

Indian Smart Solar Muni+ Fund

Challenge

India is one of the fastest growing economies in the world with annual real GDP growth around 7%. Following that trend, India's energy consumption is expected to grow by 4.2% a year through 2035, the fastest growth among major economies according to BP's Energy Outlook. India already has 14 of the 15 most-polluting cities in the world, per a World Health Organization (WHO) study, and about 77% of India's population is exposed to harmful air quality, amplifying the need for India to seek clean energy sources.

Solution and Impact

In order to curb this trend while India's economy and energy needs continue to grow, the government of India has implemented a "Smart Cities" initiative which includes a 10% solar energy target. Domestic commercial banks have been the primary financing source for solar energy projects. However, these banks are approaching their exposure limits for the energy sector, which includes both renewables and coal. Bringing in international investors is key if India wants to meet its target of installing 100 GW of solar energy capacity by 2022.

To attract international institutional investors, this fund aims to enhance the return profile of these municipal green bonds by bundling several cities and further raising return potential through leverage and an environmental impact bond (EIB) component. These bonds will allow funding to be passed on to third party developers at a lower cost relative to commercial lending.

This fund will positively impact the environment while also building financial capacity for Urban Local Bodies (ULBs) to access the capital market. The increased proportion of solar energy usage will improve air quality, leading to healthier lives and fewer premature deaths due to air pollution. In the long term, solar energy will enable these cities with greater energy independence from fossil fuels, improving economics and helping to mitigate any shocks to the fossil fuel energy supply. By participating in the fund, ULBs will build capacity to adhere to the regulations set by the Securities and Exchange Board of India (SEBI) to issue municipal debt.

Key Assumptions

1. Borrowing rate for the leveraged portion is 4.5%
2. Weighted Average Coupon Rate is 9.0%
3. USD/INR exchange rate stays within +/- 15% of spot price of 68.92 INR as of April 2, 2019.

Key Details

Fund Size	\$ 75 million (USD)
Investment Criteria	<ul style="list-style-type: none"> • Cities with growing population, employment and economies • Cities having a credit rating between AA and BBB+ • Intellectual or Financial Hubs
Target Return	9% - 16% (Gross)
Time Horizon	7 years
Fees	2% upfront origination fee and 1% annual fee
Target International Investor Pool	Family Offices, Pension Funds, Insurance Companies, Foundations, Impact Investors
Partners	Smart City Corporations
Asset Class & Capital Structure	Private Debt (Callable Committed Capital) + Environmental Impact Bond
Leverage Ratio	1.5x
Target Cities	Ahmedabad, Hyderabad, Pimpri-Chinchwad, Udaipur, Warangal, Surat, Kota (Up to 10 cities)
Metrics for Social Impact	<ol style="list-style-type: none"> 1. Solar energy capacity installed 2. Solar energy/Total energy used 3. Contribution towards UN SDGs 4. Reduction in CO₂ and GHG emissions 5. Air quality in these cities
Potential for Scale	As interest from investors and green bond issuances become more common, larger portfolios can be created across geographies

SDGs Addressed:



Exhibit I: Fund Structure

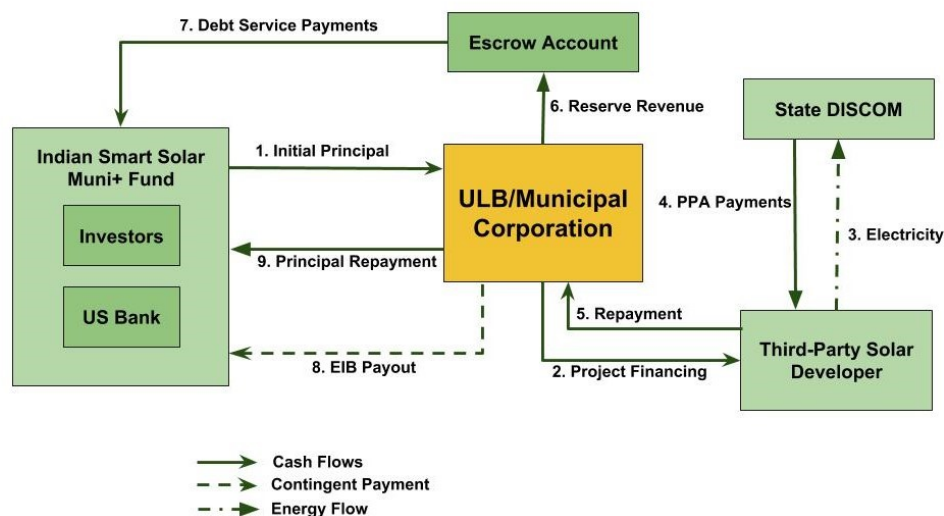


Exhibit 2: Annualized IRR with change in currency used for leveraging and movement of INR against USD

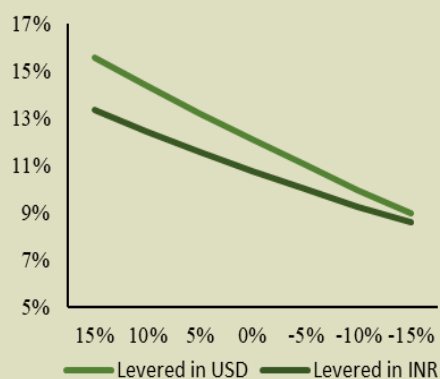


Exhibit 3: Annual cash flows and IRR under base case and with EIB payout estimates

Year	Base Case Cash Flows	Base Case w/ EIB
0	(51.00)	(51.00)
1	5.12	5.12
2	5.11	5.59
3	5.10	5.63
4	5.09	5.67
5	5.08	5.71
6	5.06	5.75
7	54.17	54.91
Net IRR	9.8%	10.8%

Innovative Elements

The Indian Smart Solar Muni+ Fund brings together multiple elements of revenue and general obligation bonds to enhance returns on municipal bonds:

- 1. Market Maker:** The Indian municipal bond market has begun to see more issuances after an effort by the national government to promote municipal financing. This fund aims to create a market for green bonds and leverage the new funding avenues to issue bonds focused on solar energy production.
- 2. Leveraged Structure:** The fund incorporates leverage into a municipal green bond fund to generate higher returns. While there is currency risk associated with USD leverage, analysis shows that INR would have to depreciate by more than 25% to make borrowing in INR preferable.
- 3. Environmental Impact Bond (EIB) Structure:** This fund will offer environmental impact as well as returns greater than standard municipal bond funds by allowing investors to partake in the cost savings accrued to municipalities through solar energy usage versus traditional energy sources. Investors will receive 20% of savings in the form of additional payouts.

Due Diligence

Type of Risk	Mitigation Strategy	Allocation
Credit	Third-party credit assessments, Work with local partners who benefit from capital subsidies, Escrow account to service Municipal debt payments	ULBs, Sponsor, CRISIL
Construction	Procurement and Construction Contracts, Usage of proven technology, Environmental indemnities, Completion Guarantees	Suppliers, Lenders, Insurance Companies
Operation	Performance Agreements, O&M Agreements	Suppliers
Market	Off-take Agreements	Utility Company
Financial	Interest Rate, Currency, FX	Sponsor, Lenders
Governance	Work with: Solar Energy Corporation of India (SECI) to adopt model with municipalities, Urban Local Bodies (ULBs) to adapt to National Municipal Accounting Manual (NMAM), Encourage adoption of disclosure standards comparable to private sector, High level oversight from Smart City CEOs	SECI, SEBI, Sponsor, ULBs
Environmental	Natural Disaster Insurance, Sinking Fund	ULBs, Insurance Companies