

Morgan Stanley Sustainable Investing Challenge 2014

HELIOS

Financing solar irrigation in India



CHALLENGE: 70 million farmers in India power their irrigation systems with diesel generators

High fuel costs

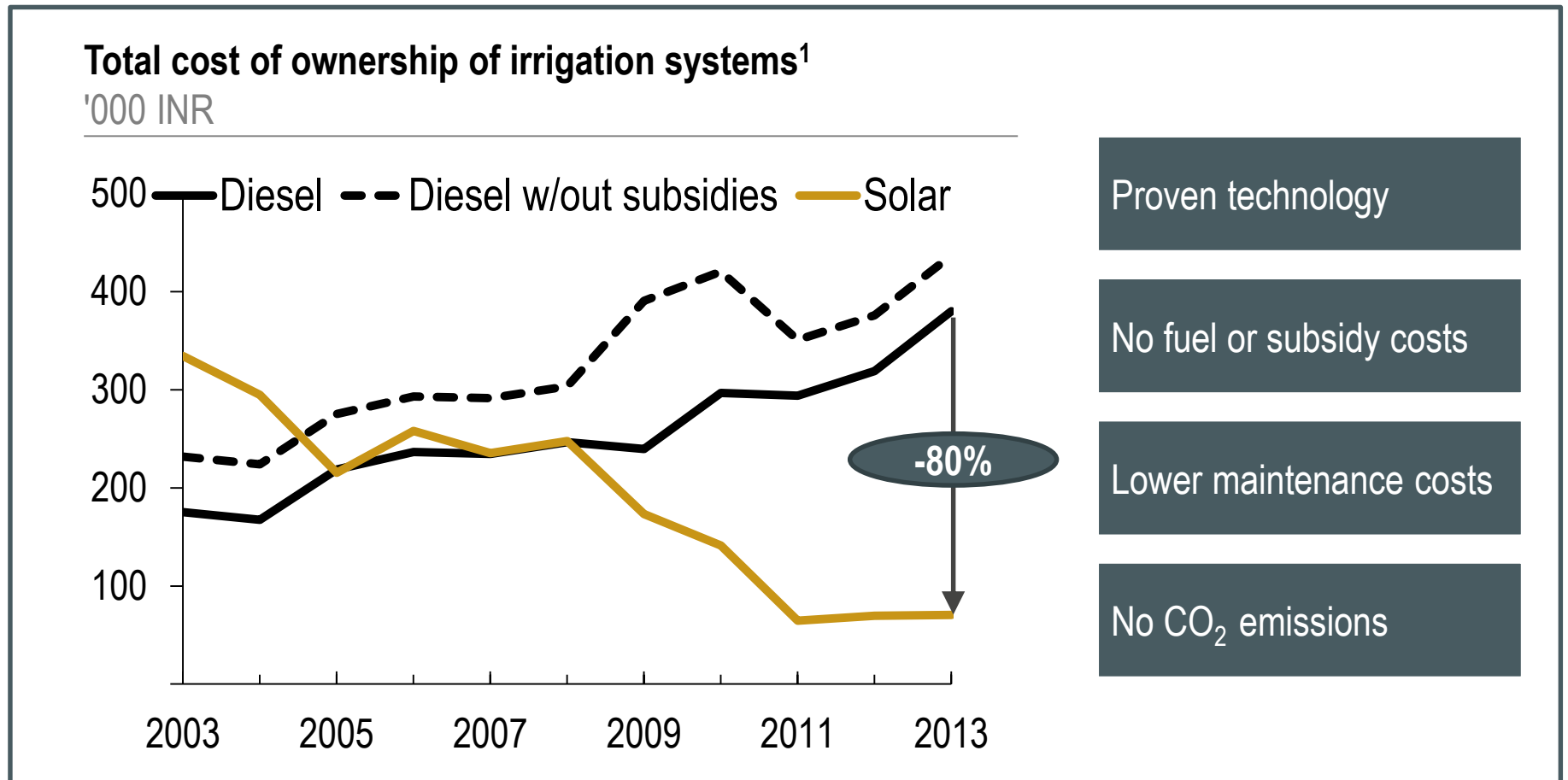
Exposure to fuel price volatility

Wasteful fuel subsidies

CO₂ emissions



OPPORTUNITY: Solar-powered irrigation systems alleviate all these issues, are now economical



¹ Based on HWWI and HELIOS research, current fuel prices based on EIU research, lifetime 20 years, discount rate 10%

BARRIERS: Adoption of solar-powered irrigation hinges on available financing and improvements in distribution

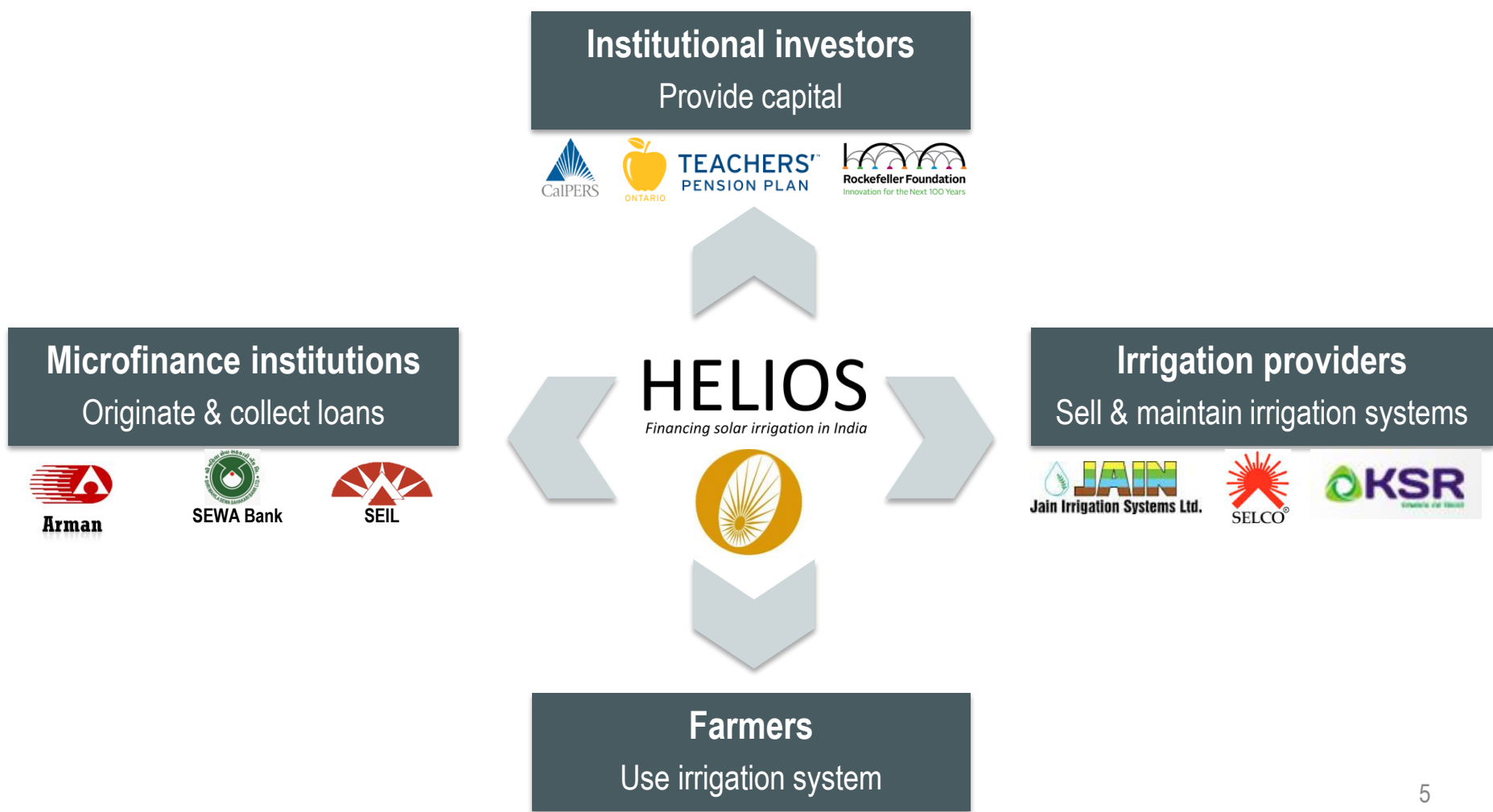
1 Financing: The underserved "middle market segment"

- Typical loan for solar-powered system ~3400 USD, 5-6 years
 - Too large, tenure too long for typical micro financing
 - Too small, with little-understood collateral for commercial banks
- Total capital need enormous: Replacing all pumps would require **> USD 100bn**

2 Distribution: Little coordination along supply chain

- Distributors sell only small volumes, have no access to volume rebates
- Lack of standardization means higher maintenance costs, weak secondary markets

HELIOS solves this challenge by bringing institutional investors, system providers and farmers together



HELIOS reduces annual costs for farmers and eliminates risks of fuel price and subsidies

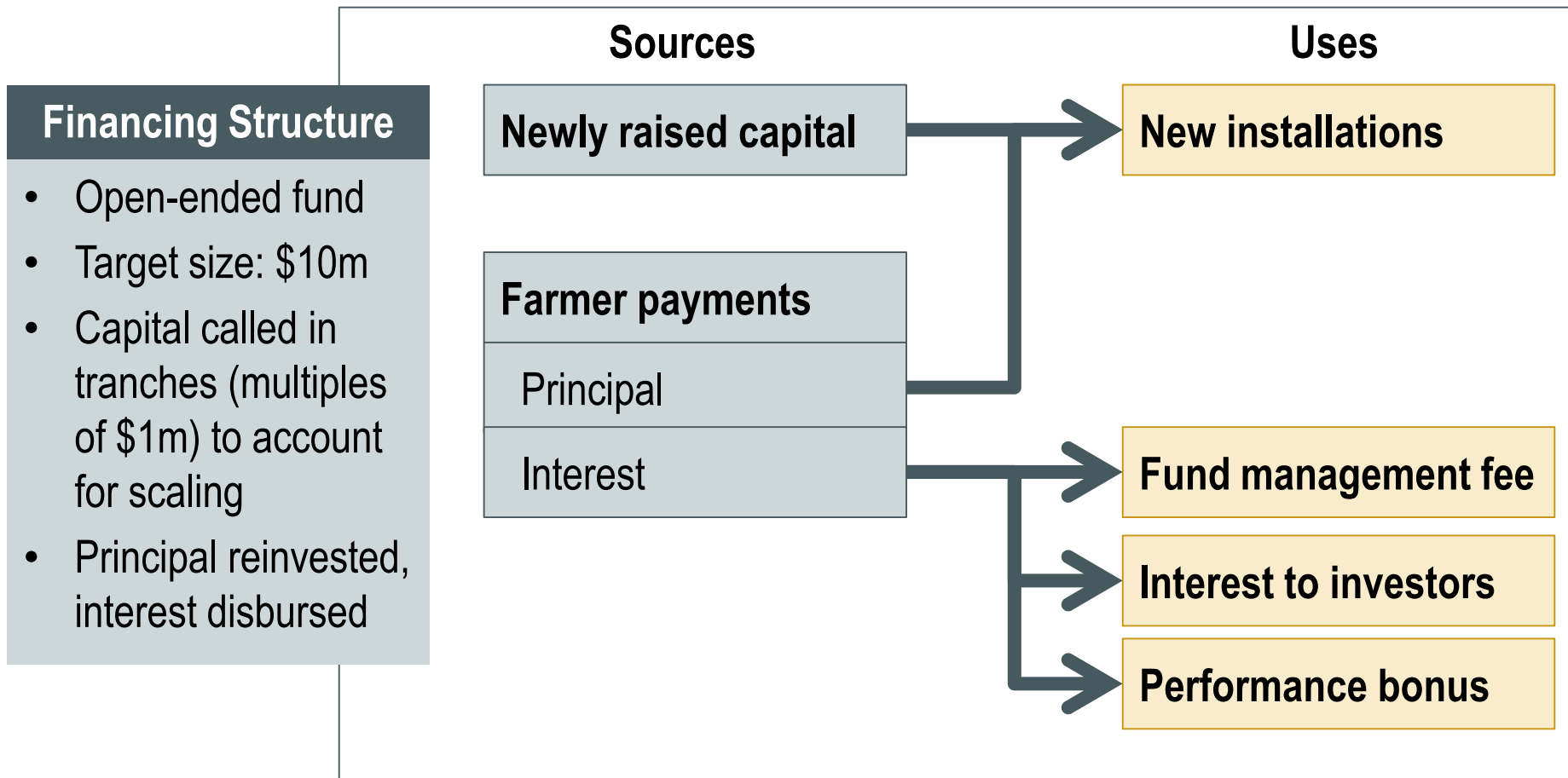
	Diesel system	Solar with HELIOS
Structure	Either already owned (convert) or newly acquired	Loan over 3400 USD, 5 years repayment, 16% real interest
Up-front costs	~ 550 USD	1000 USD (down payment)
Annual costs	~1000 USD	First 5 years: ~720 USD Then: ~20 USD
Maintenance	Often required, accounts for up to 5% of annual costs	Provided by HELIOS, then ~20 USD/year
Price risks	Fuel price (last 5yrs: +50%) Reductions in fuel subsidies	-

**Conversion from diesel¹:
NPV USD 2670, IRR 45%**

¹ Lifetime of 10 years, discount rate 10%

SOURCE: HELIOS, Microfinance Information Exchange, Price quotes from diesel and solar producers

HELIOS is an open-ended structured fund that will reinvest principal repayments and disburse interest



HELIOS will return 7% annual interest + 80% of the upside to investors and allow for an exit after 10 years

Sample calculations for annual profit sharing¹

Profit-sharing arrangement

- 2% management fee
- 7% hurdle rate
- Returns above 7% will be split 80:20 in favor of investors

Exit option

- When investor wants to exit, principal will be repaid over following 5 years

	Low case	Base case	High case
Achieved return²	7.0%	12.3%	15.0%
Retained by HELIOS	0.0%	1.1%	1.6%
Returned to investors	7.0%	11.2%	13.4%

¹ Assuming gradual scale-up, exit of investors in years 11-15

² After 2% management fee

HELIOS will create a 12-15% IRR for investors under 9 key risk scenarios

Sensitivity calculations: IRR

Risk mgmt of default rates:

- Alignment of incentives with MFIs
- Resale/reuse strategy for collateral (solar panels)
- Potential insurance against extreme weather events

		Default rate		
		Low	Base	High
Deployment speed	Fast	15.4%	15.1%	14.6%
	Base	14.2%	13.8%	13.3%
	Slow	13.0%	12.6%	12.3%

Risk mgmt of delays in deployment:

- Tranching of capital injections
- Strategic partnerships with experienced distributors
- Alignment of incentives (signup bonus)

HELIOS will deliver significant social impact for the farmers and society at large

For the farmer

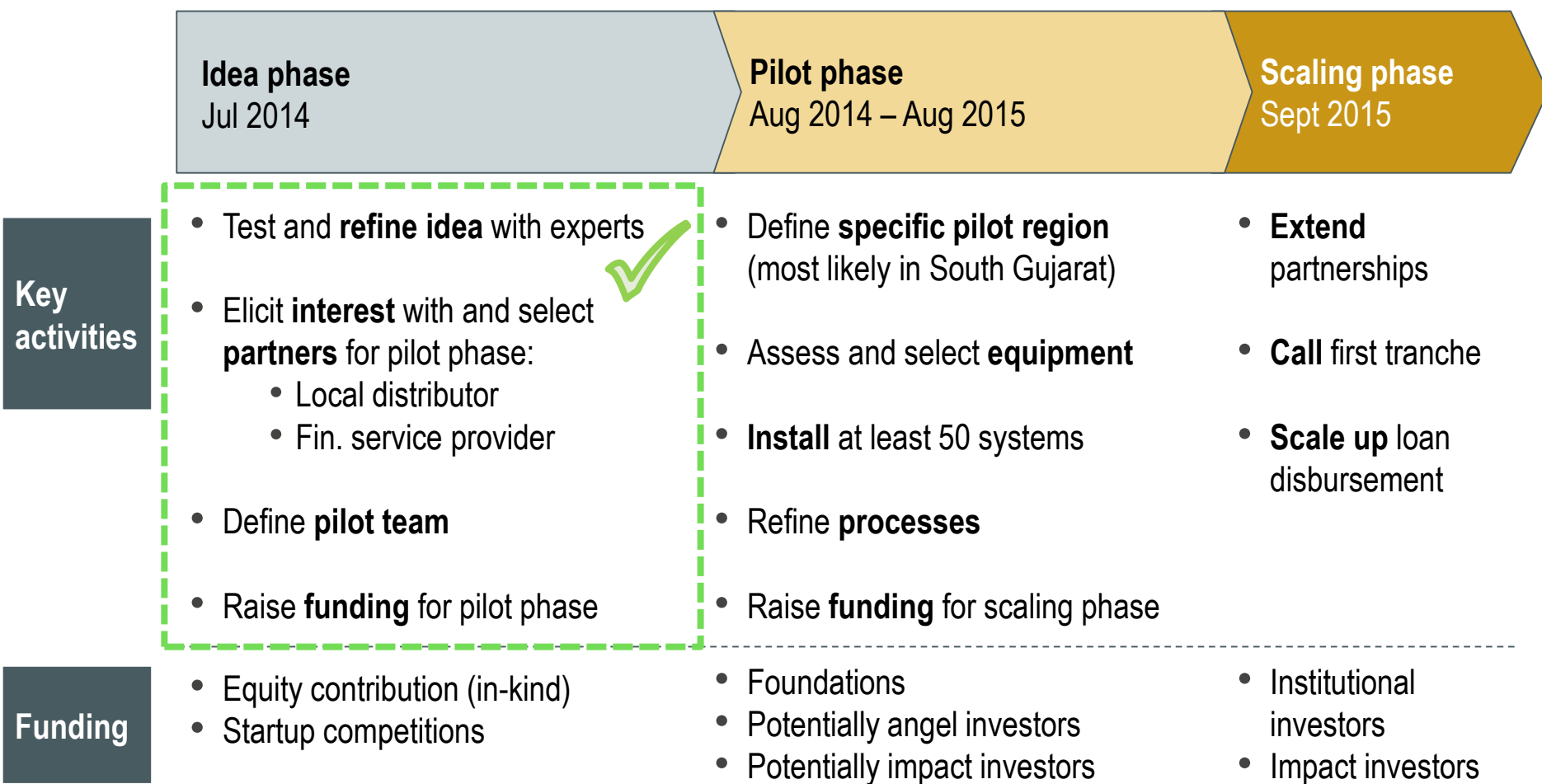
- Lower fuel costs of **USD 800 / year**
- **No exposure** to oil price volatility
- **No dependency** on fuel subsidies

For society at large¹

- No local **air pollution**
- Fuel subsidies saved: **USD 18.6 million**
- Lower CO₂ emissions: **350,000 t CO₂**



HELIOS has sparked interest with investors and partners, is entering a pilot phase this summer



HELIOS has identified Gujarat as ideal state to start a pilot, with lots of potential to scale across India



Why start in Gujarat ?

Favorable business climate

- No domestic content requirements
- 34 international companies are developing Gujarat's large-scale solar

Strong agricultural and solar sector

- 34% growth in cropped agricultural land in last 10 yrs
- 320,000 hectares of land covered by micro irrigation
- Diversified crop & cropping patterns
- Rapid growth of economy and population (60m)

State support for solar

- National Solar Mission support for off-grid systems
- More than 1 GW of solar PPA's closed
- More than 823 MW built by 2013