







<p>COUNTRY: INDIA</p> 	<p>SOLAR POWERED IRRIGATION SYSTEMS – COUNTRY CASE STUDY LALPURA</p>
	<p>Geographical Location:</p> <ul style="list-style-type: none"> ▪ Bihar, Vaishali ▪ Latitude: 25°45'0" N ▪ Longitude: 85°25'0" E ▪ Altitude: 58 m
	<p>Specific Site Conditions:</p> <ul style="list-style-type: none"> ▪ Climatic condition: semi-arid ▪ Remote location, but connected to public grid ▪ Frequent load-shedding and voltage fluctuation ▪ Water is pumped from a drilled well and directed into an open canal system ▪ Shallow and stable water level ▪ Good water and soil quality
	<p>Salient Features of Solar-powered Irrigation System:</p> <ul style="list-style-type: none"> ▪ 4,8 kWp locally manufactured PV generator; fixed installation ▪ Locally manufactured Shakti submersible AC pump with ABB inverter ▪ System comes with a 5-year guarantee ▪ Daily mean water output: 165 m³/day ▪ Pumping Head: 21 m ▪ Old diesel pump serves a back-up system ▪ Traditional surface irrigation system (basin irrigation) in place ▪ Primary water distribution in a lined open canal, secondary and tertiary water distribution by earthen makeshift field canals
	<p>System Costs / Financing:</p> <ul style="list-style-type: none"> ▪ PV pumping system: 6,410 EUR ▪ No specific investment into irrigation system ▪ Initial funding by Indo-German Energy Programme (IGEN) ▪ Farmers pay 0.60 EUR/hour for PV pump usage as compared to 1.10 EUR for former diesel pump operation (pool system)
	<p>Farming System / Cropping Patterns:</p> <ul style="list-style-type: none"> ▪ Vaishali Area Small Farmers Association (VASFA) owns and operates the Lalpura SPIS ▪ 49 farmers share the system to produce staple, oil seed and cash crops on 16,2 ha, different individual farm sizes ▪ Main cash crops: maize, millet, mustard, water melon, green pea ▪ No change of cropping patterns or intensification of production
	<p>Experiences / Lessons Learnt:</p> <ul style="list-style-type: none"> ▪ Successful pilot project demonstrating group management approach for PV pumping approach ▪ VASFA is a well functioning farmer's association strongly promoting the use of solar pumps ▪ Fees collected by the farmers' association serve to operate and maintain the system and pool financing will be used to replace other diesel pumps in the coming years ▪ The demonstration system helps to inform staff of financing institutions about the reliability and economic feasibility of SPIS ▪ Need for system monitoring, technical training and improvement of locally manufactured products
	<p>Promoting and Planning Bodies:</p> <ul style="list-style-type: none"> ▪ Financial and technical support by GIZ ▪ System integrator: CLARO Sustainable Cleantech Solutions, India ▪ Community mobilisation and local promotion by NGO VASFA