

<p>COUNTRY: CHILE</p> 	<p align="center">SOLAR POWERED IRRIGATION SYSTEMS – COUNTRY CASE STUDY AZAPA-INIA</p>
  	<p>Geographical Location:</p> <ul style="list-style-type: none"> ▪ Arica, Azapa Valley ▪ Latitude: 18°34'11" S ▪ Longitude: 70°6'2" W ▪ Altitude: 55 m <p>Specific Site Conditions:</p> <ul style="list-style-type: none"> ▪ Climatic condition: arid ▪ Poor soil conditions, structure topsoil imported from nearby sites ▪ Farm located in main production area of Arica, established in 1990 ▪ Irrigation water is provided by canal system from which open reservoirs are filled on regular basis (scheduled supply) ▪ Previous irrigation was based on surface (furrow) approach ▪ Farm is one of the first having a grid-connected PV system ▪ About 50% of PV energy is used for irrigation <p>Salient Features of Solar-powered Irrigation System:</p> <ul style="list-style-type: none"> ▪ Grid-connected pilot system with battery storage and net-metering ▪ 5 kW_p PV generator produces about 25 kWh/day and supplies energy for all electrical appliances on the farm, including the irrigation system ▪ Two conventional 220 Volt motor pumps of 1.5 kW each ▪ Daily mean water output: 63 m³/day ▪ Pumping Head: 8 m ▪ Drip irrigation system using drip line 1/2" with built-in turbulent flow emitters (discharge 0,6 gph) ▪ System includes central fertigation unit (electric booster pump to inject nutrient solution) <p>System Costs / Financing:</p> <ul style="list-style-type: none"> ▪ PV system: 17,860 EUR ▪ Irrigation system: - not disclosed - ▪ PV system financed by: Fondo de Innovación para la Competividad (FIC); Gobierno Regional de Arica y Parinacota; Instituto de Investigaciones Agropecuarias (INIA URURI) based on a 80% subsidy ▪ Irrigation system financing from own equity
	<p>Farming System / Cropping Patterns:</p> <ul style="list-style-type: none"> ▪ Horticultural farming under net houses ▪ Main products: Flowers and passion fruit, additional tomato cultivation ▪ Farm size: 5.1 ha but only 3,5 ha under irrigation ▪ Crop rotation: Flowers every 3 years, passion fruit every 3 – 4 years ▪ Fertiliser and nutrient management via fertigation unit ▪ Labour-intensive production
	<p>Experiences / Lessons Learnt:</p> <ul style="list-style-type: none"> ▪ For a grid-connected irrigation system, it is important that <ul style="list-style-type: none"> - The electric grid is stable - A tariff system is established (e.g. net-metering, feed-in-tariff) - Legal and regulatory framework allows the PV connection ▪ Grid failure for a longer period of time and the resulting lack of water could cause serious damage to flower crop ▪ If grid stability cannot be secured, a back-up solution is required <p>Promoting and Planning Bodies:</p> <ul style="list-style-type: none"> ▪ System financed by Fondo de Innovación para la Competividad (FIC); Gobierno Regional de Arica y Parinacota ▪ Supported by Instituto de Investigaciones Agropecuarias (INIA URURI) ▪ System integrator: Arica Solar, Chile