



SDI Energy Justice Programme

Progress Report

JANUARY 2018

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Introduction

The SDI network incorporates slum dweller federations in 34 countries across Africa, Asia, and Latin America. SDI's Energy Justice Programme (EJP) has delivered and continues to iterate models that improve access to basic and more advanced levels of electricity service provision. To date, the EJP spans 10 countries within this network, namely: Uganda, Tanzania, Malawi, Namibia, Zambia, Zimbabwe, South Africa, Ghana, India, and Philippines.

Access to clean, reliable, safe, and affordable sources of energy is identified by SDG-7 as a key driver of development. During the past 4 years SDI has sought to deliver scalable models for safe, affordable, and reliable renewable energy access. This work has been incorporated into the SDI network's strategy for creating inclusive and resilient cities where the lives of the urban poor are substantively improved. SDI's EJP has been fully integrated into SDI's strategic plans and Theory of Change, along each of the three change pathways: settlement, city, and global.



Tanzanian solar team

This report provides an overview of the progress of the last 4 years of SDI's EJP and its evolving strategy going forward. Firstly, the report sets the scene regarding the intentions of the programme at its inception, which broadly entailed integrating energy service provision into SDI's agenda for incremental settlement upgrading and wider strategies for change. From there the report looks at the linkages between SDI's energy work and the SDI Theory of Change. It then proceeds to outline progress made during the programme to date. Finally the report touches on emerging strategies, which will take the programme forward.

Recap of the SDI EJP Intentions

The SDI EJP was established and is supported by Sida funding to SDI's Basket Fund for implementation of a program aligned to the SDI Strategic Plan 2013-2017. A key value proposition for community driven informal settlement upgrading defined at the programme's inception was the ability of communities living in informal settlements to play a key role in designing and implementing solutions that improve basic services for the poorest (energy, sanitation, water, housing). Organized community involvement, SDI argues, produces solutions that are more affordable, scalable and sustainable.

The EJP seeks to capitalize on existing local value chains (including those derived from slum dweller federation savings groups, federation networks, urban poor funds and livelihoods loans) and integrate these into new pro-poor models for delivering alternative electricity services to the urban poor. It was noted at the outset of the programme that the urban poor often pay significantly more for basic services through the informal economy than their counterparts in higher income areas. This surcharge on the poor is commonly referred to as a, "poverty penalty" and the aim of the EJP is for SDI affiliates to unlock this penalty in order to lower the cost of basic services and redirect more local resources to settlement upgrading.

The EJP set out to develop scalable renewable energy access projects and integrate these into wider settlement upgrading programmes. SDI set out to develop the technical capacity of slum dweller communities and to develop the supply chains required to deliver energy services to the urban poor. SDI said that it would develop and source solar PV solutions suitable for urban poor communities and deliver this service using energy hubs as a base. SDI said that it would learn lessons and overcome challenges associated with providing energy services to urban informal areas and transfer this knowledge through intra-country and international exchanges to the wider network. SDI committed to providing 20,000 households across 10 affiliates with access to improved energy services derived from renewable sources.



Solar Lanten in Accra

2. Energy Justice Programme and SDI's Theory of Change

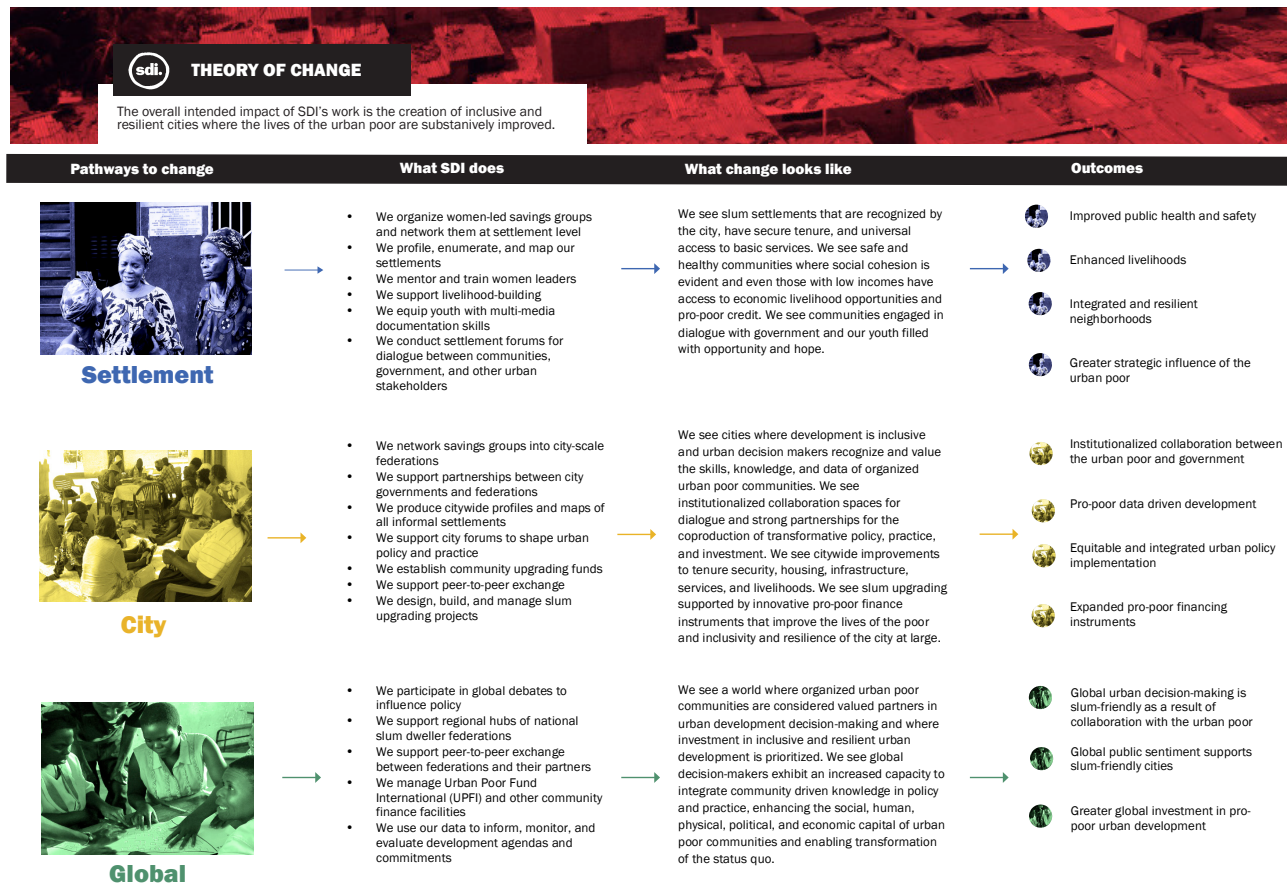
SDI's core rituals of community-led settlement profiling, women's based savings, and peer-to-peer exchanges represent an opportunity for communities to become conscious of critical service delivery gaps and to realize themselves as active citizens who possess the agency to drive change in their settlements. Not only are these rituals powerful means to develop local level community solidarity, but also their outputs allow external stakeholders a far deeper understanding of communities and their needs.

SDI's Theory of Change sets out 3 key and interwoven pathways articulating community-led efforts to create slum friendly cities. Beginning with the settlement pathway, SDI's activities deliver improved public health and safety, enhance livelihoods, integrate neighborhoods, and support greater strategic influence of the urban poor in decision shaping their futures.

Through the networking of savings groups into city-level federations; peer-to-peer exchanges with other city federations; and the aggregation of their city-wide data on informal settlements, SDI produces outcomes at city level, including: institutionalized collaboration between communities and pro-poor data-driven development.

The global pathway to change brings together data, stories, pro-poor finance, and community leadership from across SDI's network and powerfully agglomerates it at a global level. The global advocacy work is in service of SDI's community-led, bottom-up processes allow the stories of a hugely significant but often sidelined urban constituency to be heard.

SDI Theory of Change



Over the course of the EJP's work, SDI has been able to contribute to positive change at the settlement, city, and global level. Across the 10 countries where the programme is active, examples can be drawn to demonstrate SDI's ability to substantively feed into the achievement of SDG 7 in terms of setting technical precedent, delivering and scaling effective energy service delivery models, and contributing to national and global conversations about delivering energy justice, resilience, and the role of urban poor communities in strategies for a low-carbon future.



Solar panel in Jamestown

Mumbai community profiling

3. Summary Progress Report

Initial broad based research into electricity service provision in informal settlements in both the grid-connected and off-grid spheres showed a range of players and interest groups active within the energy (in this case electricity) system value chain. Important value propositions derived from providing energy justice for the urban poor were identified at each level within the value chain. These insights were significant for understanding distinct opportunities for SDI's community-led process as well as the EJP's ability to leverage financial and political support for the integration of renewables into low-income urbanized areas from local and national governments.

In the initial two years the EJP embarked upon a process to design and co-develop solar PV products suitable for urban poor energy consumers. During this time, research into the off-grid solar PV market showed a multitude of technologies, enterprises, and associated delivery models seeking to serve the low-income sector. Much of the research available was focused on rural communities and residents of small towns – households far from the grid with little prospect of grid extension to their communities any time soon. The programme rapidly gained an understanding of solar PV products available on the market, including solar lanterns, Pico solar home systems, and slightly larger solar home systems.

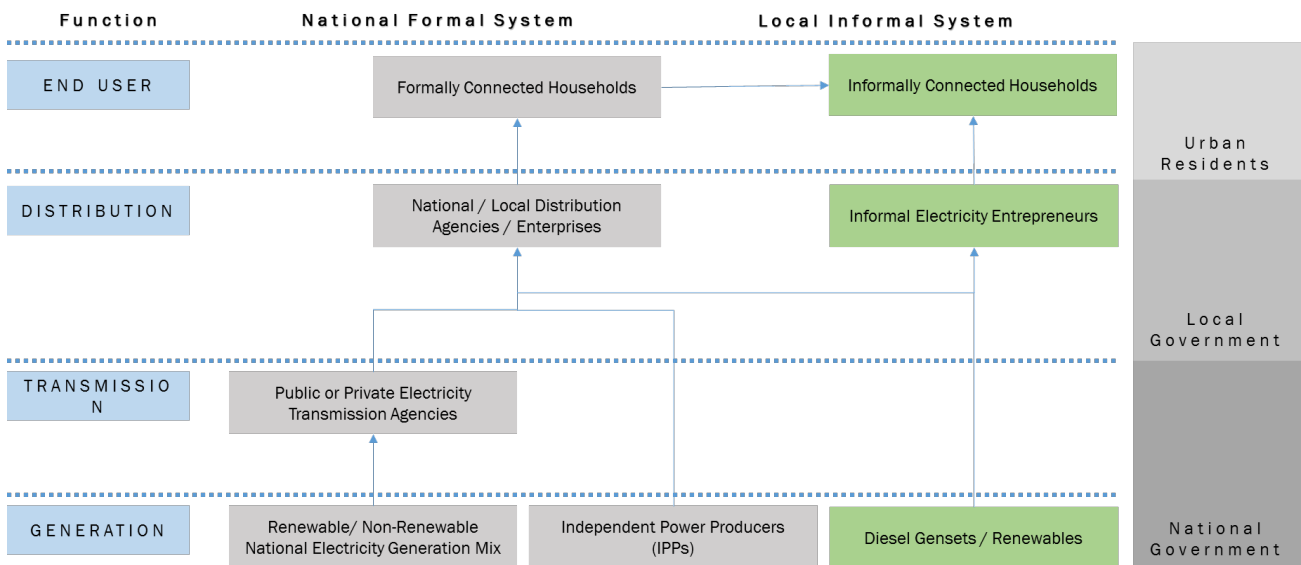
When initiating activities the EJP was explicit in its goal to integrate the provision of energy services derived from renewable energy into the SDI agenda of in-situ settlement upgrading. This meant that the development and later distribution of products would have to be responsive to this larger informal settlement upgrading agenda. SDI's community-led informal settlement profiling work (Know Your City) has been a critical asset to understanding these needs and the aspirations of local communities. It has been invaluable in the process of segmenting the market and in co-developing appropriate offerings for each segment.

Initially, SDI focused on communities with either a total absence of grid access or very little. Many of the settlements in which SDI federations operate were long invisible to local governments. Typically considered undesirable areas and a nuisance to local political and technical officials responsible for service delivery, it is only after the SDI federation began settlement profiling and mapping that there was official acknowledgement of their presence and acceptance of their aspirations for upgrading.

Communities are often unseen because of their land tenure status. In many instances the precarious tenure situation of informal settlements - together with the perception by some distribution agencies that slums are not viable energy markets - has implications for grid extension. In the minds of most conventionally trained city managers, formal land tenure is a precondition for grid extension. This situation leaves these settlements in a situation analogous to off-grid rural communities.

Electricity access value chain in urban slums

The EJP aims to support Federated slum dweller communities to hold a stake in as much of the energy service delivery value chain as is viable. Many conventional enterprises and projects involved in offering energy access to the low-income sector collaborate closely with existing community organizations in last mile marketing and distribution of their products. Similarly, regional Federations have been able to make use of existing capacities in community networking and savings to enable the distribution of solar products.



The social capital generated by Federated communities provides strong horizontal accountability which enables micro-credit to be offered on a peer-to-peer basis. This social capital and resultant horizontal accountability gives Federations the ability to manage the financial risks of operation in low-income informal settlements.

Development and sourcing of solar home systems for settlements matching the profile described above was set as the first priority for the programme. In collaboration with the SDI South African Alliance and a technology development partner, the programme supported the in-field development of a solar home system and accompanying community-managed payment system.

The system consists of a 25W PV panel, 3 LED lights, an 11Ah Li-Ion battery unit with the ability to charge 2 cellphones and integrated front end payment technology. In addition to this the system is offered with a LED TV.



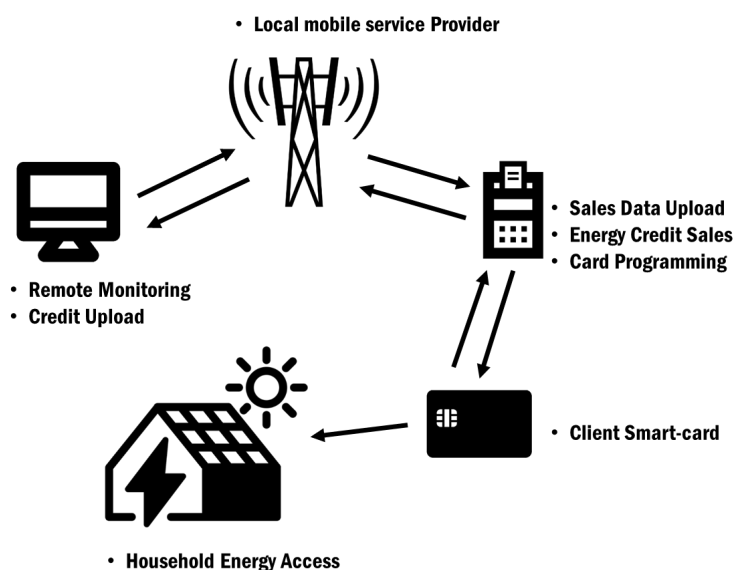
Solar Hub, Ruimsig

Energy One Fundi

Inside a home in Ruimsig

The payment system was developed exclusively for SDI and makes use of a smart card payment system facilitating a community-managed leasing model. Each client has a smart card programmed to be specifically compatible with their solar home system. An SDI Federation sales agent, who also undertakes routine maintenance and repair to systems, is contracted by the project and sells energy credits from a solar hub using a web enabled handheld Point of Sale (PoS) device that programs the cards. Energy credits are sold by the day rather than at a per-unit cost.

SDI is aiming to develop the front and back ends of its card payment system into an open source technology for use in settlements outside of South Africa. This payment system represents a competitive advantage over comparable payment technologies in the low-income market. Instead of each customer requiring their own unique SIM-enabled solar unit, only one is necessary for the PoS. This carries the advantage of reducing mobile telephone charges and also allows existing community structures to manage the handling of funds and accountability thereof.



Energy One Payment System



Fabrication of streetlight poles in Jinja

New trainees, Zimbabwe

3.1 Technical Training and Knowledge Transfer

Many of the projects under SDI's EJP have undertaken to provide technical training in solar PV installation and maintenance to slum dweller federation members. This was a critical step to build technical capacity within communities who would be undertaking solar PV projects. An understanding of these technical aspects enabled Federation members to play a leading role in conceptualizing how solar PV can benefit communities and which solutions would be best suited for the local context. It is well known that society takes up innovative technologies at a far slower rate than innovative technologies are developed.

Technical training conducted through the EJP has taken a number of forms. In many SDI projects formal training in installation and maintenance has been conducted by technical training institutes and other stakeholder organizations. The highest level of technical training received by Federation members has been seen in SDI's East Africa Hub (Tanzania, Uganda, and Kenya) where Federation members were formally accredited as solar technicians under Kenya's national solar PV technician accreditation scheme. At least two countries have undertaken training in the fabrication of solar PV panels and associated components within the solar PV value chain.

3.2 Learning Exchanges

SDI network peer-to-peer exchanges enable the transfer and cross-pollination of learning and knowledge between federations and their partners. This work is important to building network solidarity and to ensure each new affiliate exploring energy justice is aware of the challenges and achievements of their peers. Through identifying common issue areas and challenges, work-shopping solutions, then work-shopping best practices, these exchanges enable scaling across networked SDI affiliates.

Category	Countries Involved	Institute	No. of Trainees
Formal Technician Training (inc. accredited)	Zambia	(ILO Green Entrepreneurship)	51
	Zimbabwe	Scientific and Industrial Research and Development Centre (SIRDC)	26
	South Africa	Vaal University of Technology	9
	Uganda	SERC, Anuel Power, Mibawa Solar Suppliers	6
	Kenya	SERC	20
	Tanzania		36
Fabrication Training	Zambia	Thorn Park Construction School / ILO	20
	Uganda	Kalumudawa Company Limited	9
Total			177



East Africa solar exchange field visit



South Africa solar exchange field visit

A few highlights from the 19 international EJP exchanges held over the past 4 years are shown below:

Date	Countries Involved	Details
29/10/2017	Uganda, South Africa	Energy Justice Support to Uganda from South Africa to support Jinja alternative basic energy service cooperative project
23/04/2017	Kenya, Tanzania, Uganda	Technician training at Strathmore Energy Research Centre
15/01/2017	Kenya, Tanzania, Uganda, South Africa	EA Solar Hub in Nairobi including collaborative workshops, field visits, and technical training scoping
20/11/2016	Zimbabwe, Zambia, South Africa	Zambia, Zimbabwe's energy projects team visited South African projects in Northern Cape, Western Cape, and Gauteng provinces.
06/11/2016	Ghana, South Africa	Ghana's energy projects team visited South African projects in Northern Cape, Western Cape, and Gauteng provinces.



South Africa - Ghana exchange field visit



Informal electricity service, Nairobi

3.3 Community Defined Energy Justice

The proportion of urban residents who have access to electricity is assessed in official statistics inconsistently from country to country. For instance, a household may be considered to have access to energy if they live within a certain proximity to a grid transformer rather than actually being connected to the formal system. Alternatively, energy access might mean only a single bulb in the house or having access to an informal connection.

It has been important for the SDI Federations to develop their own definition of what energy access means to them. In so doing, SDI ensures the definition is responsive to slum communities' day-to-day challenges as well as their future aspirations for their families and for the upgrading of their settlement. The SDI community-led profiling process has been invaluable in gathering both quantitative data on energy service delivery as well as rich stories relating the day-to-day challenges and aspirations of communities as related to energy access.

3.3.1 Energy Affordability

As noted above, residents of informal settlements often pay more for services than those in formally connected communities. SDI Federation data shows this "poverty penalty" is often extracted from slum communities paying for energy, sanitation, water, and housing. Research conducted through SDI's community-led data profiling work has shown that in some cases informally connected households are paying as much as 40-80% more per unit of electricity than fellow citizens with formal access. This has important implications when analyzing energy poverty as a function of household income. Financial poverty penalties shouldered by the urban poor add up to a considerable additional burden that could better be used in a multitude of ways to improve a household's or community's prosperity. At a minimum the SDI EJP aims to deliver projects that provide equivalent energy services at prices equal to what is provided by the formal sector, thereby eliminating the poverty penalty.

3.3.2 Energy Quality

SDI data has shown that a community's energy use expectation increases the closer their settlement is to the urban core. Whether they be settlements with long histories, which have been enveloped by formal city growth; communities more recently settled in the interstices of formal city planning; or settlements in semi-peripheral areas – it is these communities that expect the highest level of energy service. Such communities live in close proximity to – sometimes under the grid – and expect a quality of electricity able to support activities such as ironing, refrigeration, media, and small business development.

Urban poor households located further away from the urban core in the semi periphery and periphery of cities are less likely to have access to the grid either informally or formally and have lower expectations for energy services. There is also a tendency for these communities to have lower household incomes. These realities segment the market, necessitating a conscious response. To be energy poor therefore can be assessed through many lenses whether affordability, quality, reliability, or safety.

The above realities have led the EJP to support a small but significant set of precedent-setting projects, which are exploring grid connected solar PV solutions. The intention of these is to demonstrate that urban poor communities can form a vanguard of renewable energy innovators integrating renewables into urban areas. At the same time, these projects allow communities continuing access to energy at a quality, price, and reliability level meeting the use expectations of under grid communities. These embedded generation projects also feed into city-wide strategies for energy security by feeding valuable energy into the formal grid.

3.3.3 Energy Efficiency

Intersecting closely with the use of renewables is energy efficiency. Energy efficient products such as LED light bulbs and TV's, and energy efficient fridges (including DC variants) are relative new comers to the marketplace in communities where SDI operates. These products often come at a cost premium. Households who access electricity through the informal system are often not metered by units and rather pay a flat rate for a single bulb and socket. This means the incentive to save money through the use of energy efficient household appliances is not there. The upfront cost of new energy efficient goods, the lack of energy efficient goods on the second hand market, and the disincentive for those connected to the informal system to purchase them makes a transition to clean, lower voltage electricity challenging. Peer to peer behavior change communication through Federation networks is a strong tool for socializing residents to the long-term benefits of improving energy efficiency. If electricity revenue losses can be demonstrated as a result of achieving increased levels of energy efficiency in large-scale urban slums, this may provide a strong basis for leveraging additional resources into settlements from local government and electricity providers.

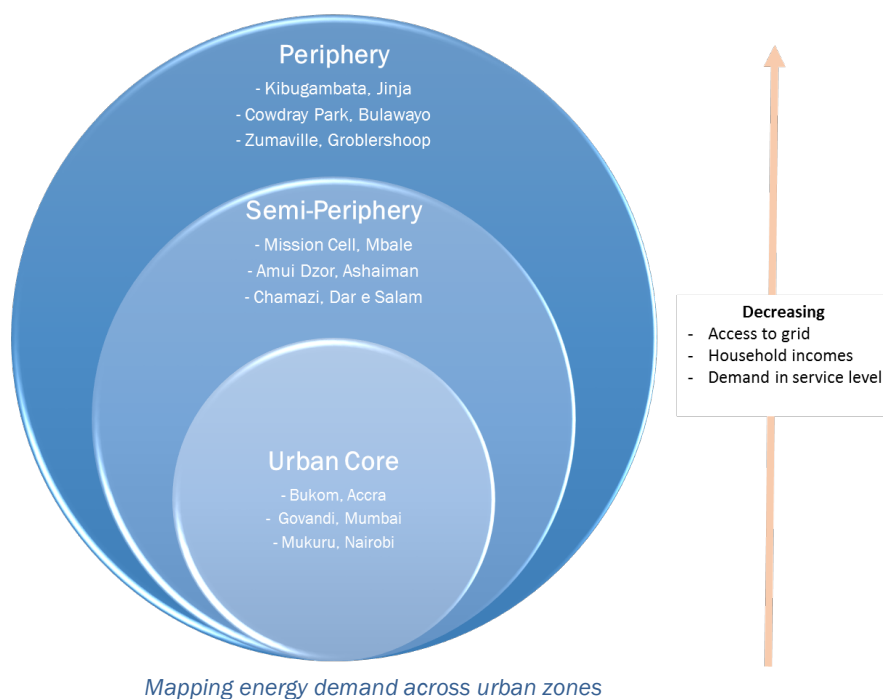


Newly installed household, South Africa

4. Programme Segments

Projects overseen by the SDI EJP can quite easily be segmented into four segments relating to a settlement's proximity to the urban core; the energy quality or energy use expectations of the residents; as well as the relative income levels within the settlements. Respectively, these involve – lanterns and Pico solar home system, larger scale solar home systems, and grid connected solar PV for communal housing. A fourth category, which the programme has explored, is community delivered, cost-optimized public lighting solutions for low-income areas.

The graphic below demonstrates a generalized visualization of SDI Federation's experience of grid access, household incomes, and energy demand in slums stretching from the urban core through the urban periphery. The graphic also fits examples of the delivered or ongoing SDI Energy Justice projects within these zones of cities in Uganda, Ghana, Zimbabwe, Tanzania, Kenya, and India.



The following case studies take a brief look into progress across these four categories and explain how they fit in to the programme's emerging strategy going forward.

4.1 Lanterns and Pico Solar Home Systems

SDI aims to continue to build upon the Federation led approaches to offering low value solar lanterns and Pico-solar home systems through existing Federation loans structures. The value presented by the horizontal self-managed nature of these arrangements allows members of communities with extremely low incomes to be able to access a basic and safe energy service. This approach to peer-to-peer financing of energy products also increases contact time between members of the community and dialogue about settlement improvement strategies more broadly. This enhances the Federations' social capital and the engagement and influence of urban poor communities on the upgrading solutions of their cities. A couple of examples are detailed below:

Mission Cell, Mbale Uganda

On the outskirts of Mbale municipality in the Eastern Region of Uganda is Mission Cell. The Mbale regional Federation was the first in Uganda to set up a solar Hub. The Mbale solar Hub sits above a Federation-run sanitation block, which serves the local community with toilet facilities and ablutions. The sanitation block and solar Hub was electrified with solar PV in 2016. An added benefit of this is the presence of exterior LED floodlights, which illuminate the surrounding area. The project has improved the health and safety of local residents and catalyzed similar efforts throughout Uganda. The solar Hub serves as a showroom for solar lanterns and Pico-SHS as well as an office space for signing up new clients, onsite secure storage of stock, and a staging area for community technicians responsible for installation and maintenance.



Solar demonstration, Mbale



Teamwork in Jamestown, Accra

Bukom and Jamestown, Accra, Ghana

The Bukom community in the Asheidu Keteke Sub-Metro Assembly of the Accra Metropolitan Assembly was the first community targeted by the Ghanaian Federation. Bukom is an indigenous informal settlement with very high population density. A large proportion of the permanent households in Bukom are electrified with up to 10 families often sharing the use of one prepaid electricity meter. A high population of the community comprises youth whose main economic activities include tailoring, dress-making, bakery, iced block production, and cold storage. Many inhabitants became jobless during the peak of Ghana's recent energy crisis. The informal economy is critical for the wellbeing of the Bukom community. The project supports sales and distribution of solar lanterns to fisherfolk and low income residents and has strong support from Asheidu Keteke Sub-Metro Assembly.

To the South of Bukom, lies the beach settlement of Jamestown. This beach serves as one of the key landing sites for Accra as well as a site for fish processing and smoking. The Ghanaian Federation were able to find a market for solar lanterns among the fisher folk of Jamestown who use them for lighting up their homes as well as for increasing their visibility to larger fishing vessels when setting sets on the Atlantic during hours of darkness.

4.2 Larger scale solar home systems

The financing of larger scale solar home systems fills an important gap for communities without access to the grid or under grid households without the ability to pay upfront costs for the installation of a metered connection. The programme will continue to offer these products through enterprising Federation projects which have demonstrated the ability to effectively install and maintain this level of solar system.

Larger sized solar PV systems have the ability to be scaled outside of low-income communities and to provide electricity for public and private institutions that benefit the urban poor. This approach provides Federations with the ability not only to improve energy justice, but to expand economic livelihoods opportunities for the urban poor. A couple of examples are detailed below:

Cowdray Park, Bulawayo, Zimbabwe

Operation Garikai was a housing programme established to house evictees of the 2005 nationwide Government evictions programme commonly known as Operation Murambatsvina. Operation Garikayi started housing evictees in Cowdray Park in 2005. In total, 15 000 stands were created and allocated to victims of the Operation Murambatsvina as well as other home seekers. The programme concentrated on house construction, but paid little mind to service provision. The Zimbabwe federation is supporting the communities to access services, including energy.

The Zimbabwe Federation is currently undertaking Phase 2 of their solar PV programme after previously demonstrating demand for affordable solar based energy solutions through the provision of affordable group loans to informal peri-urban communities that are off grid. The Federation considers solar PV energy as a viable and effective solution to energy poverty, which can be rapidly delivered through the financing and installation of household PV systems and after sales technical service that is accessible in the informal settlements.



Tanzanian installation crew

Chamzazi, Dar es Salaam, Tanzania

In Tanzania the Federation has set up a community run solar business offering small scale PV systems to slum dwellers using existing savings and loans programs. Larger scale AC systems were installed at the Federation's Chamazi community-based housing scheme located in Dar-es-Salaam and later at Miyuji Mpamaa, Dodoma where similar community-based housing schemes have been developed.

The Tanzania project has developed the capacity of the community teams drawn from the Federation to construct, install, manage and repair the solar systems. In phase two of the Tanzania project the Federation aims develop models through which large PV systems can be designed and managed for the community needs as well as feeding into the grid when needs arises.

4.3 Grid Connected solar PV for Communal Housing

As urbanization in the cities of the so called Global South increases into the future so will populations of the urban poor. This means that unless cities address the energy access problem amongst poor constituencies they will be faced with increasing numbers of low-income energy consumers with low revenue potential but a high burden on grid infrastructure. Cities require models promoting energy efficiency, cost-optimization, and energy security in order to overcome such challenges. SDI's EJP is looking at these future scenarios and testing concepts for the integration of grid-embedded solar PV infrastructure located on the rooftops of low income housing blocks. The approaches being tested have the ability to increase energy security at household and city scale, reduce tariffs to housing cooperatives and individuals, and present the opportunity for the clean energy transition to be led by the urban poor.

A couple of examples are detailed below:

Govandi, Mumbai, India

Natwar Parekh Compound (NPC) or the Indian Oil Resettlement Colony is located at Govandi, behind Shivaji Nagar Police Station in Mumbai, India. The compound is a slum rehabilitation site with 71 eight-storey buildings, built by the Mumbai Metropolitan Region Development Authority (MMRDA), facilitated by the Slum Rehabilitation Act (SRA). The compound hosts a total population of more than 10,000 people. They were relocated when the Indian SDI alliance worked with the Indian Government to relocate people living along the city's railway lines.

Over time some of these buildings were vandalized. Last year the Indian alliance of SPARC, NSDF, and Mahila Milan negotiated to rehabilitate 3 of the 20+ buildings. That number has now increased to seven.



Mumbai rooftop PVs

On the 28th of November 2017 the Mahila Milan and National Slum Dwellers Federation of India inaugurated a 12kWp rooftop solar PV system on Building 11C in Natwar Parekh Compound. The solar PV system installed at building 11C makes use of enabling net-metering policy and a capital subsidy incentivizing the tapping of Mumbai's vast rooftop solar potential. Connected to the grid supply the system imports as well as exports electricity allowing the housing cooperative a saving of around Rs. 1.9 lakhs annually.



Inauguration of solar project, India

Ashaiman, Greater Accra Metropolitan Area, Ghana

Reliable and stable power is a prerequisite and an important ingredient for businesses especially small and medium scale enterprises (SMEs) as well as households. The government of Ghana through the Energy Commission undertook a project of offering incentives to households and SMEs to install solar power by giving solar panels for free so beneficiaries pay only for the additional components and cost of installation.



Amui Dzor Building, Ashaiman

The Amui Dzor building is a showcase building demonstrating a typology for affordable housing for the poor. The project seeks to expand on the building's existing low impact technology including a sanitation system filtered through a vertical wetland. Demonstrating an approach to housing development with interventions with a low environmental impact may encourage other agencies and particularly government to adopt low impact design for affordable housing. The overall outcome of this project is to achieve affordable, accessible, sustainable and flexible energy in the facility.



Amui Dzor Rooftop installation

Community meeting, Amui Dzor

This project is a great way to help the homeowners to install solar for both direct and indirect household benefits. Utility bills are usually the largest and most volatile portion of family expenditure. Stabilizing utility bills through solar makes it easier to maintain operating budgets, retain tenant services and avoid energy cuts and disconnections. This system uses the existing roofing space of the building. The system is designed to offset electricity use for common areas such as the communal service block and to offset tenant electricity usage. It is connected up via a master meter. Sharing the cost of the balance of the system in this way represents a significant cost saving as compared to each household having its own inverter.

The eventual savings (after the payback period) will be channeled into better maintenance of the building and reduce individual tenants' electricity bills in the long term.

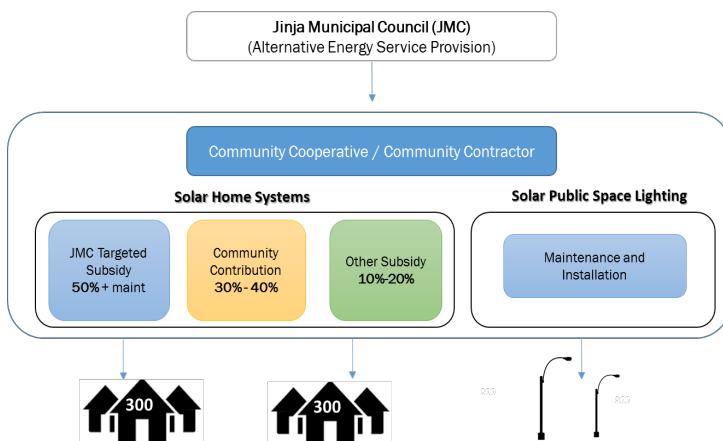
The goals of the proposed project are to: stimulate the adoption of solar power in the affordable housing sector; improve energy utilization and overall quality of affordable housing through the application of solar and energy efficient technologies; decrease electricity use and costs without increasing monthly household expenses for the facility; increase awareness and appreciation of the benefits of solar among affordable housing occupants and developers; provide job training and employment opportunities in the solar energy and energy efficiency sectors for the urban poor (federation).

4.4 Public Lighting Infrastructure for Local Authorities

Kibugambata, Jinja, Uganda

Building on the success of phase 1 of Uganda's solar home system project, the Jinja regional Federation with support of the local affiliate support NGO, succeeded in leveraging a 50% contribution from the local municipality towards the installation of 650 solar home systems for energy poor households and 200 meters of street-lighting in Kibugambata settlement. As a next step an advisory committee to the Town Clerk was set up as a project board. This committee meets quarterly to monitor project implementation progress. The local municipality struggles to collect enough revenue with which to pay for public infrastructure. Streetlights have been some of the first public services to fall victim to municipal cost saving measures and the municipality owes a vast amount to the national electricity provider.

Jinja municipality is going through a process of replacing roadside streetlights with solar PV alternatives in order to increase energy efficiency and optimize the cost associated with keeping them lit. These projects have concentrated on major roads with lower order roads and pathways being neglected.



Top left: Informal electricity connection, Kibugambata



Right: Town Clerk JMC inspects solar streetlights on exchange in South Africa

5. Table of all projects

Country	Location	Description	Households
Tanzania	Chamazi (Phase 1 and 2)	The development of a community run solar business which offers small scale PV system to slum dwellers using existing savings and loans systems. The project involves training community enterprise teams on how to construct, install, manage and repair the solar systems.	30
Tanzania	Miyuji Mpamaa (Phase 1 and 2)	The provision of solar energy at household level to address energy injustice in Miyuji Mpamaa. The Federation is developing a community run solar business which offers small scale PV system to slum dwellers using existing savings and loans systems.	30
Tanzania	Zanzibar	Enterprise based approach to solar PV distribution leveraging Federations savings groups.	76
Namibia	Gobabis	Street lighting pilot project This pilot project will provide solar powered street lighting solutions to an area for the benefit of 200 households.	200
Namibia	Gobabis	Household electrification pilot project The provision of solar home systems to 10 households, with the twofold aim of addressing energy poverty in these households as well as generating interest in solar energy at the household level.	10
Ghana	Ashaiman, GAMA	The establishment of a hybrid grid – solar PV for the Amui Dzor housing project, which is in Ashaiman slum, Accra. 31 families will benefit from this project, which seeks to capitalize on the Ghanaian Energy Commission's <i>Subsidy for Rooftop Solar PV Programme</i> . The project also aims to reduce household reliance on the grid system and in so doing, reduce the amount owed for utilities.	31
Ghana	Bukom, AMA	The Project has aims to empower local Federations to perform sales and distribution of solar lanterns to fisherfolk and low income residents. This project is entirely Federation planned, delivered, and reported and has strong support from Asheidu Keteke Sub-Metro Assembly.	500
Zimbabwe	Dzivarasekwa	The Project aims to provide poor households – both those who are not currently connected to the main electricity grid and those who are – with renewable and affordable source of energy for cooking and lighting. This project is part of the Zimbabwe Alliance's Renewable Energy Programme. The programme seeks to alleviate energy injustice through the provision and/or improvement of energy infrastructure and the creation of associated livelihoods in the renewable energy space.	408
Zimbabwe	Victoria Ranch	The Project aims to provide poor households – both those who are not currently connected to the main electricity grid and those who are – with renewable and affordable source of energy for cooking and lighting. This project is part of the Zimbabwe Alliance's Renewable Energy Programme. The programme seeks to alleviate energy injustice through the provision and/or improvement of energy infrastructure and the creation of associated livelihoods in the renewable energy space.	408
Zimbabwe	Cowdray Park	The Cowdray Park Renewable Energy Project aims to provide poor households – both those who are not currently connected to the main electricity grid and those who are – with renewable and affordable source of energy for cooking and lighting. This project is part of the Zimbabwe Alliance's Renewable Energy Programme. The programme seeks to alleviate energy injustice through the provision and/or improvement of energy infrastructure and the creation of associated livelihoods in the renewable energy space.	408

Zimbabwe	Various	Resource Centre Electrification	10 planned
Kenya	Katani Feasibility	Railway housing renewable energy program (Phase 1)	N/A
Kenya	Nakuru	The project has been designed as a self-sustaining business entity, with the goal of developing and supporting a market for an LED/solar based household light solution. It will be a marketing project that will work with existing manufacturers, and appoint distributors and retailers to deliver lighting solutions to the consumer	2340
Uganda	Jinja (Phase 1)	Solar Home Systems (SHS) are offered to households within the target communities. A number of different scales of solar PV systems which cater to the energy needs and budgets of different households are offered. Customers purchase SHS using a Federation 'Solar Loan' or with a one off cash purchase.	123
Uganda	Jinja (Phase 2)	Partnership with Jinja municipal council and the Jinja Basic Energy Cooperative Limited has leveraged a municipal subsidy of 50% from the local municipality to deliver 650 SHS and 200m of solar streetlights to Kibugambata settlement.	650 + Public Infrastructure
Uganda	Arua energy project	Solar Home Systems (SHS) are offered to households within the target communities. A number of different scales of solar PV systems which cater to the energy needs and budgets of different households are offered. Customers purchase SHS using a Federation 'Solar Loan' or with a one off cash purchase.	180
Uganda	Mbale	Solar Home Systems (SHS) are offered to households within the target communities. A number of different scales of solar PV systems which cater to the energy needs and budgets of different households are offered. Customers purchase SHS using a Federation 'Solar Loan' or with a one off cash purchase.	210
Malawi	Countrywide	Countrywide distribution and sales of small scale solar lanterns.	11 268
Philippines	Various	Raise the awareness and knowledge of member associations/groups and communities of HPFPI on renewable energy sources, particular solar energy, and applications in urban and peri-urban areas Pilot the use of the use of solar home kits by 100 member households of active savings groups and associations of HPFPI on the use of solar home kits Prepare other HPFPI partner community groups/associations and replicate the project (use of solar home kits) with an additional 100 households by the end the first year.	200
Philippines (HCC)	Malabon City	Collaboration with Human Cities Coalition on Social Impact proposition – Solar PV. This is a public private partnership leveraging Philippines REC and IPP policies.	N/A
India	Mumbai	Communal facilities supplemented by net-metered solar PV system include common area lighting, elevators, and crucially the pumping of water from underground tanks to overhead tanks. These energy costs are conventionally borne by levies paid by the building's residents. A reduction in the cooperatives overall electricity bill means more money for maintenance. As with other NSDF managed projects 100% of routine maintenance of the solar system is done by trained Mahila Milan members.	84 current 756 planned

South Africa	Groblershoop	The !Kheis LM project is a benchmark project for implementing a “learn by doing” enhanced basic services program based on sustainable development at the Local Government level. The program seek to demonstrate a comprehensive up-lift of the indigent population by leveraging sustainable development knowhow that creates a local economic development platform that leverages renewable energy and other resources as a catalyst to achieve universal access to basic services for all.	2100*
South Africa	Ruimsig and Egoli	Solar PV models responding to the technical, social, and financial opportunities in the alternative energy service market in South Africa: Reliable technology , Responsive maintenance, Community employment and support, Contributes to settlement consolidation, Access to FBE subsidy	759
Totals			20 781**

*Capital costs for just 100 of these was provided through the SDI Project. This was in the form of bridging finance. The remaining 2000 unit were leveraged from the national Department of Energy through this bridging.

** This number includes planned units.

6. Research Alliances

The EJP has been approached by a number of institutions to form consortium partnerships in pursuit of global advocacy outcomes. The following is a brief synopsis of active research and applications in progress.

“Adoption of Solar PV Solutions in Informal Settlements: Case Studies from South Africa and Ghana.”

Partners: Sustainability Institute

Client: African Development Bank

Scope: Informal settlements in African cities

This project compares two case studies of solar energy implementation in informal settlements: the iShack solar PV project in South Africa, and SDI’s solar lantern project in Ghana. Key learnings from the two cases will be extracted and presented in the form of a journal article, a policy brief and a short video to be shared online.

“GCRF Sustainable Low-Carbon Energy Access Hub”

Client: GCRF-RCUK Collective Fund

Partners: Scene Consulting, Practical Action, Charter House

Scope: Rural to Urban Migrants in Rapid Urban Growth Communities

The proposed GCRF Sustainable Low-Carbon Energy Access hub will be interdisciplinary, cross-pollinating experts in policy, engineering, computer science, social sciences, humanities and economics across academia, government and civil society organisations. The hub, working with partners in ODA countries, will co-design a number of demonstrator projects for developing and emerging markets to leapfrog technology, providing case studies for the research base in this work.

“Powering Development: Informality and New Models of Energy Provision in South Africa”

Client: Client: ESRC Global Challenges Research Fund (GCRF), New Models of Sustainable Development

Partners: University of Exeter, Energy Research Centre – University of Cape Town, Sustainable Energy Africa (SEA), Community Organisation Resource Centre (CORC)

Scope: Energy Access and Urban Informality

The project establishes a dialogue between studies focusing on the informal sector, and those on energy transitions in developing countries. Firstly, the project will contribute to the key question of how to power informal settlements, in a Global South context of increasingly rapid and informal urbanisation. Secondly, the project will be rooted in an understanding of the informal sector as a key part of economies in the Global South.

