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ENERGY ACCESS THROUGH EFFECTIVE NETWORKS: INTERVENTIONS AND ACTIVITIES



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1. Case for collaboration

India is the world's fifth largest electricity producer, but a third of all households remain without access to electricity. Nearly 93% of these households are in rural areas with most depending on kerosene to satisfy their basic lighting needs.^{1,2}

Notwithstanding numerous expired and on-going initiatives by the central and state governments, expanding energy access still remains a daunting challenge. Energy service providers operating in the off-grid domain have been hampered by a plethora of obstacles, including unsupportive policy environments, inadequate financing, lack of skilled workforce, inferior quality products, and limited opportunities for effective networking and collaboration.

Against this backdrop, several domestic and international alliances and networks, mainly propelled by multilateral and bilateral funding agencies, have stepped in to alleviate the challenges to the effective delivery of energy services.³ The Council on Energy, Environment and Water (CEEW), an independent policy research institution, with the support of the United States Agency for International Development India (USAID India), has studied the potential for a countrywide network to support and facilitate the scaling up of off-grid renewable energy and energy access solutions. In the process, CEEW has engaged with more than 75 stakeholders and continues to seek further feedback from energy service companies, manufacturers, financiers, technical researchers, policymakers and others. CEEW's research and inputs from stakeholder meetings suggests that, first, there is demand for a network that could consolidate the activities of existing alliances and, secondly, such a network ought to deliver value added services, which would be of direct benefit to its members.

Our discussions have revealed that a countrywide network will make sense to many potential members only if it manages to deliver services that are appealing to the wide diversity of stakeholders while also reducing their transaction costs. In other words, the challenges of developing a network are three-fold: the need to lower transaction costs; the need to balance different types of actors in the governance structure; and the need to find operational funding for the network/alliance on a sustainable basis.

¹ BP (2013), Statistical Review of the World June 2012, available at http://www.bp.com/liveassets/bp_internet/globalbp/globalbp_uk_english/reports_and_publications/statistical_energy_review_2011/STAGING/local_assets/spreadsheets/statistical_review_of_world_energy_full_report_2012; accessed 19 February 2013

² 44.7% of rural households and 7.3% of urban households did not have access to electricity. Census of India (2011) "Source of Lighting" available at http://www.censusindia.gov.in/2011census/hlo/Data_sheet/Source%20of%20Lighting.pdf; accessed 19 February 2013

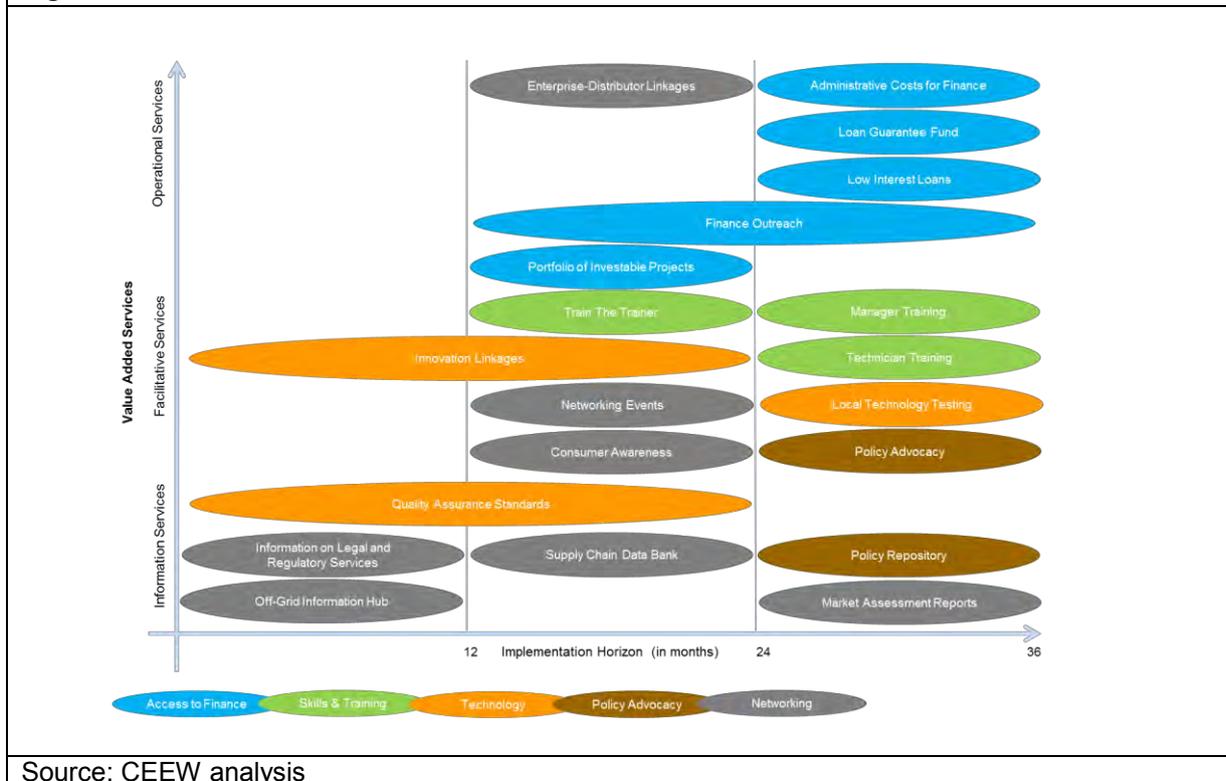
³ CEEW has analysed 22 alliances in India and overseas.

These challenges also imply that there is need for strategic coherence between the alliances that are operating in India already. The multiple networks serve different purposes, say by representing different types of firms or offering different types of services. However, stakeholders also felt that it would make little sense to have parallel structures that duplicate operational services and costs. Better coordination and coherence would, in turn, increase the benefits that could be derived from the collective network. A countrywide network could, therefore, add value by aggregating activities already on offer and by delivering additional services or targeting stakeholders, which are currently out of the scope of existing networks. This issue brief outlines proposals for specific interventions designed with these challenges in mind.

2. Developing a basket of network activities

Through the course of CEEW's research and engagement it has become clear that the case for a successful countrywide network in India rests on effectively delivering services in some or all of the following five areas: access to finance; skills and training; technology (including testing and certification); policy advocacy; and networking. These services will need to be delivered in a manner that establishes the countrywide network as a trusted information hub for India's off-grid ecosystem and, over time, the delivery of higher value-added facilitative and operational services. **Information services** include offering baseline information, which helps stakeholders assess existing market opportunities. **Facilitative services** include interventions that can reduce transaction costs but do not necessarily guarantee results in terms of, say, new business opportunities or finance. Finally, **operational services** encompass those interventions that benefit enterprises in their day-to-day operations. Each category of services is aimed at lowering the barriers that off-grid sector players face, but they would require different resources and are expected to take varying amounts of time to deliver (Figure 1).

Figure 1: Timeline for network evolution



Source: CEEW analysis

Access to finance

Both entrepreneurs and customers require access to finance, of rising amounts (for more services), higher volume (in terms of the number of transactions to cover more households or regions), and lower interest costs. Small-scale entrepreneurs have limited funding options and face additional challenges owing to their small project sizes, high capital costs of renewable energy systems relative to the incomes of targeted households (often at the bottom of the pyramid), lack of a proven track record, low repayment capacity, uncertain legal and policy frameworks, lack of existing retail and distribution channels to scale up deployment, and high interest rates. The disbursement of subsidies and loans is often hampered by onerous administrative processes.

Stakeholders suggested that a network could help to develop a **portfolio of investable projects**. An aggregation of projects could disperse some of the risks associated with individual investments and offer a portfolio that might be more attractive to large financiers within and outside the country. Further, clean energy competitions and calls for proposals could be used to develop a set of investable projects attractive to a range of financiers. Such funding sources could include angel investors, pension funds, sovereign wealth funds, and large foundations. The Renewable Energy and Energy Efficiency Partnership and ADB's

Energy for All Partnership facilitate calls for proposals. Another initiative, supported by the Rockefeller Foundation, is called Smart Power for Environmentally Sound Economic Development (SPEED) and hopes to encourage greater investment by showcasing the performance of micro-grid solutions. However, currently there is no single alliance or network which is operating to develop investable projects or act as an aggregator of such projects.

Over time the network could serve as a platform to showcase investment opportunities, not just from traditional financiers, but, for example, large companies channelling funds to Corporate Social Responsibility initiatives. The upcoming Companies Bill, which would mandate that large companies apportion 2% of profits above a certain amount towards CSR activities, represents a significant opportunity to potentially channel large sums of money into the off-grid sector.⁴ The network's value here would be to ensure that companies with an interest in supporting energy access projects are provided information about and access to a range of firms across the country.

Financial challenges are exacerbated by the continued lack of awareness and discomfort with the off-grid sector within the financial community. Even for banks that have disbursed relatively large volumes of loans to the off-grid sector over several years, and which have been successfully repaid, it is striking how little that experience informs the decisions of senior management and board members. One of the main tasks of the network could be to increase **outreach to financiers** with the aim of increasing awareness of opportunities to finance off-grid projects and increase consumer financing. This would be an on-going process drawing on activities such as the Selco Incubation Lab's efforts to impart banker training.

In response to continuing concerns about loan repayments, the network could work towards building a **loan guarantee fund** to increase the confidence of lenders. For example, in 2009, the Global Village Energy Partnership (GVEP), with the support of USAID, Garfield Weston Foundation, Jump Up, and Barclays Bank, started a small Financial Linkages Fund (formerly known as Loan Guarantee Fund) to increase access to finance for energy-related small and medium enterprises in Africa.

⁴ The Bill mandates that companies, which make an average profit of at least Rs.5 crore (approx. USD 925, 634) or have assets exceeding Rs.500 crore (approx USD 92.5 million), or whose turnovers exceed Rs.1,000 crore (USD 185 Million) in the last three years spend at least 2% of profits on CSR initiatives. Forbes India estimates that proceeds from the top 100 Indian profit making enterprises could make available more than Rs.5,000 crore (approx USD 925 Million) on CSR activities. "CSR Report Card", available at <http://forbesindia.com/article/real-issue/csr-report-card-where-companies-stand/34893/1>; accessed 25 April 2013. Rate used: USD 1 = INR 54, www.oanda.com, accessed 9 May 2013

Finally, the network could act as a central point to facilitate activities aimed at developing financial instruments that offer **low interest loans** or overcome barriers associated with burdensome **administrative costs of finance**.

Table 1: Potential interventions – Access to finance		
	Potential interventions and activities	Implementation horizon (in months)
1.	Portfolio of Investable Projects <ul style="list-style-type: none"> Act as an aggregator of projects Develop a portfolio of projects through issuing call for proposals. Facilitate engagement with CSR teams at companies with a potential interest in energy access initiatives. 	12-24
2.	Finance Outreach <ul style="list-style-type: none"> Engage with the finance community to understand investment criteria/preferences. Facilitate capacity building programmes to train officers of finance institutions regarding enterprise and consumer lending. Undertake on-going training and capacity building, leveraging partner initiatives and building strong links with bank training academies. 	12-36
3.	Loan Guarantee Fund <ul style="list-style-type: none"> Facilitate activities to develop and mobilise loan guarantee facilities to reduce credit risk. 	24-36
4.	Low Interest Loans <ul style="list-style-type: none"> Engage with financial institutions (and policy makers) to develop loan products with interest rates in a manageable range. 	24-36
5.	Administrative Costs for Finance <ul style="list-style-type: none"> Reduce the administrative burden associated with providing and accessing finance 	24-36

Source: CEEW analysis

Skills and training

Many of the entrepreneurs we spoke to find it difficult to source skilled employees, both at the management as well as the technician levels. The challenges increase manifold when an enterprise tries to scale up operations, especially in regions and states where it does not have local knowledge, connections or prior experience. The quality of managers and field staff could determine the success or failure of a firm's expansion plans.

Strong after sales support creates trust between the service provider and customers. Word of mouth from satisfied customers has often helped increase sales within communities. Conversely, poor experiences have also tainted the off-grid market, making it difficult even for credible firms to win new customers. It is, therefore, important that village level entrepreneurs (VLEs) are made responsible for promotional activities, running awareness camps, installations, and after sales support. Organisations such as New Ventures India have started mapping some of these VLE networks. This work could be promoted by the countrywide network and may help facilitate new collaborations.

The network could facilitate **train the trainer** programmes, targeting NGOs whose focus areas involve VLE training, self-help groups (SHGs) and enhancing livelihood options for rural households (examples include NIDAN, PRADAN and the Aga Khan Foundation). It is not entirely necessary that the NGOs have a renewable energy focus, but it is important that the NGOs are supported as they roll out programs. The network could also look to collaborate with government-supported programmes such as the National Rural Livelihoods Mission (NRLM) and the National Skills Development Corporation (NSDC) to extend sector-specific capacity building activities. There should be a robust feedback loop between entrepreneurs, trainers and trained individuals to ensure continuous improvement of training delivery.

The network could also seek to support **manager and technician training** programmes, working directly with training institutions, and training delivery agencies to develop appropriate curricula (or building on existing MNRE initiated curricula) and leverage channels to deliver training. The network may also help facilitate innovative solutions to accessing skilled individuals, such as tapping company secondment and career break schemes. The network could collaborate with organisations such as the Confederation of Indian Industry which has worked in the past to understand Human Resource development challenges in the renewable energy sector.

	Potential interventions and activities	Implementation horizon (in months)
1.	Train the Trainer <ul style="list-style-type: none"> Organise training workshops for NGOs to impart training on off-grid energy projects and associated livelihood opportunities. Support trained NGOs to then train VLEs, SHGs 	12-24
2.	Manager Training <ul style="list-style-type: none"> Design clean energy fellowship/certificate programmes. Either as short courses, or longer duration training programmes. Collaborate with academic institutes, and other suitable delivery agencies, (e.g. NGOs, training start-ups) to administer programs. Engage with CSR and HR teams at companies to leverage training and work placement schemes or career break initiatives. 	24-36
3.	Technician Training <ul style="list-style-type: none"> Support industrial training institutes (ITIs) and polytechnic institutes to deliver off-grid energy focused course modules. 	24-36

Source: CEEW analysis

Technology (development, testing, and certification)

Customers have had poor experiences with first generation technologies (and service providers). This has led to customers taking a cautious approach when buying new renewable energy systems. Many stakeholders expressed concerns that easy availability of cheap but poor quality solar products reduces confidence in the market if products fail or underperform. Some energy service companies have also started to manufacture their own systems due to poor quality of imported or outsourced products.

Many of the stakeholders with whom we consulted called for strong oversight on product quality. Regulation is one route but others have suggested that quality control should be driven by market forces.

Product certification and labelling help in ensuring product quality and operability, enhance innovation, build consumer confidence and boost the local off-grid market. However, stakeholder discussions have indicated that quality assurance and certification procedures currently in use in the country are not uniform. The countrywide network could step in to coordinate the development of consistent **quality assurance standards**, which would be

accepted across the country, thereby lowering transaction costs for firms. Where appropriate the network would leverage existing initiatives and approaches.

The countrywide network could also identify and leverage existing academic and research institutions to create **innovation linkages**. First, research institutions and technology business incubators have to be connected to firms operating in the off-grid domain, so that new products could be developed and tested to meet local market needs and conditions.

Stakeholders have also pointed out that R&D efforts in this sector require more impetus to make off-grid renewable technologies more conducive for use by rural consumers. Our discussions suggested that R&D efforts need to focus on building robust products that can withstand consumer mishandling, improving battery storage options for off-grid renewable, unlocking the potential of smart mini grids, and improving turbine design and efficiencies for small hydro projects. Therefore, secondly, the network could establish innovation linkages via regional R&D roadshows to enable research institutions to showcase programmes; build collaborations to leverage R&D expenditure; facilitate technology transition from R&D to deployment and help garner additional funds for R&D initiatives. These roadshows could, in turn, spur new R&D activities.

Finally, over time the network could play a role to facilitate easy access to adequate **local technology testing** centres across the country.

	Potential interventions and activities	Implementation horizon (in months)
1.	Quality Assurance Standards <ul style="list-style-type: none"> Develop a harmonised approach to quality assurance standards. 	0-24
2.	Innovation Linkages <ul style="list-style-type: none"> Promote development of marketable products/technologies by linking together research and academic institutions, technology business incubators and off-grid energy entrepreneurs. Conduct R&D roadshows to help connect off-grid enterprises with a range of on-going research and technology development activities throughout the country. 	0-24
3.	Local Technology Testing <ul style="list-style-type: none"> Facilitate easy access to appropriate local technology testing centres across the country. 	24-36

Source: CEEW analysis

Policy advocacy

Several existing networks aim to advocate policy reforms on behalf of their members. But many stakeholders with whom we consulted had varying opinions about the overall policy framework. Some were satisfied on how the policies were designed and implemented, while others, due in a large part to lack of organisational bandwidth, were resigned to operating within the existing policy environment. Many of the stakeholders emphasised the need for improved policy guidelines, with a need for policy to be designed to safeguard against perceived risks – such as grid extension to currently underserved areas – that tend to erode investor confidence. Enterprises across the off-grid spectrum highlighted subsidy-related issues as one of the most important policy challenges. Multiple layers of bureaucratic hurdles and delays in disbursement of subsidies create a stigma against renewable energy among potential customers.

These views suggest that there is certainly a need for collective policy advocacy. The view was also echoed by government officials, who felt that it would be easier to deal with stakeholders' concerns if they were collectively represented. A countrywide network could support **policy advocacy** by providing an easy access point to the policy positions of various groups involved in advocacy, such as the Ashden India Collective, Climate Parliament, Greenpeace and the Renewable Energy Working Group. The network could also serve as a common platform to consolidate various policy advocacy initiatives across the off-grid ecosystem. A transparent approach would reduce concerns about whether policy positions reflected the concerns of only a few firms. It would also support collaboration across firms and more effective advocacy. The network could support such knowledge development and dissemination by being a focal point for policy-related webinars and workshops covering both national and regional policy.

Policy advocacy initiatives could be further strengthened by developing a **policy repository**, to provide an inventory of existing international, national and state off-grid renewable energy policies and programmes. Entrepreneurs would have easy access to a broad array of policy perspectives, helping to help to strengthen inputs to policymakers. This information may also be utilised as part of business decision making processes (e.g. expansion to a new state). The network would leverage policy studies conducted by various research institutions as well as national and overseas networks/alliances. The network may also commission specific policy research projects tailored to member challenges.

Table 4: Potential interventions – Policy advocacy		
	Potential interventions and activities	Implementation horizon(in months)
1.	<p>Policy Advocacy</p> <ul style="list-style-type: none"> • Provide an easy access point to policy positions of alliances and networks involved in advocacy. • Provide a platform to bring together policymakers, enterprises, donors, local organisations, and other stakeholders. • Act as a focal point for workshops, webinars, and issue specific discussions at a regional and national level. 	24-36
2.	<p>Policy Repository</p> <ul style="list-style-type: none"> • Create an inventory of existing international, national and state off-grid RE policies/subsidies/programmes. • Leverage policy studies conducted by various research institutions, national and overseas networks/alliances. 	24-36

Source: CEEW analysis

Networking

The off-grid market is dispersed, but the enterprises delivering services to this market are often headquartered in large cities. Nonetheless, our stakeholder discussions have shown that, even though a number of players within the off-grid ecosystem have close connections with each other, there is lack of effective knowledge exchange and sharing of best practices across the broader ecosystem. There are significant opportunities to improve sharing information and experiences, develop innovative distribution relationships, improve supply chains, build consumer awareness, and understand potential markets.

Currently there is no “go-to” information source for off-grid entrepreneurs, or those interested in the sector. The network should work to become India’s **off-grid information hub**. The network could consolidate information around the service delivery focus areas, for example consolidate information on the existing finance ecosystem (angel investors, venture capitalists, banks, MFIs, CSR funders and donor organisations); provide information on VLE networks, grassroots organisations, and business accelerators and incubators; act as a central point to access information on national and state-level off-grid regulation, incentives, tenders and modalities.

The network would also seek to collate and consolidate information on R&D institutions as well as training institutes delivering courses to managers and technicians. This information would be the base from which additional value added activities in the network are formed. Some of this information would be developed by the network itself, whereas other information would be leveraged from existing initiatives.

When establishing a small firm, entrepreneurs recognise the need for professional services, such as lawyers and accountants (for reasons of legal compliance), but are also wary about the costs involved. It is a challenge to find service providers who understand the needs of small off-grid enterprises and are able to provide **information on laws and regulations**. The network would seek to collate information on individuals and firms with prior experience in offering legal and regulatory services to SMEs (off-grid RE SMEs in particular). The network could share experiences of service providers amongst its members. It would also seek to highlight opportunities to access free services.⁵

Numerous stakeholders highlighted the significant effort and costs involved in hiring, training, and supervising a sales force or establishing distribution channels. The network would aim to develop a **supply chain data bank**, which would consolidate information on manufacturers, distribution channels, local NGOs and SHGs, and VLE networks.

The network would then facilitate **enterprise-distributor linkages** based on information in the supply chain data bank. Among its operational services, the network could aim to explore and create partnerships with other stakeholders. For example, food and retail companies or public sector units, with strong nationwide commercial distribution channels and supply chains, could assist off-grid firms with deeper penetration in other markets, say outside their fields of current operation. The countrywide network could serve as the intermediary for this effort.

Stakeholders have cited a lack of **consumer awareness** and understanding of off-grid energy products and technologies as a major roadblock to increasing uptake of off-grid solutions. A network could run consumer education campaigns involving an array of groups such as NGOs, theatre groups, folk groups, panchayats, village youth clubs, and radio channels. Any nationwide awareness generation program would benefit from strong government engagement would be needed. The network could also facilitate the expansion of existing consumer awareness programmes, run by state renewable energy development agencies such as the West Bengal Renewable Development Agency, into other states and markets. The same could be done for private sector or multi-lateral initiatives (such as the IFC's Lighting Asia Program).

Access to information about potential new markets is lacking. Stakeholders have shown an interest in **market assessment reports** as an important service that a network could provide to help scale up their operations. Entrepreneurs would like to know where markets exist and the network may be able to facilitate that information more cost effectively. For example, for

⁵ For example, TrustLaw Connect, links social enterprises and NGOs with free legal services

a given locality, they would be interested to obtain reliable and detailed information on the potential consumer base, their energy needs, willingness to pay and means of livelihoods.

The efforts above can be augmented by focused **networking events** such as webinars, roundtables and forums. Talent acquisition has also been highlighted as a major hurdle faced by enterprises. Along with creating a platform to showcase employment opportunities, the network may utilise targeted networking events to encourage individuals to enter the sector. The networking events should aim to mobilise peer to peer knowledge exchange and provide focused opportunities for key stakeholders to engage with each other.

Table 5: Potential interventions – Networking		
	Potential interventions and activities	Implementation horizon (in months)
1.	Off-Grid Information Hub <ul style="list-style-type: none"> Consolidate information on current off-grid enterprises – solar, biomass, hydro and small wind as well as incubators and accelerators. Provide regular updates on national and regional policies and state tenders. Consolidate information on the existing finance ecosystem. Consolidate information on R&D institutions. Consolidate information on institutes or agencies offering manager and technician training. 	0-12
2.	Information on Legal and Regulatory Services <ul style="list-style-type: none"> Collate information on individuals/firms with prior experience in offering legal and regulatory services to SMEs (off-grid RE SMEs in particular). Highlight opportunities to access free or low cost legal services. 	0-12
3.	Supply Chain Data Bank <ul style="list-style-type: none"> Consolidate information on manufacturers; distribution channels; local NGOs and SHGs; and VLE Networks. 	12-24
4.	Enterprise – Distributor Linkages <ul style="list-style-type: none"> Utilise information in the Supply Chain Data Bank to forge partnerships amongst enterprises. Develop mechanisms for energy enterprises to develop and explore partnerships with corporates. 	12-24
5.	Consumer Awareness <ul style="list-style-type: none"> Build upon government awareness programs For example, awareness generation initiatives of West Bengal Renewable Energy Development Agency (WBREDA). Support NGOs and other delivery agencies to undertake consumer education and mobilisation campaigns in villages and remote areas. 	12-24

Table 5: Potential interventions – Networking

	Potential interventions and activities	Implementation horizon (in months)
6.	Networking Events <ul style="list-style-type: none"> • Organise webinars, regional roundtables, teleconferences, focussed group discussions, workshops, investor forums and technical tours. 	12-24
7.	Market Assessment Reports <ul style="list-style-type: none"> • Research market opportunities for off-grid technologies. • Leverage work and experiences of organisations doing similar work 	24-36

Source: CEEW analysis