

# Innovation in Rural Energy Delivery

## Accelerating Energy Access through SMEs



### A Navigant Consulting, Inc./Soluz, Inc. Study

**Lead Author:** John Rogers

**Co-Authors:** Richard Hansen and Shannon Graham

**Contributing Authors:** Philip Covell, Harish Hande, Steven Kaufman, Carlos Rufin, and Lisa Frantzis

#### Project Sponsors:



## Table of Contents

EXECUTIVE SUMMARY .....	3	II-E. THE SVF MODEL: AREED.....	90
INTRODUCTION .....	6	RESULTS .....	90
PART I - ACCELERATING ENERGY ACCESS.....	9	LESSONS LEARNED .....	92
I-A. THE SCALE OF THE RURAL ENERGY ACCESS		II-F. THE SVF MODEL: PVMTI AND REEF.....	95
CHALLENGE .....	10	RESULTS .....	96
SCALE.....	10	LESSONS LEARNED .....	96
THE DIMENSIONS OF SCALE-UP.....	11	CONCLUSION .....	98
I-B. THE STATE OF THE ART IN RURAL ENERGY		II-G. THE WBGp MODEL: LESSONS FROM WORLD	
DELIVERY: SMEs AND SME ENGAGEMENT	13	BANK PROJECTS.....	100
RURAL ENERGY SMEs .....	13	BACKGROUND .....	100
RURAL ENERGY SME ENGAGEMENT.....	21	CONVERGENCE ON SME ACCELERATION.....	101
I-C. THE SME-BASED ACCELERATION MODEL ....	31	LESSONS LEARNED .....	104
1. ENABLING ENVIRONMENTS.....	32	GOING FORWARD.....	106
2. CONSUMER FINANCE.....	35	II-H. THE MICROFINANCE SECTOR: LESSONS IN	
3. ENTERPRISE FINANCE.....	39	CAPACITY-BUILDING.....	108
4. INNOVATION FUNDING .....	41	EVOLUTION OF ACCION'S MICROFINANCE	
I-D. CONCLUSIONS AND RECOMMENDATIONS:		LENDING CAPACITY.....	108
GOING TO SCALE .....	45	LESSONS LEARNED .....	109
NEXT STEPS: TARGETING INTERVENTIONS .....	45	ANNEXES .....	111
BUILDING THE NECESSARY CAPACITY FOR		ANNEX A. UNSERVED PEOPLE .....	112
ACCELERATION.....	46	RURAL ENERGY NEEDS .....	113
SERVING THE RURAL POOR.....	47	ANNEX B. RURAL ENERGY NEEDS AND	
PART II – CASE STUDIES IN RURAL ENERGY		TECHNOLOGIES .....	113
DELIVERY .....	49	DCE TECHNOLOGIES .....	113
II-A. SELCO INDIA.....	50	INTEGRATING NEEDS AND TECHNOLOGIES.....	116
CONTEXT .....	50	ANNEX C. CLIMATE-CHANGE IMPACTS AND	
THE BUSINESS MODEL.....	50	CARBON FINANCE .....	118
RESULTS.....	53	POTENTIAL CLIMATE-CHANGE IMPACTS OF	
LESSONS LEARNED .....	55	INCREASED ENERGY ACCESS.....	118
THE FUTURE.....	57	CARBON FINANCE AND DCE TECHNOLOGIES.....	119
II-B. SOLUZ 59		QUANTIFYING EMISSION REDUCTIONS UNDER THE	
CONTEXT .....	59	CDM.....	119
THE BUSINESS MODEL.....	60	EMISSION REDUCTIONS AND CARBON-REDUCTION	
RESULTS.....	63	REVENUE .....	120
LESSONS LEARNED .....	69	FACILITATING SME PARTICIPATION IN CLIMATE-	
THE FUTURE .....	72	CHANGE MITIGATION PROGRAMS .....	120
II-C. THE REDCO ALLIANCE .....	74	ANNEX D. POLICY CONSIDERATIONS FOR RURAL	
HISTORY AND IMPACTS .....	74	ENERGY .....	122
PROFILES .....	75	POLICY MOTIVATIONS .....	122
SURVEY RESULTS.....	79	COMMON FORMS OF POLICY INTERVENTION .....	123
II-D. THE SVF MODEL: SOLAR DEVELOPMENT		CHALLENGES .....	124
GROUP .....	82	OPPORTUNITIES .....	126
BACKGROUND .....	82	ANNEX E. SELECTED ACRONYMS AND	
RESULTS.....	83	ABBREVIATIONS .....	129
LESSONS LEARNED .....	87	ANNEX F. SELECTED REFERENCES.....	130
THE FUTURE.....	89	ANNEX G. STUDY TEAM.....	135

## Table of Figures

SME-BASED ACCELERATION MODEL TARGET .....	10	REDCO ALLIANCE PROPOSED SUBSIDY INTERVENTIONS .....	81
SME-BASED ACCELERATION MODEL CAPACITY DEVELOPMENT .....	11	SDF INVESTMENT INSTRUMENTS .....	84
THE DIMENSIONS OF SCALE-UP .....	12	SDF INVESTEE ENTERPRISES.....	84
RURAL MICROFINANCE ACROSS REGIONS .....	36	SAMPLE SDF PROJECTS .....	85
INDIAN SOLAR LOAN PROGRAMME .....	37	SDG ENTERPRISE-CLIENT PERSPECTIVES .....	86
VALLEY OF DEATH AND TRANSACTION COSTS .....	40	AREED COUNTRIES, PARTNERS, AND PARTICIPANTS .....	90
INNOVATION FUNDING FOR THE PRIVATE SECTOR	43	AREED INVESTMENT DISTRIBUTION .....	91
SELCO COVERAGE .....	51	AREED INVESTMENT PERFORMANCE .....	91
SELCO CUSTOMER GROWTH.....	53	PVMTI AND REEF: SELECTED SME PERSPECTIVES .....	98
SELCO REVENUE AND PROFIT.....	54	SOLUZ-REEF INTERACTIONS .....	98
SELCO-SEWA BANK STREET VENDOR LIGHT- RENTAL PROGRAM .....	58	SELECTED TECHNOLOGIES AND USAGE .....	114
TRADITIONAL ENERGY EXPENDITURES .....	60	MINI-GRIDS AND SME-BASED ENERGY SERVICE.	115
SOLUZ COVERAGE .....	61	THE COST OF RURAL ENERGY .....	115
STRATEGIES FOR PENETRATING THE RURAL PYRAMID .....	61	SALE OF GREENHOUSE-GAS REDUCTIONS FOR ENTERPRISE FINANCE .....	120
SAMPLE SOLUZ SYSTEM.....	61	AN “INDOOR-OUTDOOR” APPROACH .....	128
SOLUZ OPERATIONAL STRUCTURE.....	63		
SOLUZ CUSTOMER GROWTH.....	64		
SOLUZ RENTAL SERVICE GROWTH.....	65		
SOLUZ CUSTOMER SATISFACTION .....	65		
SOLUZ REVENUES .....	66		
SOLUZ VALLEY OF DEATH .....	67		
SOLUZ CUSTOMER DISCONNECTIONS .....	70		
SOLUZ RENTAL CUSTOMERS AND REVENUES .....	70		
REDCO ALLIANCE FOUNDING MEMBERS .....	74		
REDCO ALLIANCE CUSTOMERS .....	75		
REDCO ALLIANCE FOCUS AREAS .....	75		
REDCO ALLIANCE RURAL ENERGY ACTIVITY .....	79		
REDCO ALLIANCE FINANCING APPROACHES.....	79		
REDCO ALLIANCE REVENUES .....	79		
REDCO ALLIANCE PROFITABILITY .....	80		
REDCO ALLIANCE CHALLENGES .....	80		
REDCO ALLIANCE TRANSACTION COSTS .....	80		