



Report and Recommendation of the President to the Board of Directors

Project Number: 46931
December 2012

Proposed Equity Investment Simpa Networks Off-Grid Pay-As-You-Go Solar Power Project (India)

In accordance with ADB's public communications policy (PCP, 2011), this abbreviated version of the RRP excludes confidential information and ADB's assessment of project or transaction risk as well as other information referred to in paragraph 97 of the PCP.

Asian Development Bank

CURRENCY EQUIVALENTS

(as of 19 November 2012)

Currency Unit	–	Indian rupee/s (Re/Rs)
Re1.00	=	\$0.018
\$1.00	=	Rs55.01

ABBREVIATIONS

ADB	–	Asian Development Bank
DMC	–	developing member country
SHS	–	solar home system
SMS	–	short messaging service

NOTES

- (i) The fiscal year (FY) of Simpa Networks ends on 31 December.
- (ii) In this report, “\$” refers to US dollars.

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PROJECT AT A GLANCE

1. Project Name: Off-Grid Pay-As-You-Go Solar Power Project		2. Project Number: 46931	
3. Country: India		4. Department/Division: Private Sector Operations Department Infrastructure Finance Division 1	
5. Sector Classification:			
Sectors	Primary	Subsectors	
	Energy	Renewable energy	
6. Thematic Classification:			
Themes	Primary	Subthemes	
Economic growth		Widening access to markets and economic opportunities	
Environmental sustainability	X	Global and regional trans-boundary environmental concerns	
Private sector development		Private sector investment	
6a. Climate Change Impact:		6b. Gender Mainstreaming:	
Adaptation		Gender equity theme	
Mitigation	X	Effective gender mainstreaming	
Not applicable		Some gender elements	
		No gender elements	X
7. Targeting Classification:		8. Location Impact:	
General Intervention	Targeted Intervention		
	Geographic dimensions of inclusive growth	Millennium development goals	Income poverty at household level
X			
		Rural	High
		Urban	Low
		National	Medium
		Regional	Medium
9. Nonsovereign Operation Risk Rating : Not applicable			
10. Safeguard Categorization:			
	Environment		C
	Involuntary resettlement		C
	Indigenous peoples		C
11. ADB Financing:			
Sovereign/Nonsovereign	Modality	Source	Amount
Nonsovereign	Equity	OCR	Up to \$2 million
12. Cofinancing: Not applicable			
13. Counterpart Financing: Not applicable			
14. Aid Effectiveness: Not applicable			

I. THE PROPOSAL

1. I submit for your approval the following report and recommendation on a proposed equity investment of up to \$2,000,000 in Simpa Networks (Simpa) for the Off-Grid Pay-As-You-Go Solar Power Project in India.

II. THE COMPANY

A. Investment Identification and Description

2. More people in India lack access to electricity than any other nation in the world; the International Energy Agency estimates the number at 400 million. Most live in rural areas outside the reach of conventional electricity grid networks. Solar photovoltaic technology offers a clean alternative to address off-grid access to electricity. Effective decentralized energy solutions using solar photovoltaic technology, such as solar home systems (SHSs) and community-scale solar micro grids, involve significant upfront costs for rural consumers and have limited market penetration.¹

3. From initial discussions with Simpa, the Asian Development Bank (ADB) believes that the company offers a simple, affordable, and commercially sustainable clean energy solution to address lack of electricity access in off-grid, largely rural areas. Moreover the successful initial rollout of SHSs in Karnataka demonstrates strong market demand for the product. ADB's investment will enable Simpa to scale up its operations, and ADB's knowledge and experience will be valuable to the company as it expands its operations. The decentralized energy solution developed by Simpa has strong potential for replication across other developing member countries (DMCs). With its strong focus on the underserved rural poor, the ADB investment will be a market leading initiative that would build on ADB's strong presence in solar energy in India.

B. Business Overview and Strategy

4. Simpa offers a secure, prepaid payment platform to make simple, affordable, and investible clean energy solutions for underserved consumers in India. The "technology + service + finance" platform leverages mobile phones to unlock demand from consumers, while providing risk mitigation for the company that finances the solar equipment. The technology platform comprises a very low-cost prepaid meter supported by sophisticated cloud-based software. The technology can be embedded in standalone products such as an SHS and is also offered to solar micro grid developers as an extremely flexible metering, customer, and revenue management solution.²

5. An SHS consists of a module, a battery, a charge regulator, and compact fluorescent and/or light-emitting diode lamps. Sometimes other appliances, like an electric fan, can be included in the SHS. Simpa has developed a metering solution comprising a device—the Simpa controller—that locks up the energy flowing out of the battery connected to the SHS, which the consumer can unlock to the extent needed by purchasing energy credits from Simpa through a simple and quick recharge process based on the mobile telephony platform. The Simpa controller is a small electronic device with a keypad for inputting data, such as recharge codes, and has a simple liquid crystal display showing the energy credit balance available for use. The

¹ Centre for Development Finance; World Resources Institute. 2010. *Power to the People: Investing in Clean Energy for the Base of the Pyramid in India*. Chennai.

² A micro grid is a localized grouping of electricity generation, energy storage, and electricity demand centers that operates in isolation without connection to a traditional centralized transmission grid.

Simpa controller is integrated into a metal box along with the battery and the solar charge regulator; both are standard equipment in an SHS.

6. A customer who chooses a Simpa metering system-enabled SHS is given a choice of paying 10%, 20%, or 30% of the total cost of the SHS as a down payment, after which the SHS is installed on the customer's premises, typically on the roof of the house. After installation, the customer has a choice of how much energy credit to purchase from as low as Rs50 to as high as Rs500. A portion of this payment goes toward repayment of the capital cost of the SHS, while the rest goes to Simpa to cover the costs of operation plus a profit. The higher the recharge amount, the higher the proportion of the amount allocated for repayment of the capital cost of the SHS. Once the capital cost of the SHS is recovered (typically after 2–3 years), customers receive a code through a text message to unlock the SHS, after which they are not required to purchase any further energy credits and own the SHS outright. The pricing plan is completely flexible and can be customized to suit the customer's needs and ability to pay. Thus ongoing energy expenditure is transformed into an asset purchase through Simpa's innovative solution.

7. Confidential information deleted.

8. Simpa has entered into partnership agreements with SHS vendors wherein vendors offer Simpa controller-enabled SHSs under the pay-as-you-go scheme to customers who would otherwise not have considered buying an SHS due to the high upfront cost.

9. In addition to SHSs, Simpa offers its metering solution to micro grid developers as an extremely flexible metering, customer, and revenue management solution. In this case, the micro grid developers install the Simpa metering units at each household connected to the micro grid and pay Simpa for ongoing revenue management services..

10. Confidential information deleted.

C. Ownership, Management, and Governance

1. Ownership

11. Simpa was established in November 2010 by Paul Needham, Jacob Winiecki, and Michael Macharg—three accomplished and highly regarded entrepreneurs with proven track records. Simpa is incorporated in Delaware, United States, and operates in India through its 100% subsidiary Simpa Energy India.

12. Confidential information deleted.

2. Management

13. Simpa's management team comprises local and foreign professionals with experience in solar finance, energy access, micro-payments, and information technology. The management team is listed in Table 2.³

³ Additional information on the management team and board of directors is presented in Ownership, Management and Governance accessible from the List of Linked Documents in Appendix 2.

Table 2: Management Team

Name	Designation	Area of expertise
Paul Needham	President	Information technology start-ups
Jacob Winiacki	Vice President, Product	Energy access, microfinance
Michael Macharg	Vice President, Markets	Off-grid energy, water and health solutions
Karthik Meda	Vice President, Finance	Venture capital, solar energy financing
Shashi Kumaraswamy	Vice President, Technology	Mobile payments, solar photovoltaic solutions

Source: Simpa Networks.

3. Board of Directors

14. The Simpa board of directors is responsible for taking decisions on all important matters related to the operation of the company. The current board of directors is listed in Table 3.

Table 3: Board of Directors

Name	Designation
Paul Needham	President, Simpa Networks
David Arfin	Founder and CEO, First Energy Finance
Karl Mehta	Founder and CEO, Playspan (a Visa company)
Bruno Walt	Senior Advisor, Hilti Foundation

Source: Simpa Networks.

D. Financial Performance

15. Confidential information deleted.

E. Other Issues

16. Confidential information deleted.

17. Confidential information deleted.

III. THE PROPOSED ADB ASSISTANCE

A. The Assistance

18. The ADB equity investment of up to \$2 million in Simpa will be provided from ADB's ordinary capital resources.

B. Financial Analysis of Expected Returns and Assumptions

19. Confidential information deleted.

C. Implementation Arrangements

20. Confidential information deleted.

21. **Reporting arrangements.** Simpa will provide unaudited quarterly financial statements and audited annual financial statements to ADB. ADB will monitor the investment using information from Simpa, investment administration missions, site visits, and the public domain. The investment will be evaluated on the basis of its financial success and operating

performance, and on meeting the development objectives. The performance indicators are included in the design and monitoring framework (Appendix 1).

D. Value Added by ADB Assistance

22. The proposed transaction merits ADB's assistance for the following reasons:
- (i) ADB's assistance will provide much-needed growth capital to a company, with an innovative pay-as-you-go payment and metering system, to scale up operations in India.
 - (ii) ADB's investment will enable the company to raise capital from other private equity firms in the next 3 years.
 - (iii) Through ADB's representation on its board of directors, the company will benefit from ADB's knowledge in the sector as it scales up operations and develops further energy delivery solutions, which could be introduced to other DMCs.

E. Risks

23. Confidential information deleted.

24. **Partnerships.** Simpa's ability to develop partnerships with SHS vendors and micro grid developers is critical to the successful execution of its business plan. Simpa will need more business-to-consumer partners, many of whom are still small and emerging. In the business-to-business segment, Simpa's potential partners are relatively new micro grid developers that are also expanding their operations and are reliant on grants and subsidies.

25. **System tampering risk.** Given that the system is installed at the customer's house in remote rural areas, Simpa will have difficulty conducting regular physical checks to prevent tampering. Tampering has the potential to allow the customer to access electricity without paying Simpa for the same, resulting in a revenue loss for Simpa.

26. Confidential information deleted.

27. **After-sales service.** The SHS vendor and the micro grid developer are responsible for after-sales service and maintenance. Typically two site visits per year are included under the pricing package. However lack of proper follow-up by the SHS vendors could generate a bad reputation for the reliability of SHSs, impacting their market penetration.

28. Confidential information deleted.

29. **Government subsidies for kerosene.** India's total annual kerosene subsidy for lighting is estimated to be \$2 billion. Despite high levels of kerosene subsidization, SHSs are cost effective options for consumers in the long-term as evidenced by the successful pilot in Karnataka. However, further increases in subsidies or more effective policies for subsidized kerosene may promote continued usage of kerosene for lighting purposes. Kerosene subsidy is a highly political subject as a majority of the consumers of kerosene are rural and low income households, a critical voter base for any political party.

30. Confidential information deleted.

31. **Expansion of conventional transmission grids.** Demand for off-grid energy solutions might decrease if rural consumers are connected to the conventional transmission grid.

However, state utilities would have difficulty raising the capital for expansion of transmission grids given their poor finances and heavy reliance on subsidies to maintain existing transmission networks. Moreover, given the electricity demand–supply mismatch, rural areas would likely experience intermittent electricity supply even if connected to the grid.

32. **Reach of mobile networks.** The reliability and reach of mobile telecommunication networks in rural areas is crucial for successful implementation of the short messaging service (SMS)-enabled metering and payment system. Any disruption in the mobile network could cause loss in revenue for Simpa. India has a well-developed mobile telecommunication network with more than 930 million mobile phone users and 14 mobile network operators as of June 2012.

33. **Competition.** Currently, Simpa is the sole provider of an SMS-enabled payment and metering system for SHS and micro grids in India. Future entrants could take market share away from Simpa. As the first entrant in the market, Simpa has a strategic advantage through established relationships with SHS vendors and micro grid developers. Moreover the market for off-grid energy access solutions is significant enough to support the profitable operations of multiple players.

IV. DEVELOPMENT IMPACT AND STRATEGIC ALIGNMENT

A. Development Impact, Outcome, and Outputs

34. **Impact.** The project will contribute to increased access to electricity in rural India. Although not being measured, increased access to electricity will result in improved education, health, and productivity outcomes. Access to electricity enables children to study beyond sunset. Replacement of smoky fuels, such as kerosene, with clean solar energy improves air quality, thereby improving respiratory health of household members. Access to electricity also improves productivity and contributes to increasing rural household incomes. Successful implementation of the project across India will offer opportunities for replication across DMCs. The investment is also expected to have a positive demonstration effect leading to increased private equity and venture capital funding for off-grid energy services in India.

35. **Outcome.** The project will result in increased access to clean energy for 63,125 new households by 2015, while delivering adequate returns for the private investors.

36. **Outputs.** Successful implementation of the project will result in the sale and installation of 29,000 new SHSs and 34,125 metering units for solar-powered micro grids by 2014.

B. Alignment with ADB Strategy and Operations

37. **Consistency with Strategy 2020 and country strategy.** The investment relates to two core focus areas—infrastructure and environment—under Strategy 2020, wherein ADB is committed to expand the supply of energy in an environmentally sustainable way.⁴ The investment will directly contribute to the outcome of increasing the number of households with access to electricity. The investment is aligned with the India country partnership strategy, 2009–2012, one of the key outcomes of which is increased rural electrification.⁵

⁴ ADB. 2008. *Strategy 2020: The Long-Term Strategic Framework of the Asian Development Bank, 2008–2020*. Manila.

⁵ ADB. 2009. *Country Partnership Strategy: India, 2009–2012*. Manila.

38. **Consistency with the energy policy and Asia solar energy initiative.** Access to energy for all is an important pillar of ADB's Energy Policy. Maximizing access to energy for economic and social development under its Energy for All Initiative is part of ADB's inclusive growth strategy. The initiative aims to share knowledge and to identify and scale up successful models that will bring energy to the poor across Asia. Within the region, the initiative is supporting the Energy for All Partnership, which aims to extend access to energy to an additional 100 million people in Asia and the Pacific by 2015. The project is directly aligned with ADB's Asia Solar Energy Initiative, which aims to help develop, finance, and commission 3,000 megawatts of solar power generation capacity including off-grid projects in DMCs by May 2013.

39. **Consistency with ADB operations.** The project strongly complements ADB's current private sector initiatives in solar energy in India. In April 2011, ADB's Board of Directors approved the Solar Power Generation Guarantee Facility,⁶ which will catalyze commercial lending and private investment for smaller solar generation projects (less than 25 megawatts), while the Dahanu Solar Power Project⁷ (approved in November 2011) and the Rajasthan Concentrating Solar Power Project⁸ (approved in March 2012) aim to catalyze private investment in larger solar generation projects with a capacity greater than 25 megawatts. The proposed equity investment extends ADB assistance to off-grid solar energy solutions making ADB one of the leading financiers of solar power in India. This investment also highlights ADB's multiproduct approach to promoting private investment in solar energy and its ability to customize based on market needs and associated risks.

V. POLICY COMPLIANCE

A. Safeguards and Social Dimensions

40. The investment is classified under category C for impacts on the environment, involuntary resettlement, and indigenous peoples. Simpa's business activities have minimal or no adverse environmental impacts, and are unlikely to entail impacts on involuntary resettlement and indigenous peoples. Simpa will apply ADB's prohibited investment activities list, exclude all projects that will have adverse environment and social safeguards impacts, and ensure that investments using ADB funds abide by applicable national laws and regulations and comply with ADB's Safeguard Policy Statement (2009). The investment documentation will include appropriate provisions requiring Simpa to comply with national labor laws and take specific measures in relation to the internationally recognized core labor standards, in compliance with ADB's Social Protection Strategy.⁹

41. The investment has some potential gender benefits. Women typically bear the main responsibility for caring for the sick, collecting firewood or traveling to buy fuel, maintaining a hygienic domestic environment, and bringing up children. The investment is expected to benefit women as access to clean energy within their homes will enable women to spend more time on other productive work. However as the purchase of an SHS is voluntary, the investment is classified as having no gender elements.

⁶ ADB. 2011. *Report and Recommendation of the President to the Board of Directors: Proposed Guarantee Facility for Solar Power Generation in India*. Manila.

⁷ ADB. 2011. *Report and Recommendation of the President to the Board of Directors: Proposed Loan to Dahanu Solar Power Private Limited for the Dahanu Solar Power Project in India*. Manila.

⁸ ADB. 2012. *Report and Recommendation of the President to the Board of Directors: Proposed Loan to Rajasthan Sun Technique Energy Private Limited for the Rajasthan Concentrating Solar Power Project in India*. Manila.

⁹ ADB. 2001. *Social Protection*. Manila.

B. Anticorruption Policy

42. Simpa was advised of ADB's policy of implementing best international practice relating to combating corruption, money laundering, and the financing of terrorism. ADB will ensure that the investment documentation includes appropriate provisions prohibiting corruption, money laundering, and the financing of terrorism; and remedies for ADB in the event of noncompliance.

C. Investment Limitations

43. Confidential information deleted.

D. Assurances

44. Consistent with the Agreement Establishing the Asian Development Bank,¹⁰ the Government of India will be requested to confirm that it has no objection to the proposed assistance to Simpa. ADB will enter into suitable financing documentation, in form and substance satisfactory to ADB, following approval of the proposed assistance by the Board of Directors.

VI. RECOMMENDATION

45. I am satisfied that the proposed equity investment would comply with the Articles of Agreement of the Asian Development Bank and recommend that the Board approve the equity investment of up to \$2,000,000 in Simpa Networks for the Off-Grid Pay-As-You-Go Solar Power Project in India, from ADB's ordinary capital resources, with such terms and conditions as are substantially in accordance with those set forth in this report, and as may be reported to the Board

Haruhiko Kuroda
President

6 December 2012

¹⁰ ADB. 1966. *Agreement Establishing the Asian Development Bank*. Manila.

DESIGN AND MONITORING FRAMEWORK

Design Summary	Performance Targets and Indicators with Baselines	Data Sources and Reporting Mechanisms	Assumptions and Risks
<p>Impacts Increased access to electricity for rural population</p> <p>Increased funding for innovative technological solutions for delivery of off-grid energy services</p>	<p>Access to electricity for rural households in India increased from 55% in 2011 to 70% in 2022</p> <p>\$20 million in venture capital and private equity funds invested in companies operating in the energy sector in India by 2017</p>	<p>Statistics published by the Census of India, Ministry of Home Affairs</p> <p>Central Electricity Authority annual reports</p> <p>Indian Private Equity and Venture Capital Association reports</p>	<p>Assumptions Continued growth in demand for rural electrification</p> <p>Risk Increasing fiscal deficits force government to reduce incentives for rural electrification</p>
<p>Outcome Increased access to clean energy, enabled by a financially viable payment systems company</p>	<p>63,125 new households provided with access to electricity by 2015</p> <p>Average carbon dioxide emission avoidance of 2,900 tons per annum (2012–2022)^a</p> <p>Return on equity (nominal) exceeds 20%</p>	<p>Simpa Networks (Simpa) annual reports and audited financial statements</p> <p>Simpa technical reports</p> <p>Asian Development Bank (ADB) development effectiveness monitoring reports</p>	<p>Assumption Simpa succeeds in raising private equity capital for business expansion in 2015</p> <p>Risks Tampering with metering systems</p> <p>Disruption in mobile networks that could hamper payment collection</p> <p>Increased government subsidies for off-grid solar applications reduce the need for a pay-as-you-go system</p>
<p>Outputs Installation of sustainable solar home systems</p> <p>Installation of metering systems for solar-powered micro grids</p>	<p>29,000 new solar home systems sold and installed by 2014</p> <p>34,125 metering units sold and installed for solar-powered micro grids by 2014</p> <p>Locally purchased goods and services amount to Rs110 million by 2014</p>	<p>Simpa annual reports and audited financial statements</p> <p>Simpa operations reports</p> <p>ADB development effectiveness monitoring reports</p>	<p>Assumption Simpa manages to recruit and train adequate staff to deliver its business plan</p> <p>Risks Competition from other vendors</p> <p>Manufacturing costs increase due to inflation</p>
<p>Activities with Milestones</p> <ol style="list-style-type: none"> 1. Investment closes by 31 January 2013 2. Expand operations to seven new states—Andhra Pradesh, Kerala, Gujarat, Madhya Pradesh, Maharashtra, Uttar Pradesh and West Bengal—by 31 December 2014 3. Complete third round of private equity financing by 31 December 2014 			<p>Inputs</p> <p>Equity funding: ADB: \$2 million</p>

^a Assuming a grid emission factor of 0.9 and an efficiency of 15% for solar photovoltaic modules for a total installed capacity of 2.46 megawatts.