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## India's development cooperation in Africa

The case of 'Solar Mamas' who bring light

Veda Vaidyanathan\*

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**Abstract:** This paper examines multiple facets of New Delhi's development cooperation with countries in Africa and argues that grassroots organizations in India that find innovative, low-cost technological solutions to developmental challenges can help governments and multilateral agencies craft inclusive, sustainable policies. The aim of this paper is threefold. First, to understand the major actors, instruments, themes, and mechanisms that make up India's Development cooperation towards countries in Africa and how these usher in a new dimension of 'South–South cooperation'. Second, the paper will explore the role of grassroots organizations that have found localized solutions in India that then export their learnings to other geographies and how they craft a unique role for themselves in India's broader development cooperation framework. To explore this idea further, the paper will utilize the case study of a community-based grassroots organization, Barefoot College, Tilonia, founded by Sanjit Bunker Roy in 1972, and its solar programme. The college trains women from unelectrified, remote communities to become solar engineers who then return to their rural villages with the ability to harness solar power, earning them the title of 'Solar Mamas'. Third, this paper argues that the uneven, fragmented Indian experience of designing development assistance programmes provides an important non-western perspective that can help decision makers craft policies for an era beyond aid.

**Key words:** India, Africa, development cooperation, sustainability, technology, innovation

**JEL classification:** F50, O30, O10, Q42

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\* Fung Global Fellow, Princeton Institute for International and Regional Studies, Princeton University, USA; email: [veda.v@princeton.edu](mailto:veda.v@princeton.edu)

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Katajanokanlaituri 6 B, 00160 Helsinki, Finland

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## 1 Introduction

A crucial component of the existing development paradigm in the global landscape, is the new wave of South–South cooperation (SSC), in which countries from the developing world are pooling resources and expertise to work together towards achieving the SDGs. India’s international development began taking shape soon after its independence in 1947, and there are three factors that set it apart: it is demand-driven, not tied to conditionalities, and does not employ traditionally used ‘donor–donee’ semantics. Scholars making a case for an Indian model of development cooperation argue that a ‘policy evolution is underway that is building a self-confident and unique Indian government approach to development cooperation’.<sup>1</sup>

An understanding of the mechanics of this ‘unique Indian approach’ calls for an analysis of its instruments, components, and organizational layout. For instance, the nodal office of India’s development cooperation is the Ministry of External Affairs, with the Ministry of Finance, Ministry of Commerce, and the EXIM bank of India playing critical roles. However, in January 2012, the Development Partnership Administration (DPA) was set up in the Ministry of External Affairs (MEA) to streamline the delivery of assistance and improve the effectiveness of such efforts.

The DPA functions in close coordination with the concerned Territorial Divisions of the MEA, who continue to be the main interlocutors with partner countries on the prioritization and selection of projects for coverage under India’s development assistance initiatives. DPA comprises of four Divisions and among them DPA- II Division is the nodal division for all capacity building programmes, including the Indian Technical & Economic Cooperation Programme (ITEC) and Technical Cooperation Scheme (TCS) of Colombo Plan schemes.<sup>2</sup>

The aim of this paper is threefold. First, to understand the major actors, instruments, themes, and mechanisms that make up India’s development cooperation towards countries in Africa and how these usher in a new dimension of ‘South–South cooperation’. Second, this paper will explore the role of grassroots organizations who have found localized solutions in India who then export their learnings to other geographies and how they craft a unique role for themselves in India’s broader development assistance framework. Third, this paper explores the reasons why New Delhi’s development cooperation with countries in Africa provides a template of sustainable development cooperation and it is worthy of closer scrutiny.

## 2 India–Africa development cooperation

The narrative of India’s evolving relationships with countries in Africa is dominated by the century-old trade partnerships, support of African anti-imperial struggles, and solidarity displayed during the Non-Aligned Movement. Today, India positions itself as a partner in development, has extended concessional loans of over US\$12.3 billion, and allocated US\$700 million in grant

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<sup>1</sup> Dye, B. (2020). ‘Uneven Convergence in Development? The Case of India’s Lines of Credit to Africa’. FutureDAMS/IUKDP Working Paper 014. Manchester: The University of Manchester.

<sup>2</sup> ‘ITEC: Indian Technical and Economic Cooperation’. Available at: <https://www.itecgoi.in/index> (accessed 2 October 2022).

assistance to Africa. The creation of imaginative and progressive capacity building initiatives, as early as 1949, have focused on skills, technology, and knowledge transfer.

The Indian private sector that has made forays across African landscapes, has also been successful in leveraging Lines of Credit, which have been a crucial component of India's development cooperation mechanisms. These interactions have brought in a renewed vigour to state-to-state interactions driven under the auspices of the India Africa Forum Summit (IAFS), and their commercial success has encouraged a new wave of migrants seeking opportunities in Africa. Now, Indian sub-national actors, including civil society and voluntary organizations, are setting up linkages across these geographies, scaling up innovative development solutions and sharing knowledge.

India's partnerships with African countries in the health sector is also noteworthy. One of the most significant contributions has been Indian-manufactured generic antiretroviral (ARV) that facilitated the treatment of HIV/AIDS through low-cost, quality-assured medicines. In Africa especially, India stood up to massive resistance from Western pharmaceutical companies to provide drugs that cost US\$1, made possible due to India's unique patent system and legal provisions, thereby making huge strides in containing the disease.<sup>3</sup> Studies show that Indian ARVs continue to dominate the market, accounting for more than 80 per cent of annual purchase volumes.<sup>4</sup> This cooperation extended into the pandemic when 32 African countries received 150 tonnes of medical assistance, including access to vaccines manufactured in India. Other initiatives, including e-Vidyabharati and e-Arogyabharati (e-VBAB) project, are looking to leverage technology to expand the scope of cooperation.

In the fight against climate change, India and countries in Africa are poised to be close partners. To that end, when India launched the International Solar Alliance (ISA) at COP 2015, African countries showed tremendous support and today over half of ISA member states are from the continent. New Delhi has pledged a concessional credit line of US\$2 billion to Africa over five years for the implementation of off-grid solar energy projects.<sup>5</sup> The ISA is also working with the African Development Bank to develop 10,000 megawatts (MW) of solar power systems across the Sahel, 'which aims to provide electricity to approximately half of the 600 million Africans who remain off-grid'.<sup>6</sup>

India is also the third largest provider of UN peacekeeping troops, with over 5,300 soldiers deployed in eight of the 12 UN missions around the world. Since 1953-54, the Indian army has contributed over 2.58 lakh<sup>7</sup> personnel in 51 of the 71 UN missions. Most recently, an infantry battalion with 570 soldiers were deployed under the UN interim security force for Abeyi

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<sup>3</sup> 'Indian Generics and AIDS', *Frontline*, 16 October 2013. Available at: <https://frontline.thehindu.com/social-issues/indian-generics-and-aids/article5228850.ece> (accessed 2 October 2022).

<sup>4</sup> Waning, B., E. Diedrichsen, and S. Moon (2010). 'A Lifeline to Treatment: The Role of Indian Generic Manufacturers in Supplying Antiretroviral Medicines to Developing Countries'. *Journal of the International Aids Society*, 12(35). <https://doi.org/10.1186/1758-2652-13-35>

<sup>5</sup> Karingi, S., and L. Naliaka (2022). 'The Future of India-Africa Relations: Opportunities Abound'. *Foresight Africa series*. Brookings Blog. Available at: <https://www.brookings.edu/blog/africa-in-focus/2022/02/25/the-future-of-india-africa-relations-opportunities-abound/> (accessed 25 February 2022).

<sup>6</sup> African Development Bank (2018). 'African Development Bank Signs Deal with International Solar Alliance to Propel Solar Development in Africa', *News*. Available at: <https://www.afdb.org/en/news-and-events/african-development-bank-signs-deal-with-international-solar-alliance-to-propel-solar-development-in-africa-17936> (accessed in February 2023).

<sup>7</sup> A lakh is equal to 100,000 (it is a unit in the Indian numbering system).

(UNISFA), tasked with monitoring the border between Northern and Southern Sudan,<sup>8</sup> which includes a platoon of female peacekeepers.<sup>9</sup>

### 3 South–South cooperation

India’s development partnerships with countries in Africa is built on the changing notions of SSC. In this paper, SSC is defined as the exchange of resources, personnel, technology, and knowledge between developing countries. The origins of SSC can be traced back to the Bandung Conference of 1955 where 29 African and Asian states decided to present a unified voice against status quo, which later took the form of the Non-Aligned Movement (NAM). These newly independent, politically fragile countries had the arduous task of achieving economic progress, which scholars argue changed their attitudes from ‘uhuru’ (freedom) to ‘uhurunakaze’ (freedom means hard work).<sup>10</sup>

This is very much in line with the Buenos Aires Plan of Action (BAPA) for Promoting and Implementing Technical Cooperation among Developing Countries endorsed by the General Assembly in 1978 (resolution 33/134)<sup>11</sup> that emphasizes ‘fostering the self-reliance of developing countries by enhancing their creative capacity to find solutions to their development problems in keeping with their own aspirations, values and specific needs’, ‘promoting and strengthening collective self-reliance among developing countries through the exchange of experiences’, and “improv[ing] the capacity of developing countries to absorb and adapt technology and skills to meet their specific developmental needs”.

The establishment of financial institutions such as the New Development Bank, the India-Brazil-South Africa Facility for the Alleviation of Poverty and Hunger (IBSA Fund), and the Asian Infrastructure Investment Bank seeks to fill a fundamental gap in development financing with non-traditional development partners becoming viable alternatives to traditional lenders.

A common, oft-quoted challenge to South–South cooperation as explained in this report by the OECD is:

While South-South learning and knowledge exchange is gaining traction, it often draws on very scarce resources and takes place in an isolated form. Developing countries willing to share their expertise tend to resolve this lack of fuel with creativity and (often personal) commitment, recycling available budgets and human resources. However, this approach entails severe limitations, especially in terms of scaling-up, coordination among South-South partners and their platforms, accumulative learning, and the generation of good practices. It is also

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<sup>8</sup> Rajat, R. (2022). ‘India to Send a Battalion for Peacekeeping Ops in Africa’, *The Times of India*, 17 January 2022. Available at: <https://timesofindia.indiatimes.com/india/india-to-send-a-battalion-for-peacekeeping-ops-in-africa/articleshow/88939315.cms> (accessed in February 2023).

<sup>9</sup> Dutta, A. (2023) ‘Largest Unit of Indian Women Peacekeepers in Sudan Conflict Zone’, *The Indian Express*, 7 January 2023.

<sup>10</sup> Ugwuja, A.A, K.C. Ubaku, N.J. Obiakor, and B. Ibekilo (2014). ‘South - South Cooperation and the Prospects of a New International Economic Order: An Insight into the India Brazil-South Africa (IBSA) Dialogue Forum’. *International Journal of Humanities Social Sciences and Education*, 1(8): 171–82.

<sup>11</sup> United Nations Office for South-South Cooperation (UNOSSC). *About South-South and Triangular Cooperation*. Available at: <https://unsouthsouth.org/about/about-sstc/> (accessed in November 2022).

one of the main causes why there are still some voices that claim that South-South cooperation does not exist: it frequently happens in an informal, uncoordinated, and ultimately invisible way.<sup>12</sup>

While this perspective is not entirely inaccurate, as many actors do operate with severe limitations and scaling up is a challenge, SSC is not nearly as isolated as it is made out to be. As this paper will put forth, there are institutions, frameworks, personnel, and resources that facilitate these operations, and SSC is far from an ‘informal or invisible’ phenomenon.

#### 4 The mechanics of India’s development cooperation in Africa

India’s development cooperation rests on two main pillars. The first emphasizes the role of partnership and the second focuses on priorities determined by the partner country. Over the years, the initiatives have increased in scope and include ‘Lines of Credit, grant assistance, technical consultancy, disaster relief, humanitarian aid, educational scholarships and a wide range of capacity building programmes including short-term civilian and military training courses.’<sup>13</sup>

One of the major programmes in this regard is the Indian Technical and Economic Cooperation (ITEC). Instituted by a decision of the Indian Cabinet on 15 September 1964, it now extends to over 161 countries in Asia, Africa, East Europe, Latin America, the Caribbean as well as Pacific and Small Island countries. The three components of the ITEC are training and capacity building, including executive programmes for bureaucrats and civil servants, deputation of Indian experts abroad to assist in developmental activities, and study tours in India where delegates from partners countries are taken to different institutes and training centres in the country.

While India’s development assistance is categorized as ‘demand driven’, Indian authorities also have a list of sectors they want to engage in. While ‘demand driven’ would entail that it is always the partner country that identifies a project based on its priorities and submits a request to the Indian government for Lines of Credit, this is not always the case. Sometimes, host countries may not have the resources for project conceptualization. To offset this, a ‘Project Preparation Facility’ was created in 2018 to ‘expeditiously provide free-of-cost Indian consultancy support to requesting governments in the preparatory phase of project formulation and design for projects that may be considered for Government of India Lines of Credit’<sup>14</sup>.

That said, certain criticisms pertaining to India’s development cooperation do point towards challenges unique to the country. For instance, a scholar argues that:

Rather than continuing the rate of increase in IDEAS loans and thereby delivering a high volume of functioning projects, LoCs to African countries have decreased. This demonstrates the weak capacity of India’s development bureaucracy and

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<sup>12</sup> OECD (2010). *Boosting South-South Cooperation in the Context of Aid Effectiveness: Telling the Story of Partners Involved in more than 110 Cases of South-South and Triangular Cooperation*. Available at: <https://www.oecd.org/dac/effectiveness/46080462.pdf> (accessed in February 2023).

<sup>13</sup> ITEC: Indian Technical and Economic Cooperation?. Available at: <https://www.itecgoi.in/index> (accessed 2 October 2022).

<sup>14</sup> Ministry of External Affairs, Government of India (2018). *Project Preparation Facility (PPF) for Government of India Lines of Credit (LoCs)*. 15 January 2018. Available at: <https://www.mea.gov.in/Images/attach/Project-Preparation-Facility.pdf> (accessed 2 October 2022).

Foreign Service, something which recent announcements on increases in staff and African embassies, for example, may start to address. Equally, it shows the potential challenges of increasing intervention and ‘paperwork’ requirements for the emerging powers’ development cooperation programmes.<sup>15</sup>

This notwithstanding, the three components of India’s development cooperation towards countries in Africa that are crucial to examine closely are: 1) training and scholarships, sending experts to partner countries, 2) funding and equipment for specific developmental projects, and 3) engaging civil society organizations that have identified innovative, scalable, low-cost solutions to shared developmental challenges.

#### 4.1 Emphasis on capacity building

Official documentation traces the emphasis on individual and institutional capacity building to 1953, where a central government circular suggests that state governments should sponsor at least two students from Africa.<sup>16</sup> Soon, in 1956, the Government of India helped establish a residential Royal Technical College in Nairobi, to provide higher technical, commercial, and arts education.

Later in 1961, when the government of Ethiopia requested assistance in programmes related to community development, Ethiopian participants were sent to India for training. In mineral-rich countries dependent on extractives, Indian engineers have helped set up the knowledge bases to train local engineers.

Today, the Indian Council for Cultural Research (ICCR) alone offers nearly 3,365 scholarships under 24 schemes of which almost 1,000 are for countries in Africa. The C.V. Raman Fellowship for African Researchers has trained over 400 scientists from over 40 African countries in universities and research institutes in India.<sup>17</sup> Under the Africa Scholarship Scheme that began in 2012, over 4,000 civilian training slots were made available to African students wanting to pursue undergraduate, post graduate, or PhD training in India. At the India Africa Forum Summit in 2015, 50,000 scholarships were announced, of which over 32,000 slots have so far been utilized.<sup>18</sup>

There are also sector- and country-specific training programmes that are more focused. For instance, International Crop Research Institute for the Semi-Arid Tropics (ICRISAT), headquartered in Hyderabad, has established food processing incubators in Angola, Cameroon, Ghana, Mali, and Uganda, food testing laboratories in Nigeria, Gambia, Republic of the Congo, Zimbabwe, Rwanda and mentors six value chain agrobusiness incubators in various countries by

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<sup>15</sup> Dye, B. (2020). ‘Uneven Convergence in Development? The Case of India’s Lines of Credit to Africa’. FutureDAMS/IUKDP Working Paper 014. Manchester: The University of Manchester.

<sup>16</sup> Chaturvedi, S. (2016). ‘Enhancing India-Africa Development Cooperation’. Report, 1 February 2016. Brookings. <https://www.brookings.edu/research/enhancing-india-africa-development-cooperation-more/> (accessed in February 2023).

<sup>17</sup> C.V. Raman International Fellowship for African Researchers. See: <http://www.indoafrica-cvrf.in/> (accessed in October 2022).

<sup>18</sup> Address by External Affairs Minister, Dr. S. Jaishankar at the 17th CII-EXIM Bank Conclave on India-Africa Growth Partnership, Ministry of External Affairs, Government of India. 19 July 2022. Available at: [https://mea.gov.in/Speeches-Statements.htm?dtl%2F35499%2FAddress\\_by\\_External\\_Affairs\\_Minister\\_Dr\\_S\\_Jaishankar\\_at\\_the\\_17th\\_CIIEXIM\\_Bank\\_Conclave\\_on\\_IndiaAfrica\\_Growth\\_Partnership](https://mea.gov.in/Speeches-Statements.htm?dtl%2F35499%2FAddress_by_External_Affairs_Minister_Dr_S_Jaishankar_at_the_17th_CIIEXIM_Bank_Conclave_on_IndiaAfrica_Growth_Partnership) (accessed in October 2022).

partnering with local bodies. Over 800,000 farmers have benefited from these schemes, it has created 4,665 jobs and 294 start-ups in Africa.<sup>19</sup>

This emphasis on capacity building has also shaped several triangular programmes with partners like the United States. For instance, the ‘Feed the Future India Triangular Training Program’ is a partnership with the USAID and the Indian Ministry of Agriculture’s premier institute—the National Institute of Agricultural Extension Management (MANAGE)—to train 1,500 agricultural practitioners from 11 African and six Asian countries on specialized farming practices to increase productivity. ‘Phase I of the program trained 219 participants from Kenya, Liberia, and Malawi in agricultural marketing, dairy management, food processing and other best practices to prevent post-harvest losses.’<sup>20</sup>

Similarly, in the ‘Feed the Future India Africa Innovation Transfer Platform’, USAID partnered with a US NGO Technoserve to share and transfer innovative Indian soil and water management techniques known as *Khadins* and *Taankas* in Kenya and Malawi. According to official documents:

These techniques helped local communities improve off-season crop production, provide water for their cattle, and explore options for growing additional fodder crops. In Kajiado county of Kenya, 97 million liters of run-off water holding capacity has been created to benefit over 400 masai tribal households. In Dedza district of Malawi, over 200 households benefited through taking a second crop due to construction of seepage wells demonstrating the benefits of these technologies for wider use.<sup>21</sup>

## 4.2 Funding developmental projects

Beyond training, over 50 per cent of the Lines of Credit provided by the Indian EXIM bank is targeted at developmental projects in Africa. So far India has completed 197 projects, has 65 currently underway with 81 at the pre-execution stage.<sup>22</sup> These projects span across various sectors and countries from water supply, agriculture, food processing, and building the National Assembly in Gambia, erecting prefabricated health posts, and building a hydro power project in Zambia, building social housing, the new Supreme Court, and the metro express in Mauritius, a Centre for excellence in IT in Namibia, establishing solar panel production unit and training local scientists in Maputo, Mozambique, to name a few.<sup>23</sup>

Some of the centres that are set up, such as the Gandhi-Mandela Centre of Specialization for Artisan Skills in South Africa, signed in 2018, will collaborate with the Hindustan Machine Tools

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<sup>19</sup> International Crops Research Institute for the Semi-Arid Tropics (ICRISAT). ‘Facilitating Agribusinesses’. Available at: <https://www.icrisat.org/portfolio/facilitating-agribusinesses/> (accessed in October 2022.)

<sup>20</sup> U.S. Agency for International Development (USAID). ‘U.S.-India Triangular Cooperation’. Archive. Available at: <https://2017-2020.usaid.gov/india/us-india-triangular-cooperation> (accessed in September 2022).

<sup>21</sup> Ibid.

<sup>22</sup> Address by External Affairs Minister, Dr. S. Jaishankar at the 17th CII-EXIM Bank Conclave on India-Africa Growth Partnership, Ministry of External Affairs, Government of India. 19 July 2022. Available at: [https://mea.gov.in/Speeches-Statements.htm?dtl%2F35499%2FAddress\\_by\\_External\\_Affairs\\_Minister\\_Dr\\_S\\_Jaishankar\\_at\\_the\\_17th\\_CIIEXIM\\_Bank\\_Conclave\\_on\\_IndiaAfrica\\_Growth\\_Partnership](https://mea.gov.in/Speeches-Statements.htm?dtl%2F35499%2FAddress_by_External_Affairs_Minister_Dr_S_Jaishankar_at_the_17th_CIIEXIM_Bank_Conclave_on_IndiaAfrica_Growth_Partnership) (accessed in October 2022).

<sup>23</sup> Ibid.



Limited (HMTL) to offer resources and equipment to train mechanical fitters, electricians, boilermakers, and millwrights— vocational jobs that have a huge demand in South Africa.<sup>24</sup>

Triangular cooperation with the US extends into development projects as well. For instance, the ‘India-Kenya Dairy Development Project’ is a partnership between USAID and a leading infrastructure development and financial services group, Infrastructure Leasing & Financial Services Limited (IL&FS), to transfer and pilot India’s successful smallholder dairy production and marketing business model to Kenya. According to primary source data:

The program has introduced and tested feed and fodder management best practices, as well as established a micro-milk processing unit in Nakuru County, Kenya, that increased milk production by more than 50 percent in the target communities where the model is being piloted.<sup>25</sup>

### **4.3 Indian civil society organizations: introducing innovative, low-cost technological solutions**

Indian civil society organizations are also a crucial, understudied aspect of its development cooperation initiatives in Africa. An example is ‘Kudumbashree’, which was set up in 1997 in Kerala, a state in southern India. The word in Malayalam means ‘prosperity of the family’ and is a poverty eradication and women empowerment programme. Implemented by the State Poverty Eradication Mission (SPEM) of the Government of Kerala, it has a three-tier structure for its women community network, with Neighbourhood Groups (NHGs) at the lowest level, Area Development Societies (ADS) at the middle level, and Community Development Societies (CDS) at the local government level.<sup>26</sup>

The Governments of Uganda and South Africa have shown interest in implementing this model in their countries. Experts from Kudumbashree travelled to Kampala to provide a ten-day training for 57 participants on their institutional architecture and share information on the community approaches that were successful.<sup>27</sup> Similarly, the leaders of Free State province in South Africa have sought assistance to set up Self Help Groups, however Kudumbashree officials state that they will first need to study the different social contexts as well as different drivers in each of these geographies before implementing them. A delegation of experts from Ethiopia also closely studied similarities between the countries and the role SHG’s played in finding solutions and was keen on modelling similar programmes. These transfers of ideas, resources, and structures are an important dimension of addressing shared challenges. To gain a more nuanced understanding of how this plays out, we now turn to the case study of the Barefoot College in rural Rajasthan.

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<sup>24</sup> High Commission of India (2019). ‘India-South Africa Relations’. Available at: [https://mea.gov.in/Portal/ForeignRelation/South\\_Africa\\_Sept2019-1.pdf](https://mea.gov.in/Portal/ForeignRelation/South_Africa_Sept2019-1.pdf) (accessed in August 2022).

<sup>25</sup> U.S. Agency for International Development (USAID). ‘U.S.-India Triangular Cooperation’. Archive. Available at: <https://2017-2020.usaid.gov/india/us-india-triangular-cooperation> (accessed in September 2022).

<sup>26</sup> Kudumbashree. ‘The Kudumbashree Story’. Available at: <https://thekudumbashreestory.info/index.php/what%E2%80%99s-kudumbashree> (accessed in September 2022).

<sup>27</sup> Kudumbashree. ‘International Assignments’. Available at: <https://www.kudumbashree.org/pages/504> (accessed in September 2022).

## 5 Case study: Barefoot College, Tilonia

The Social Work and Research Centre—also known as the Barefoot College, Tilonia—was founded by Sanjit Bunker Roy in 1972. This community-based grassroots organization worked in partnership with rural Indian communities to provide basic services and find solutions to problems, with the aim of encouraging self-sufficiency and sustainability. The ‘barefoot solutions’ include, but are not limited to, harnessing solar energy, financial and enterprise skill building, artisan development, children’s education, community self-sufficiency, water, health, and waste management. In 2008, the Ministry of External Affairs, Government of India, recognized the Barefoot College as a training institute under the ITEC programme.

Today, the college trains women from impoverished communities in India as well as groups of women from faraway African towns as solar engineers to electrify their villages and maintain the grid for maximum efficiency, earning them the title of ‘Solar Mamas’. The introduction of solar energy in these unelectrified ecosystems that traditionally rely on charcoal, biomass, and candles for lighting is a game changer. Not only is it more environmentally sustainable, but it is less hazardous and contributes to the socio-economic transformation of these rural communities, especially for women.

In this context, the ‘Barefoot Approach’—which involves selecting unlettered women, training them for over six months to fabricate, install, and maintain household solar electrification systems—is novel. This unique model is community owned and managed, provides financial self-sufficiency, thereby empowering women who graduate as Women Barefoot Solar Engineers (WBSE). It has been introduced in 36 countries in Africa, and 270 ‘Solar Mamas’ have electrified 12,000 houses in 161 villages at a cost of US\$4.8 million, 200,000 men, women, and children having directly benefitted from it.

According to the founder, Bunker Roy, the Barefoot College is the only community-based organization (CBO) in the world that makes a distinction between literacy and education, saying ‘just because someone rural is illiterate does not mean that the person is uneducated’. Challenging existing developmental paradigms, he argues:<sup>28</sup>

Most conventional development solutions that target the rural poor have failed to take hold at the village level. These solutions miss the mark in two ways: first, they rely on tools and technologies that are overwrought with complicated installations or upkeep, creating communities dependent on outside help. And second, they ignore a large group of people (the rural poor) able to learn new skills to generate their own livelihoods and, more importantly, sustain solutions over time. Development organizations too often neglect the knowledge, wisdom, and skills of the world's poorest, on the assumption that a lack of formal education renders them unfit to contribute meaningfully to society.

He believes that at the centre of the Barefoot College’s success is its Gandhian values, the model of community ownership that provides dignity to the poor, and finding solutions to problems that champion their own resourcefulness.<sup>29</sup> In a report compiled for the 55<sup>th</sup> session of the UN

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<sup>28</sup> Roy, B. (2017). ‘Barefoot Women Solar Engineers: An Initiative Having Impact in Africa’. *The International Journal on Green Growth and Development*, 3(1): 75–81.

<sup>29</sup> Personal Interview, Tilonia.

Commission on the status of women, he explains:<sup>30</sup> ‘What the Barefoot College has effectively demonstrated is how the combination of traditional knowledge (barefoot) and demystified modern skills can bring lasting impact and fundamental change when the tools are in the control and ownership of the rural poor.’

The Barefoot College has been working with the Government of India to construct five women’s regional vocational training centres in Liberia, Burkina Faso, Senegal, South Sudan, and Tanzania. In 2015, the sixth Barefoot Vocational Centre was inaugurated by the President of Zanzibar, and in 2019, the centre in Madagascar was inaugurated, where 50 women from rural villages are trained each term (five months) and are provided the equipment to install solar panels. They expect that by 2030, 744 women will be certified solar engineers and will provide light to around 630,000 homes.<sup>31</sup>

The programme is funded by the government, the private sector, multilateral organizations, non-governmental organizations, and members of the community. While the Ministry of External Affairs provides the travel and training costs under the ITEC umbrella, UNWOMEN, UNESCO, UNDP/GEF Small Grants Programme, and private foundations, such as Skoll, Enel Green Power, fund the hardware which includes a 40 W solar panel, with deep cycle battery that lasts for six years and powers three LED lights, one mobile charger, one fan, and a radio. The monthly repair and maintenance are carried out by the local communities, creating ‘the first technically and financially self-sufficient solar electrified villages in the world’.<sup>32</sup>

While the primary aim of building these networks and institutions was to push for electrification, during the outbreak of the pandemic, the team at the Barefoot College in Zanzibar was able to utilize their extensive networks in relief work, revealing flexibility in their operations. They were able to produce and distribute over 100,000 masks, create awareness in local communities by distributing fliers, and battle misinformation by sending over 2,000 text messages a day, emphasizing best practices.<sup>33</sup>

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<sup>30</sup> Roy, B. (2011). *Women Barefoot Solar Engineers A Community Solution*. Interactive Expert Panel. United Nations Commission on the Status of Women, Fifty-fifth session, 22 February–4 March 2011. New York. Available at: <https://www.un.org/womenwatch/daw/csw/csw55/panels/Panel1-Roy-Bunker.pdf> (accessed in February 2023).

<sup>31</sup> Barefoot College International (2019). ‘Celebrating Barefoot’s Grand Training Centre Opening in Madagascar’. Available at: <https://www.barefootcollege.org/celebrating-barefoots-grand-training-centre-opening-in-madagascar/> (accessed in September 2022).

<sup>32</sup> Roy, B. (2017). ‘Barefoot Women Solar Engineers: An Initiative Having Impact in Africa’. *The International Journal on Green Growth and Development*, 3(1): 75–81.

<sup>33</sup> Barefoot College International (2020). ‘Barefoot College Zanzibar’s Response to Covid-19’. Available at: <https://www.barefootcollege.org/barefoot-college-zanzibar-covid19/> (accessed in October 2022).

Figure 1: Trainees at the Barefoot College in Rajasthan



Source: photograph taken by the author, August 2022.

During the author's visit to the Barefoot College in Rajasthan, in early August 2022, a group of 15 women were being trained to become 'Solar Mamas'. The organizers were preparing to host a delegation of African women who would arrive later in the year for training, the first international batch after the COVID-19 pandemic had struck.

A major takeaway is that the teaching transcends language barriers, as it is based on colour coding and a manual with step-by-step photographs and instructions. The women learn by doing and repetition is key. Hesitant and insecure about their own abilities at first, with time, their technical dexterity improves, understanding of basic concepts and comfort with tools increases, and they gain confidence. Once the 'Solar Mamas' return to their villages, they are paid a monthly salary to set up units and are provided with the equipment to set up workshops. To instil a sense of ownership, the communities pay a small fee for the use of solar units, roughly the same amount they use to spend on kerosene, candles, etc.

Over the course of the six months of training, friendships and kinships are formed, special days are celebrated, personal tragedies mourned, and support systems created to help those that are struggling to keep up. Several respondents have pointed out that they deal with trainees from Africa with empathy because most of these women are travelling outside their villages and country for the first time, and therefore reach Tilonia with a sense of trepidation and caution. The women speak to each other using basic English and sign language, and as one master trainer puts it, 'after being around each other for some time, we develop our own ways of communication. We pick up words from their language and them from ours, but there is also a universal language of laughter, and kindness that doesn't need words'.

The experience of having picked up a tangible skill, having access to solar equipment after returning to their villages, and 'bringing light' to unelectrified homes, helps these women to break through generations of oppression and offset biases they face due to their gender and other social norms. It is empowering, in more ways than one, this is evident. How do we imagine more such interventions remains the big question. What is clear with this case, though, is that we need to look beyond existing frameworks, have the audacity to imagine, the resources to sustain and scale up, and the willingness to share our learnings.

## 6 Conclusion

Instruments of India's development cooperation in Africa, some designed when India herself was newly independent, indicate that they are rooted in the ethos of finding creative solutions and pooling resources to address developmental challenges. The advantages for New Delhi are aplenty: a range of African leaders who have been trained in India are familiar with its functioning, developmental projects created through the Lines of Credit have benefited local communities, and ITEC programmes have helped host countries build individual and institutional capacity. All have contributed to generating tremendous goodwill.

On the downside, a common criticism has been the often-excessive time it takes to implement projects. Stakeholders interviewed admit that even if they win a tender floated by an African government, it may be years before the funds that have been approved for the project are released. According to one respondent: 'We might get a project approved in 2015, but the money to start work might only be issued in 2020, and the final project completed by 2022, by which time a lot of realities in the ground would have changed.'<sup>34</sup> Delays in project delivery have also been attributed to government red tape and time-consuming bureaucratic processes.

This paper identifies legitimate grassroots organizations as key actors in a country's development cooperation ecosystem. Their role involves not just finding low-cost, innovative solutions, but helping governments and multilateral agencies craft inclusive, sustainable policies and usher in a new dimension of 'South-South cooperation'. Furthermore, the paper concludes that not only does the Indian experience provide an important non-Western perspective, it also offers a template of how mechanisms can be made more sustainable. As a country that has a history of crafting decentralized developmental models, India can play a part in spearheading such global initiatives and shaping conversations about an era beyond aid.

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<sup>34</sup> Personal Interview, Ghana, 2022.

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