



The South-South Opportunity

South-South cooperation in the context of aid effectiveness

Case Story Entry Form

Title Required	Barefoot College – Illiterate Rural Grandmothers solar electrifying their own villages in Africa.
Organization(s) Required	<p>Please enter the name of your organization or the institution most closely connected to the Case (e.g. the Ministry of Health, social development agency, etc.)</p> <ul style="list-style-type: none">• Barefoot College• Indian Technical and Economic Cooperation (ITEC) Division of the Ministry of External Affairs, Government of India• Multiple Governments-Ethiopia, Sierra Leone, Tanzania,• GEF Small Grants Programme of the UNDP.• 21 indigenous grass root organizations in Africa.
Country (ies) Required	<p>Please enter the Country or Countries involved in the SSC activity (i.e. provider, recipient)</p> <ul style="list-style-type: none">• India• Afghanistan• Bhutan• Ethiopia• Tanzania• Sierra Leone• Mali• Cameroon• Gambia• Ghana• Kenya• Namibia• Mauritania• Uganda• Benin• Malawi• Rwanda• Bolivia• Siberia(Russia)• Mozambique• Djibouti• Senegal• Guinea Bissau• Niger• Tchad



Overview Required	Please provide a short summary description of your SSC activity Barefoot College trains rural, illiterate and semi-literate women(both mothers and grandmothers) to fabricate, install, maintain, and repair fixed individual home lighting systems with solar lanterns for off-grid electrification. Participants from developing countries (mostly in Africa) are trained in six months at the Barefoot College campus in Tilonia, Rajasthan. Air fare and 6 months training costs are covered by the Government of India. After completing the course, with funds from private foundations and SGP (UNDP) solar equipment is shipped to their villages where it is used to electrify the whole village. These are the first technically and financially full solar electrified villages in Africa. An example of South South Cooperation at its best
Background — <i>describe how it began</i> Required	What was the purpose and overall goal of the SSC activity? The objective of the off grid solar-electrification training program at Barefoot College is to demystify technology and decentralize the management, control and ownership of this sophisticated technology to the hands of very poor rural communities. Illiterate mothers and grandmothers have been trained to fabricate, install, operate, maintain, and repair solar electrification equipment for rural, off-grid electrification. It is to demonstrate that rural African women can also be competent and confident solar engineers without depending on urban skills from outside. What was the development challenge to which this SSC activity was meant to address? This SSC activity directly addresses several development challenges simultaneously including: <ul style="list-style-type: none">• Community to community exchanges of knowledge and skills• Environmental sustainability• Empowerment of women• Increasing Livelihoods at the bottom of the pyramid• Reducing dependency on outside urban skills• Reducing migration from rural to urban areas Indirectly, this SSC activity also impacts other development challenges including: <ul style="list-style-type: none">• Re-defining professionalism• The importance relevance and urgency of partnership models What were/are the expected results of this SSC activity? Over 6,000 houses in nearly 100 villages covering 15 of the Least Developed Countries have been solar electrified by nearly 100 mothers and grandmothers demonstrating the first ever fully technically and financially self sufficient villages in the continent of Africa. Why did the partners engage in the SSC activity? The Barefoot approach has been recognized as being more sustainable than other methods of decentralized rural solar electrification. By building capacity of middle aged women within the village, communities do not have to depend on expensive technicians for repairs and maintenance from the urban areas. Barefoot College has experience and expertise in training individuals (without prior experience) to become proficient in building, maintaining, and repairing solar electrification equipment.



	<p>Barefoot College has engaged in this SSC activity to show the “importance and relevance of Mahatma Gandhi’s message” that “technology should be demystified and decentralized to the hands of the rural poor.”¹</p> <p>How did the political context or previous cooperation influence the planning process?</p> <p>It is the first successful attempt that demonstrating the power and sustainability of a planning process that originated from the grass roots. It is by far the largest south south cooperative efforts in terms of scale and outreach ever to be attempted with such immediate results impacting on the social, political and cultural lives of people living on less than \$ 1/day.</p> <p>The Partnership Model has had a political impact in several countries all over Africa. The President of Sierra Leone has decided to implement the barefoot approach all over the country. The first barefoot training centre is being built in a village 30 kms outside Freetown where it has been proposed to train 150 grandmothers by December 2010.</p>
<p>Implementation—<i>tell the story of what was done</i> Required</p>	<p>What kinds of SSC activities or modalities were conducted?</p> <p>The central activity in this example of SSC involves a Government of India sponsored 6 month training of semiliterate middle aged rural women to fabricate, install, maintain, and repair solar electrification systems at Barefoot College. By colour, sign language, sight and sound(the written word is not used) the women are trained to fabricate sophisticated types of circuits (e.g. a charge controller, an inverter circuit, etc.), in six months at the Barefoot campus in Tilonia, Rajasthan. After completing the course, with funds from private foundations and the GEF Small Grants Programme the equipment is shipped to their villages where it is used to electrify the houses in their community. Building capacity to maintain and repair the equipment at the local (i.e. village) level is a crucial aspect of sustainability.</p> <p>The Barefoot philosophy of teaching involves only practice and no theory; trainees need no educational qualifications. Additionally, Barefoot solar engineers learn without language, other than learning the English names of essential parts (e.g. capacitor, resistor, etc.). Instead, Barefoot solar engineers learn by seeing and doing. They construct solar electrification units that are able to power two light bulbs for four to five hours with a 40-watt panel or light bulbs, a fan, and cell phone with a 75-watt panel.</p> <p>Please describe the roles, responsibilities, interests and interrelations of the involved stakeholders.</p> <p>ITEC (the Ministry of External Affairs) funds the training of the African participants at Barefoot College. The cost of the equipment that is constructed during the training process and then used to solar-electrify the participants’ villages is covered by the participants’ communities, the participants’ governments, as well as several multilateral development banks (e.g. the UNDP, the Asian Development Bank, etc.).</p> <p>Barefoot College also receives funding from various foundations, MDBs, and international donor agencies including:</p> <ul style="list-style-type: none">• GEF Small Grants Programme (UNDP)• Stichting Het Groene Woudt• Skoll Foundation• Fondation Ensemble• Norwegian Church Aid• Rio Tinto

¹ Roy, Bunker. “South-South Cooperation at the Grass Roots: The Barefoot Approach”.



	<p>Community ownership is an important part of the Barefoot approach. Communities bear the cost of repair workshops and families (no matter how poor) are required to contribute to the cost of equipment. Having a stake and bearing a portion of the cost, it is believed, encourages families to respect and appreciate the equipment.</p> <p>Local partners (i.e. NGOs) play an important role in the process providing administrative, logistical, and technical support to Barefoot College and participants in the course. Partners arrange meetings with members of the rural community and facilitate dialogue between Barefoot College and policy makers, donors, and media. Partners also play a role in helping rural communities to select appropriate candidates for training and help with passports, visas, medical check-ups, and insurance. Additionally, the inclusion of local, grass-roots level organizations that are genuinely interested in helping the poor is a step towards decentralization.</p> <p>Maximum 600 words</p>
<p>Outcomes—<i>describe what it achieved</i> Required</p>	<p>Did the relation between the providing and receiving countries / governments / organizations change with this experience? Why and how?</p> <p>While it may be argued that the ITEC Programme, which funds the training of individuals at Barefoot College, generates goodwill between India and other South South developing countries, changing mindset is one of the specific goals of Barefoot College.</p> <p>What were the planned and unplanned achievements of the SSC experience?</p> <p>Planned achievements of this SSC experience include the training of women to fabricate, install, maintain, and repair solar electrification equipment as well as the solar electrification of rural, off-grid villages.</p> <p>An unplanned achievement that is, as yet, unproven, but is likely, is increased respect towards women within the villages.</p> <p>Are these outcomes sustainable? Could they be replicated in similar contexts?</p> <p>Training individuals at Barefoot College is sustainable from both a development perspective (i.e. building capacity at the village-level) and an environmental perspective (i.e. renewable energy).</p> <p>Commercial solar electrification of rural villages has not been as sustainable as the Barefoot approach because the systems require expensive repair and maintenance work to be done by a technician. By building capacity within the village, the community can repair and maintain the systems themselves. Typically, as a part of the Barefoot solar electrification process, villages donate the space (e.g. a small structure/room) to be the solar “workshop” of that village where repair work can be done, while increasing their stake in the project. Training a villager to maintain and repair electrification equipment is substantially more sustainable (i.e. cost-effective for the community) than merely transferring the technology and expecting villagers to pay technicians to maintain and repair the equipment. Moreover, the Barefoot approach can be replicated with the founding of training centres in Africa; Barefoot alumni have already started centres in Ethiopia and Sierra Leone.</p> <p>Solar electrification is also environmentally sustainable and replaces burning kerosene and wood, improving the health of the environment (and of the people).</p> <p>The Barefoot approach is certainly replicable, but faces potential challenges with regard to</p>



	<p>scaling up training capacity.</p> <p>Another challenge associated with the Barefoot approach is ensuring that individuals who have been trained do not lose their skills over time.</p> <p>For longer-term projects, could you describe (both positive and negative) impacts?</p> <p>Positive impacts include:</p> <ul style="list-style-type: none">• Rural electrification• Rural employment• Building capacity at the village-level• Technology (i.e. solar power) transfer• Empowerment of women• Environmental sustainability <p>A major problem facing Barefoot is the ability to determine with reasonable certainty the impact the trainings have had over time. Barefoot, at this time, is too constrained to undertake such a project, but it would shed more light on the limitations of the Barefoot approach and could contribute to making the approach more effective.</p> <p>Maximum 400 words</p>
<p>Aid effectiveness— <i>describe synergies of the experiences</i> Required</p>	<p>How can this experience help to understand the possible synergies between SSC and aid effectiveness principles?</p> <p>Effective aid facilitates sustainable, inclusive development. The Barefoot approach demonstrates the importance and effectiveness of building capacity at the local (i.e. village) level in achieving sustainable development. Furthermore, to make aid more effective, not only should the technology be made available, but also the knowledge to repair and maintain the equipment should <i>and can</i> be disseminated.</p> <p>The Barefoot approach also offers an alternative to other (less environmentally sustainable) methods of electrification (e.g. coal) and lighting (e.g. burning kerosene). As countries develop, their consumption of electricity increases; making renewable energy more accessible can help reduce damage to the environment.</p> <p>Was national leadership and ownership supported?</p> <p>The Barefoot Approach has been supported by local governments, but it is in the process of being a national priority of governments in Sierra Leone, Ethiopia and possibly Tanzania.</p> <p>Generating goodwill through SSC (in this case by funding the training of individuals at Barefoot College) is not a stated priority of the Indian Government but is aware of the impact it has had..</p> <p>To which extent was the experience aligned to national priorities and systems?</p>



	<p>Barefoot College is an ITEC institution; the ITEC Programme is an important part of foreign policy and considered the “flagship programme of the Government of India for extending [its] technical cooperation and assistance to developing countries”.²</p> <p>Rural electrification is both a national and international development priority. Empirical findings suggest that rural electrification can have substantial economic and socio-cultural impacts.³ Research has also shown that access to electricity increases worker productivity with the use of power tools.⁴ Electrification also enhances the ability to communicate with cell phones, radios, etc.⁵ The majority of Sub-Saharan Africans live in rural areas where electrification levels are frequently below 5 per cent.⁶ Not only are households in need of electricity, but also schools and hospitals. Solar electrification provides a solution to rural, off-grid communities.</p> <p>Electrification is, perhaps more important than being a national priority, a priority of the communities that participate in the Barefoot electrification process. Listening to what the community wants is an important part of the Barefoot approach.</p> <p>Has there been an effort to harmonize and coordinate with other programmes and development actors?</p> <p>Partnerships with other development actors are an important aspect of the Barefoot approach.</p> <p>Partners with whom Barefoot has worked include:</p> <ul style="list-style-type: none"> • Mekele University (Ethiopia) • Safer Future (Sierra Leone) • Aide de Leglise (Mali) • Rural Women Development Centre (Cameroon) • Lutheran World Federation (Mauritania) • Abed Ong (Benin) • International Child Support(ICS) (Tanzania) • Norwegian Church Aid (Rwanda, Mali, Mauritania, and Afghanistan) • Safer Rwanda (Rwanda) • Kirewa Women’s forum in collaboration with Mifumi (Uganda) • Centre for Community Organisation and Development (Malawi) • Tostan (Djibouti, Guinea Bissau and Senegal) • Ru’yu Association (Sudan) • Catholic Mission (Mozambique)
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² Smt. Preneet Kaur (Minister of State for External Affairs). 02 December 2009. Statement at UN conference on South-South cooperation in Nairobi, Kenya.

³ Barkat, Abul et al. 2002. *Economic and Social Impact Evaluation Study of the Rural Electrification Program in Bangladesh*. Dhaka: Human Development Research Centre. Pg 284.

⁴ Kirubi, Charles et al. 2008. Community-Based Electric Micro-Grids Can Contribute to Rural Development: Evidence from Kenya. *World Development*. doi:10.1016/j.worlddev.2008.11.005. Pg. 11.

⁵ Jacobson, Arne. Connective Power: Solar Electrification and Social Change in Kenya. *World Development*. Vol. 35 (1): pg. 157.

⁶ Karekezi, Stephen and Waeni Kithyoma. 2002. Renewable Energy Strategies for Rural Africa: Is a PV-led Renewable Energy Strategy the Right Approach for Providing Modern Energy to the Rural Poor of Sub-Saharan Africa? AFREPREN. Pg 1.



	<ul style="list-style-type: none">• Riders for Health (Gambia)• Taryana Foundation (Bhutan)• Irupana Andeane Organic Food S.A. (Bolivia) <p>Was managing for results included in the experience?</p> <p>The results of Barefoot College’s training activities are quantifiable in terms of the number of individuals trained, the number of villages/households electrified, and the wattage generated. Results can also be quantified more specifically in terms of households electrified, total wattage generated, number of solar units, etc.</p> <p>As of 2009 (in less than 5 years) in Africa:⁷</p> <ul style="list-style-type: none">• 141 women have been trained• 97 villages have been electrified• 9,000+ houses have been electrified• 397 Kw <p>Also, in Bolivia as of 2009 (in less than three years):⁸</p> <ul style="list-style-type: none">• 3 women have been trained• 3 villages have been electrified• 115 houses have been electrified• 3.5 Kw <p>Barefoot, however, does not have the capacity to monitor results over time. The argument that the Barefoot Approach is more sustainable over the long term (as compared to other forms of technology transfer) is, at this point, still theoretical, although the logic is convincing.</p> <p>Maximum 400 words</p>
<p>Capacity Development Required</p>	<p>Describe any specific capacity development benefits from this SSC activity at the individual, organizational or systemic level.</p> <p>Benefits accrue at the individual, community, and national (even international) level from Barefoot solar electrification. Building capacity at the individual level is a crucial aspect of sustainability (in terms of long-term viability). Additionally, building capacity for renewable energy electrification contributes to environmental sustainability.</p> <p>Are there any lessons learned from this SSC activity that improve the overall enabling environment, especially through improved incentives for better public services?</p> <p>One of the central lessons of the Barefoot Approach is the importance of building capacity locally to achieve sustainable development and technical/financial independence (i.e. helping the impoverished to be able to help themselves).</p> <p>Maximum 125 words</p>
<p>Duration Required</p>	<p>Please enter start and end date (if completed)</p> <p>September 2008 to present</p>

⁷ Roy, Bunker. “South-South Cooperation at the Grass Roots: The Barefoot Approach”.

⁸ Ibid.



Budget (Optional)	<p>Please enter the total budget and the shares of the stakeholders in it (ideally in USD) including financial and in-kind resources</p> <p>Financial Year 2008-09</p> <ul style="list-style-type: none">• Total Annual Budget<ul style="list-style-type: none">○ \$2.5 million (Rs. 46/USD)• Sources<ul style="list-style-type: none">○ Government<ul style="list-style-type: none">▪ 6%○ Foreign Donors<ul style="list-style-type: none">▪ 54%○ Own Sources<ul style="list-style-type: none">▪ 40%
File (Optional)	<p>Attach an electronic copy (e.g. .DOC file) of any additional descriptive information directly related to this experience such as a pre-existing case study, report, brochure or slide presentation.</p> <p>Maximum file size allowed is 20 MB</p>
Image (Optional)	<p>Attach an image for your SSC experience here.</p> <p>Maximum file size allowed is 20 MB</p>



Contact Information	
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<i>Are you interested in developing your SSC experience into a more in-depth study?</i>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> If "Yes" you may be contacted with more detailed follow-up questions