/MWh)
	87	Coal: 73-155 Gas: 56-100 Wind: 129	112

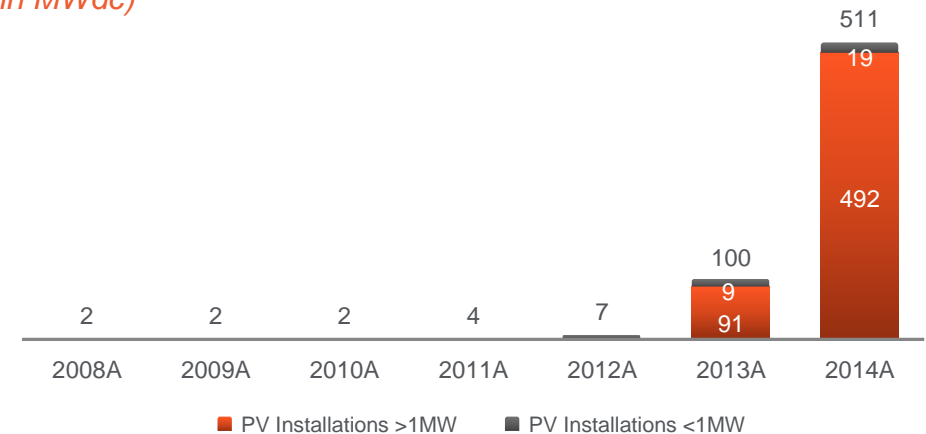
Sources: IHS Cera, SolarGIS, Inter-American Development Bank (IBD).

Chilean solar irradiation map



Yearly net solar capacity commissioned in Chile

(in MWdc)



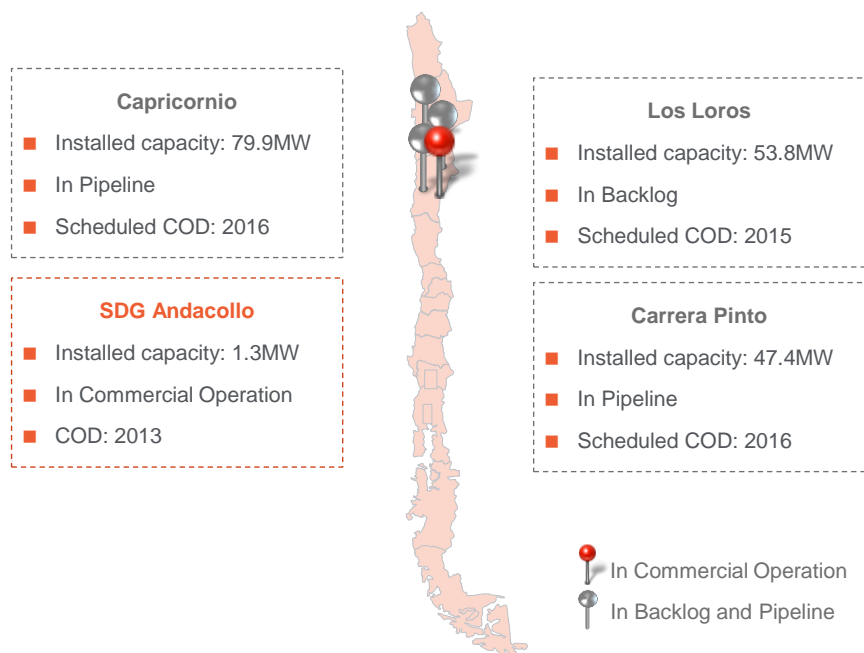
Solairedirect footprint in Chile



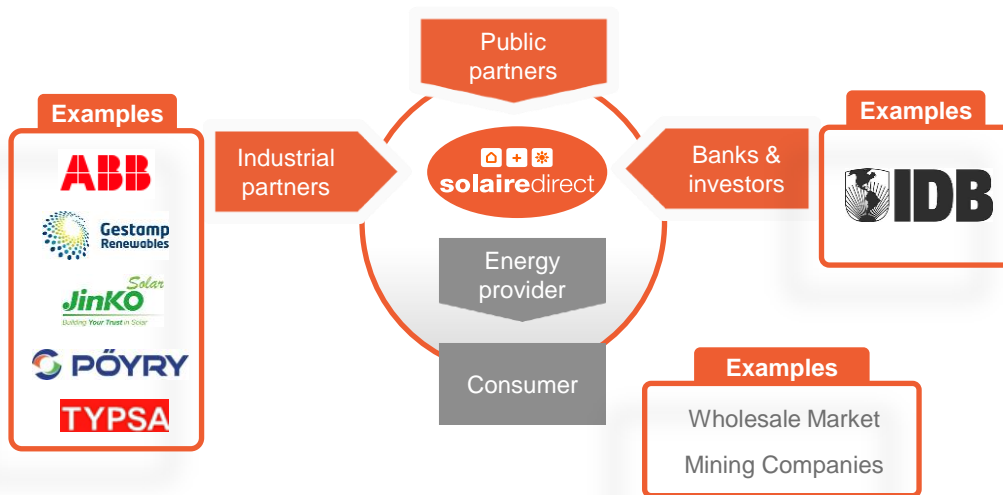
Milestones



Location of projects in Chile



Relationship with stakeholders



Case study: Los Loros



Project overview

Los Loros project will supply electricity to meet growing demand and reduce the reliance on fossil fuels in the Sistema Interconectado Central (SIC). The main users of the energy produced by the Loros project are expected to be distribution companies (70%) and mining companies & other industries (30%)

Capacity	<ul style="list-style-type: none">■ 54 MW■ Developed by Solairedirect Generacion V Spa
Land	<ul style="list-style-type: none">■ Total surface: 100 Ha⁽¹⁾■ Location: 50 km southwest of the city of Copiapo, in the region of Atacama
Operational life	<ul style="list-style-type: none">■ 25 years
Financing commitments	<ul style="list-style-type: none">■ Inter-American Development Bank (IDB): \$25.7mn■ Canadian Climate Fund⁽²⁾: US\$18.0mn■ China Fund⁽²⁾: US\$8.0mn



Los Loros and The Arica 1 projects will contribute to diversifying the energy matrix in the country, which is presently heavily dependent on imported fossil fuels, through the incorporation of renewable energy that is fueled by the exceptional solar resource of Chile's Atacama Desert.

Jean-Marc Aboussouan (Chief of the Infrastructure Division of the IDB's Structure and Corporate Finance Department)

(1) 99.97ha for the solar facilities and 0.02ha for the tower and posts of the transmission line. (2) The Canadian Climate Fund and the China Fund are administered by the IDB.

Deployment of competitive solar in Chile



Positive Factors

- **Open access** to a private transmission infrastructure
- **Nodal market structure** providing clear signals on location of supply/demand imbalances
- Distribution companies stepping up to become **aggregators** + emergence of new actors
- **Availability of financing** options from both international and local institutions (US\$ denominated)
- **Stable regulatory/** institutional framework

Limiting Factors

- **Limited export/ evacuation capacity** in areas most suited for solar deployment
- Unsophisticated power market (Real time only, OTC) **limiting hedging ability**
- **Large power users** not used/ capable of integrating “variable” production profiles in their sourcing



- Chile is a prime example of a market where **solar PV is already today the cheapest** source of power generation
- In need for new capacity additions, solar PV is **inserting itself quickly into the country's energy mix**
- **Future large-scale deployment of solar PV needs to be coordinated with a grid reinforcement strategy**
 - Solar is initially being deployed in high irradiation areas with limited evacuation capacity to the Santiago Metro load area, with transmission line reinforcements already underway
 - In the near future, solar PV's increased competitiveness will allow it to target areas closer to large load centers
- Deployment of renewables (wind & solar PV) to-date is **already decreasing nodal prices** in areas where it is being deployed **providing benefits to the economy and population**



We develop
We operate
We invest in

UTILITY-SCALE
SOLAR PARKS

