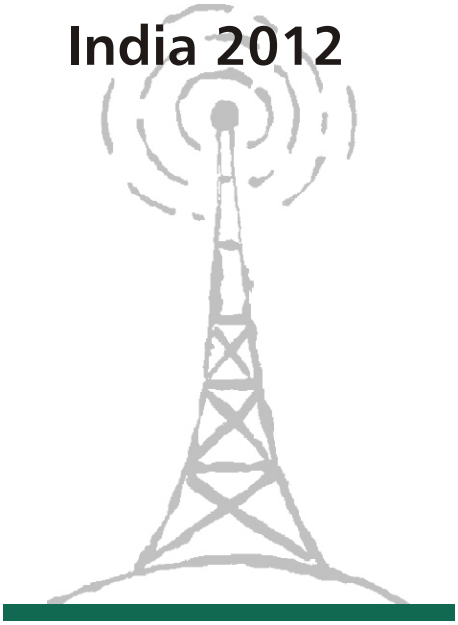
SPEED

Smart Power for Environmentally-sound Economic Development

India 2012



The SPEED program aims to create a positive impact on the lives of poor rural communities in India through delivery of more affordable, reliable and clean energy services to enhance livelihood security and improve overall quality of life.

In India, 42,000 villages are either un-electrified or de-electrified and over 400 million people do not have access to electricity. This lack of access is a major inhibitor to achieving equitable growth and building resilience of poor and vulnerable communities.

Decentralized power production using renewable energy (RE) technology with assured demand, and parallel creation of a conducive environment for investment in sustainable rural electrification is the only holistic (and realistic) solution for village communities to secure their household and community energy needs within a reasonable timeframe.

By creating a first of its kind multi-dimensional, multi-partner program to attract private investment and mainstream sources of finance, the Rockefeller Foundation supported SPEED program seeks to harness the potential of smart business models to deliver electricity through decentralized renewable energy based power plants.

On the basis of intensive research, analysis and practical action, SPEED has been designed to capitalize on the energy demand of the 320,000 telecom towers located in India (they consume over 2 billion litres of diesel annually). As the anchor load, this potential for usage of "green" power can play a crucial role in the viability of decentralized renewable energy based power projects and accelerate their eventual replication at scale.

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How is SPEED different?

SPEED builds upon several initiatives that have relied upon distributed generation for rural electrification but, unlike past projects, SPEED has a strong commitment to scale and an explicit focus on anchor loads.

Key Barriers and Past Learnings	SPEED Response Designed for Accelerated Action and Sustained Impact
Micro-enterprise development has been constrained by lack of electricity; and **electricity supply has been constrained by lack of demand.**	**Demand Assurance:** Demand assurance is a key value-add of SPEED for ESCOs. It is achieved through ensuring commercial load development by SPEED's Community Engagement and Micro-enterprise Development Partners as well as household demand generation in the community through implementation of effective load management and revenue collection models.
Long term sustainability of RE power plants has been missing due to a "single size fits all" approach adopted earlier.	**SPEED Prototypes:** Key factors like optimal load and availability of resources determine the economic viability of rural power plants. The SPEED team has developed six variants of typical projects for off-grid or grid connected locations taking into account the investment perspective of three different types of companies. Partners conduct surveys to assess potential for villages at three different levels of economic development and remoteness in terms of market access. These variants ensure customized and better-fit implementation. **Technology Neutrality:** SPEED is technology neutral, exploring biomass, solar, biogas, wind, micro-hydro and hybrid solutions. The Technology Task Force engages technology suppliers, system integrators, manufacturers, EPC contractors and R&D institutions to identify the most suitable technology packages for ESCOs under various load conditions. This forms a strong technology service network and stakeholders derive advantages of aggregation in reducing technology costs.
The biggest challenge for creating distributed RE systems is the **requirement for upfront CAPEX and subsequently, assurance of Return on Investment (RoI).**	**Aggregated Investment Model:** SPEED provides access to investors and bundles projects to provide aggregated investment opportunities to Private Equity players, Social Venture Funds, Development Finance Institutions, Commercial Banks and Foundations. The programme has developed tools such as: **Plant Economics Model:** SPEED offers Energy Supply Companies (ESCOs) a comprehensive Plant Economics Model to analyze techno-commercial aspects and optimize plant sizes and configurations across various load scenarios. **Business Plan Template:** ESCOs determine the long-term viability of their enterprise across a portfolio of projects with the help of a comprehensive Business Plan Template. **Catalytic Fund:** A Catalytic Fund has been established within the SPEED program to provide access to innovative Incentives, Guarantees and Preferential Lines of Credit.
RE typically caters to Bottom of Pyramid communities and their lighting /household needs. **Community empowerment and income enhancement has not been a key tenet**	**Policy Enablement:** Interaction with several ESCOs, investors, industries have helped identify key policy issues which act as barriers to scaling up of RE based rural electrification projects and associated development initiatives. Particular attention is being paid by SPEED to regulatory aspects of power production in grid connected areas and issues related to eventual interactivity with the grid.
RE projects have generally involved non-profit formats with focus on initial investments only. Consequently, **long term operation and maintenance has been ineffective.**	**Capacity Building:** With a focus on creating a pool of skilled operational and managerial personnel for RE based power plants, providing access to technical, managerial and other support services for ESCOs and other agencies as well as institutional anchoring of SPEED as a single window facility to drive future growth, capacity building is a key enabler.

Concept Validation: DESI Power

As a window into what a typical SPEED project can look like, DESI Power operates three renewable energy based plants connected to mini-grids in the villages of Baharbari, Bhebra and Bara of Araria District, Bihar.

Technology used	:	Biomass gasifier
Plant capacity	:	50 kW, 100 kW, 32 kW
Type of fuel	:	Dhaincha, Ipomea, Corn Cob and Hardwood
Load consumed by towers	:	5-6 kW each at three locations
Electricity supplied per day	:	8-10 hrs

At Bara, a biomass and solar hybrid solution will enhance power supply to at least 16 hours a day. The data and experience of validation pilots in the Araria innovation cluster is being used to optimize the design of projects being planned in the next phase of SPEED.

Potential impact:

- Growth of micro-enterprises like huller, chakki, rice mill, repair shops, irrigation pumps, etc.
- Establishment of Management Training Centre to train staff (with a focus on local women), thereby generating rural employment.
- Cultivation of energy plants, inter-cropped with other crops, for power plant fuel (Ipomea, Dhaincha) which generate cash income for the farmers.

For more information on the SPEED theory of change, please see:

"An Agenda for Action"

http://www.rockefellerfoundation.org/news/publications/speed-smart-power-environmentally-2

The SPEED Ecosystem:
An integrated framework for concerted action

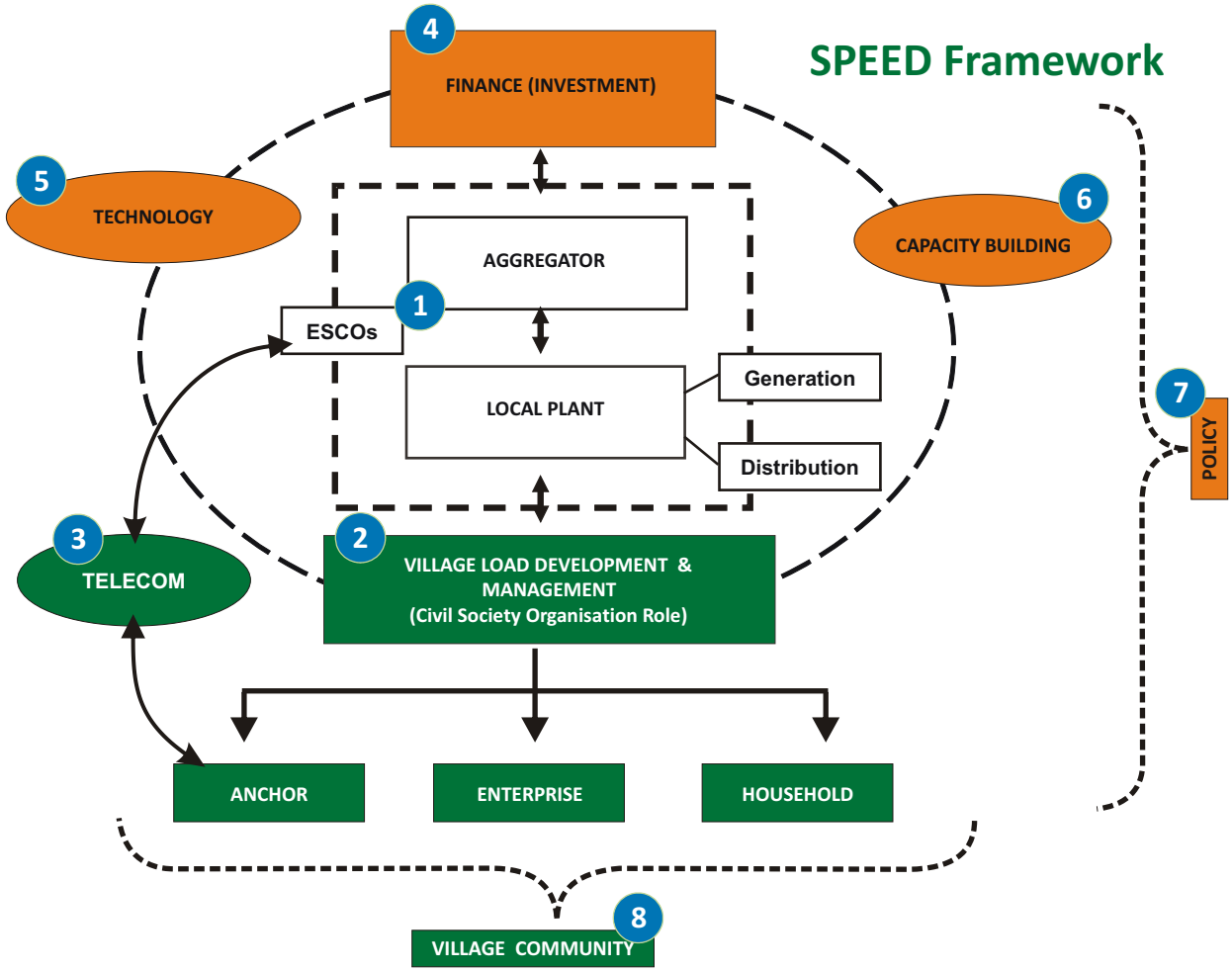
SPEED aims to create an "ecosystem" of key stakeholders to support the spread of scalable and sustainable business models, engage critical industry players, create financing models and promote favorable policies. All stakeholders together seek to create a compelling environment for **accelerated action and sustained impact** in the area of clean energy led economic development.

1. Energy Supply Companies (ESCOs)
SPEED partners with ESCOs that aim to extend the reach of their business to rural households through decentralized power projects, either directly or through local power generation and distribution enterprises. The SPEED "ESCO Construct" visualizes a symbiotic relationship between aggregators and local energy enterpreneurs.

2. Community Engagement and Micro-enterprise Development Agencies
SPEED will tie up with local civil society organizations and community development agencies to promote rural economic development and livelihood security. Enterprise development initiatives will create local employment and enhance the demand for electricity, thereby making projects viable.

3. Telecom Companies
Cell Tower companies have the means to provide anchor loads in electricity-starved regions. Many of their infrastructure partners are interested in engineering a transition to green energy and exploring larger, more sustainable village projects that will reduce OPEX (lower diesel consumption), reduce carbon footprint and provide tax incentives, CDM benefits funding and security against escalating electricity costs.

4. Financial Institutions (FIs)
FIs and the investor community seek to tap opportunities for their investors across the globe that not only provide high financial ROI but social and environmental returns as well. SPEED provides an opportunity to establish specialized investment vehicles managed by suitable financial intermediaries who can identify, review and manage SPEED ecosystem investment.



5. Technology Companies
Technology companies service the set-up in remote regions that will provide RE solutions (20KW - 100KW) and the required hardware to set up village power plants and the distribution network. SPEED provides an entry into the untapped rural market, which has a huge potential for Decentralized RE technologies.

6. Capacity Building Partners
TARA, based out of its Technology Resource Centre at TARAgram, Orchha (M.P.) and DESI Power, at their DESI MANTRA facilities in Araria (Bihar) will spearhead capacity building efforts to:

- Create a pool of skilled operational and Managerial personnel for RE based power plants
- Provide vocational training and access to technology based Micro-enterprises packages.
- Institutionally anchor SPEED across a wide network of support service provides.

7. Policy Makers, Influencers and Strategists
Government and Regulatory Agencies play a catalytic role in implementation of SPEED. SPEED will provide an opportunity to create favorable policy and regulatory environment that will drive private participation for investment in energy companies, use of renewable energy by cell tower companies, setting up of micro enterprises for value-addition to local resources and creation of livelihoods for rural communities.

8. Village Communities
As key stakeholders, village communities, are important stakeholders in SPEED. They are directly impacted by the program as consumers and also play a crucial role in unlocking the social capital required for successful rural energy businesses.

Operationalizing SPEED

SPEED operates at two levels: (a) a national program where it is playing the role of an ecosystem developer; (b) a local project facilitator where, at the village level, SPEED will test the ability of ESCOs to operate across a range of technologies, scales and business models.

National Level Activities: Ecosystem Development	Local Activities: RESCO and Micro-enterprise Development
Macro-demand of the anchor load for SPEED	Local demand estimation for commercial viability and prioritizing location
Technology options and affordabilityin grid and non-grid scenarios	Entrepreneur / local staff identification and engagement
Structure and legal framework	Investment and capitalization
Implementation scale-up and replicability across regions	Implementation and ensuring bankability/ viability
Facilitating capital flows and attracting investors	

SPEED States and Clusters

At the local level, SPEED will implement pilot projects in 50 villages that will demonstrate sustainability of the model and create verifiable conditions for its scaling up to 1000 villages thereafter. So far, the clusters that have been developed include:

SPEED ESCOs

Twelve SPEED projects will be implemented in the "Prototype Project Implementation Phase" by DESI Power, GP Green Energy, Telesolar, First ESCO and Greenfields. Interaction with a number of other companies with diverse backgrounds is taking place to create a robust pipeline for the next cycle of 50 projects.

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The SPEED Partner Network

TARA
Part of the Development Alternatives Group, TARA is a social enterprise engaged in capacity building, incubation of service delivery models and management of sustainable development initiatives.

cKinetics
cKinetics is a private consulting company specializing in sustainable solutions and low carbon growth practices.

Pradan
Pradan is a leading civil society organization engaged in promoting livelihood security for the rural poor.

Confederation of Indian Industry (CII)
The CII works to create and sustain an environment conducive to the growth of industry in India. The CII Sohrabji Godrej Green Business Centre offers advisory services in the areas of green buildings, renewable energy and business incubation.

DESI Power
DESI Power, a Rural Energy and Enterprise company, installs biomass power plants in villages and also help villagers develop businesses to turn generated power into value addition services for economic enhancement.

Sambodhi Research & Communications
Sambodhi works to promote and demystify areas of knowledge, which contribute to social as well as organizational development. They are one of the leading Research and Advisory organizations in India.

The Paul H. Nitze School of Advanced International Studies (SAIS)
Based in Washington DC, SAIS, Johns Hopkins University is a leading graduate school devoted to the study of international relations in numerous public, private, multi-sector and non-profit agencies.

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