HELIOS - I: SOLAR IRRIGATION INDIA

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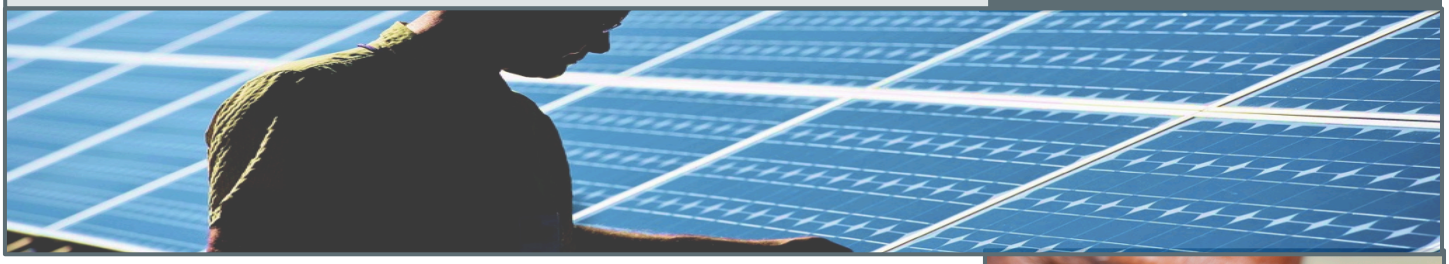
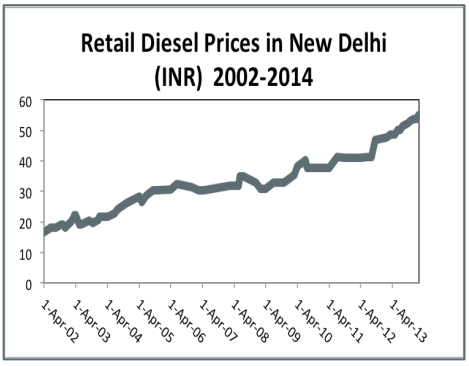


CHALLENGE - 70 million diesel-dependent farms in India

Seventy million farms in India use **diesel powered irrigation systems**. They are burdened with high operational costs, exposed to oil price fluctuations and generate significant carbon emissions. In rural areas, diesel costs 50-80% more than in cities due to inefficient distribution infrastructure. Additionally, diesel generators require regular maintenance, spare parts and filters, all of which are hard to come by in rural India. Farmers end up spending **USD 840-1200 per annum** to operate a diesel pump even though **fuel is heavily subsidized**. The government is currently looking to roll back these subsidies, which will put further pressure on operators of diesel pumps.

Furthermore, the high costs of diesel-powered irrigation, together with a lack of access to credit, **prevents millions of farmers from installing irrigation** in the first place. This means their yields remain low and they remain highly exposed to increasingly variable weather patterns due to climate change.



OPPORTUNITY - solar-powered irrigation systems

The **dramatic decrease in solar** panel prices has made the business model for solar-powered irrigation price competitive. A solar panel to replace a typical diesel generator costs as little as USD 2,000 in China. Such an investment has three major advantages:

- The farmer significantly **reduces** his or her **costs** for fuel, spare parts and maintenance;
- The Indian government **spends less on fuel subsidies** and begins to **decouple** the livelihood of its most vulnerable population from oil, paving the way for a later phase-out of fuel subsidies;
- Society at large **avoids CO_2 emissions** from diesel generation, one of the most carbon-inefficient ways of producing electricity

HELIOS-I will **leverage** technology, distribution and financing **partners** to enable farmers to switch from diesel- to solar-powered irrigation and to bring irrigation technology to yet un-served farmers. HELIOS-I will use the large Indian market to pioneer a model that could later be expanded into East Africa and in other South Asian countries.

OUR VALUE– scale and lower capital costs

- **Cost reductions** of equipment, logistics, and replacements through large-scale sourcing & smart product design
- **Improved loan collection** through technical innovation, e.g., mobile repayments, technology to remotely turn off solar panels if in arrears
- **Alignment of interests** along the value chain through risk and reward sharing with suppliers, distributors and financing partners

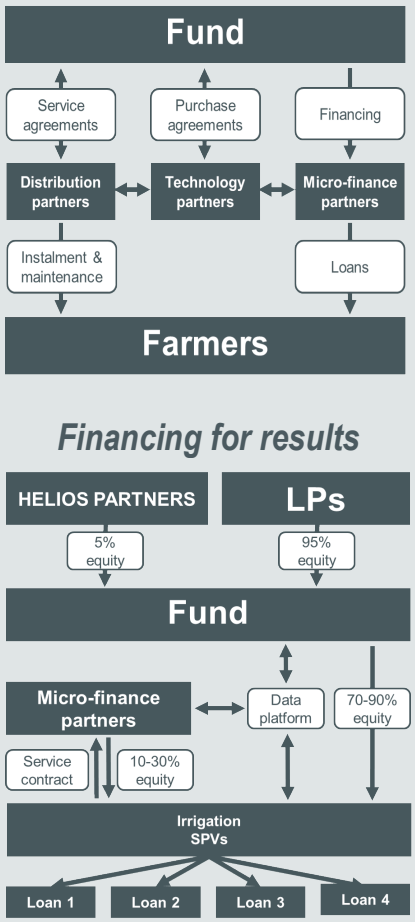
FUND SUMMARY

Geography	India
Instrument	Loan Fund
Target size	$10 million
Min. LP Investment:	$1 million
GP Commitment:	5.0%
Target Investor:	Institutional Investors
Fund Life:	15 years
Target Gross Return:	12-14%
Management Fee:	2.0%

Feature: Very low correlation (statistically insignificant) with US and European stock markets, strong social and ecological impact

RISKS – managing uncertainties

- **Insurance against extreme weather events** enabled by scale – in case of a drought, HELIOS-I can offer repayment deferral to farmers
- **Lower foreign exchange risk** through a government subsidy in USD (avoided fuel subsidies are also dependent on USD rate), a frontloaded repayment structure and FX hedging for the first years.
- **Lower cost of capital** than MFIs or commercial banks due to scale and high value of diversification to investors



BUSINESS MODEL – partnering with local champions

HELIOS-I will enable the distribution and financing of solar irrigation systems by providing finance and by working with the following partners to enable distribution:

- Producers of solar panels, pumps and irrigation systems **to source equipment** at scale and ensure suitable equipment for the specific complexities of rural India
- Distributors of farm equipment (e.g., irrigation companies such as Jain or NGOs providing technical assistance) **to market and install** solar irrigation systems
- Micro-finance institutions and distributors **to originate and collect loans**

HELIOS-I is built to be economically feasible through **repayments from farmers** based on their savings on fuel and maintenance costs. To accelerate scaling, we are seeking to get a share of the **government's savings on fuel subsidies**, which HELIOS-I can demonstrate and calculate. A further upside would be the **monetization of carbon emission reductions** – e.g., through the CDM, through a subsidy from the Indian government or through access to low-cost capital from a carbon fund.

The financing structure of HELIOS-I maximizes the alignment of interests of the financing partners with the HELIOS investors:

- HELIOS and its financing partners (e.g., MFIs, irrigation providers) set up **special purpose vehicles** (SPVs) to finance individual solar irrigation systems
- The financing partner **originates and collects** the loans
- The service contract between the SPV and the financing partner is exclusive – which means that the financing partner will finance all solar irrigation loans through the SPV
- The investment of the financing partner in the SPV is structured to generate a **return linked to the performance** of the loans

CONCRETE SOCIAL IMPACT– decoupling the poor from diesel

- **Higher income for farmers:** By measuring produced electricity from the solar panels, HELIOS can calculate the cost savings for each farmer – an average increase of USD 300 per year
- **Fuel subsidy savings**: the Indian government will save by reducing required subsidies on fuel – a decrease HELIOS can calculate by measuring the amount of fuel used off-set by electricity produced by our solar panels
- **Decoupling farmers livelihood from oil price volatility:** By removing the exposure of farmers to the oil price, farmer incomes are "smoothed" and a possible future phase-out of fuel subsidies is enabled
- **Increase in agricultural productivity:** farmers that "leapfrog" diesel-based irrigation can significantly increase yields, reduce their exposure to weather events and grow higher-margin cash crops
- **Reduction of carbon emissions:** The fund will reduce CO2 emissions equivalent to taking 10,000 cars off the road
- **Improved quality of life:** Local air pollution (particulates etc.) from diesel generation are completely avoided