Overview

- Motivation
- Campaign Overview
- Research Scope
- #PoweringJobs Research Highlights
- Q&A
- Next Steps
Challenge: Energy Access and Unemployment

- Up to 20,000 DRE companies are needed to power SDG 7 by 2030.
- The off-grid value chain could create 4.5 million jobs globally by 2030 – including sales, installation, service, appliances.
- Most renewable energy jobs are outside of low energy access countries (less than 1 percent in Africa of global 10.3 million).
- There is a gap in the technical, financial and managerial skills needed for DRE in low energy access countries.
- Meanwhile, the youth unemployment rate is more than 10% in India, and almost 20% in both Kenya and Nigeria.
- The World Bank, in its Jobless Growth report, warns that India needs 8 million jobs per year to satisfy the number of young people looking for work, while over 10 million jobless youth are looking for work every year in Africa.
#PoweringJobs: Solving SDG 7 and SDG 8

- **Awareness:** Data & communications show that DRE markets can create positive social impact on energy access and employment.

- **Advocacy:** Grow support within target institutions for financial, policy and programmatic support for DRE training and education.

- **Activation:** Demonstrate new opportunities for youth and women (connect the skills set need for DRE to energy sector more broadly).
Partners: Community of Action

Global Partners:
- Schneider Electric
- Youth In Energy
- IRENA
- UN Women
- clasp
- AMDA
- CEEW

Global Funding Partners:
- World Energy Council
- World Bank
- IFC

India Partners:
- CLEAN
- SELCO
- SCGJ

Kenya Partners:
- Kerea
- Strathmore University

Nigeria Partners:
- REAN

Funding Partners:
- Foundation
- The Rockefeller Foundation
#PoweringJobs Campaign Timeline

- **2018 Survey launch**
- **Q4 2018**
  - Campaign launch at IOREC, Singapore
- **Q1 & Q2 2019**
  - Focus group discussion
- **Q3 2019**
  - Data analysis and report draft
  - Convene Global and Country Steering Committee
- **Q4 2019**
  - Report launch and Round table
  - ILO/HPLF Event
  - Local Action Support
- **2019 Survey launch**
Technology and Jobs Scope

- **Pico-solar Appliances**
  - Power: < 10 W
  - Types: Direct Jobs (Formal, Informal)
  - Data: Survey and focus groups

- **Solar Home Systems**
  - Power: 10 W+
  - Types: Productive Use Jobs (Formal, Informal)
  - Data: Focus groups and literature

- **Productive Use Appliances**
  - Power: variable
  - Types: Indirect Jobs (Formal, Informal)
  - Data: Literature where possible

- **C&I Standalone Systems**
  - Power: 100 W+
  - Types: Induced Jobs (Formal, Informal)
  - Data: Not included in survey scope

- **Mini-grid Systems**
  - Power: > 1 kW

*Image Source: POWER FOR ALL*
Survey Sample: 3 countries; 139 respondents

- **End-user product providers** sell pico-solar appliances, SHS, solar water pumps, or other DRE products to end users.

- **Project developers and installers’** revenue mainly comes from the development and implementation of projects instead of products. They are usually involved in procurement of panels and batteries, site feasibility study, system design, construction.

- **Mini-grid operators** are private companies which operate and maintain mini-grid systems and are characterized by sales of electricity as core part of business model.

- **Manufacturing and upstream supply chain** companies are those whose core business is in manufacturing, assembling, importing, and wholesale.

- **Sector service providers** work closely with the DRE sector to provide services such as microfinancing for energy access, metering and software services, training, human resources, research, and advocacy.
Key Study Outputs

1. Job estimates and projections
   - Full-time equivalent (FTE) direct formal jobs estimate
   - Direct informal jobs estimate
   - Productive use jobs estimate
   - Future projections based on best available market forecasts

2. Workforce Trends
   - Gender balance
   - Youth participation
   - Job function breakdown
   - Recruitment challenges
   - Wage and compensation
   - Level of engagement

3. Recommendations
   - Key recommendations for DRE on local capacity building, gender inclusion, and youth employment
The DRE Energy Access Workforce

- **In all three focus countries, DRE is already a job engine.** In 2017–18, the DRE sector provided 95,000 direct, formal jobs in India, 10,000 in Kenya and 4,000 in Nigeria, as compared to 92,400 on-grid solar jobs in India, 11,000 in national utility jobs in Kenya and 10,000 jobs in electricity, gas and steam sector in Nigeria.

- **The DRE sector has a 2x–5x wider impact in the informal sector through direct, informal jobs and productive use jobs.** In 2017–18, the sector provided 200,000 informal jobs in India, 15,000 in Kenya and 10,000 in Nigeria. In terms of productive use jobs, the sector provided 470,000 in India, 65,000 in Kenya and 15,000 in Nigeria.

- **By 2022–23, mini-grid may grow to be one of the most important DRE employers,** contributing about 5,000 direct formal jobs and 5,800 informal jobs – an increase of 20-fold as compared to only 260 jobs in 2017–18. The realization of this projection is dependent on the support of KOSAP on mini-grids.

- **Sales and distribution makes up 40% of Kenya DRE sector’s skill demand,** as the country continues to top the charts in pico-solar appliances and SHS sales in Africa. By 2022–23, the trend may continue as market grows with existing customers’ system upgrades.

- **Management and business administration represents a main skill gap.** They makes up more than 20% of the Kenyan DRE workforce. Managerial talents are also said to be one of the most difficult talents to recruit, according to experts. Business soft skills were identified as a major gap across all jobs functions.

- **Women’s participation in the DRE workforce is low** – 23% of the direct formal jobs are taken up by women, as compared to global RE sector’s 32%. Women engage more through informal work. Youth participation is high.
Jobs Estimates in 2017–18

- The scale of DRE direct formal workforce is already on the order of on-grid solar sector in India, national utility company in Kenya and electricity, gas and steam sector in Nigeria.
- In addition to direct formal jobs, the DRE sector employs 2x–5x more people through indirect jobs and productive use jobs
Jobs Projections in 2022–23

- Direct, formal jobs may grow by 100%, 70% and more than 10x in India, Kenya and Nigeria between 2017–18 and 2022–23.
- Direct, informal jobs remain constant in India, double in Kenya and more than double in Nigeria between 2017–18 and 2022–23.
Engagement and Retention

The DRE sector provides highly skilled, full-time, long-term jobs. More than two-thirds of the workforce is skilled and full-time with average retention of more than 30 months.
Women and Youth Participation

- Women account for less than 30% of the direct formal jobs, as compared to 32% for the global renewable energy sector.
- Women constitute higher percentage of the informal workforce.
- Youth participation is high. Companies express strong interest in hiring young people.

**Women Participation**

- India: Female employees, Female informal workers, Female managers
- Kenya: Female employees, Female informal workers, Female managers
- Nigeria: Female employees, Female informal workers, Female managers

**Youth Participation**

- India: Youth, Kenya: Youth, Nigeria: Youth
Job Function Breakdown in 2017–18

- In India and Kenya, approximately 40% of the jobs are in sales and distribution
- In Nigeria, project development and installation makes up a large part of the workforce
- In all three countries, management and business administration are an important part of the workforce
In India, skills needs may shift slightly away from sales and distribution to project development, installation and O&M.

In Kenya, sales and distribution remains the most important skill in demand.

In Nigeria, project development and installation skills remain in high demand, while importance of O&M grows.
Insights and recommendations

• There are clear skills needed to unlock the DRE sector’s potential to scale and create more employment, presenting an opportunity for collaboration between government, academia, training organizations, and industry associations. Managerial skills are in high demand, being identified as the most difficult to recruit.

• Alongside technical skills, DRE companies reported that general business soft skills are critically lacking, affecting every aspect of company performance. These include leadership, finance, strategic planning, communication, chains of command, project management, compliance, anti-harassment, and HSE.

• There is clearly opportunity for further youth engagement. The lack of awareness on the opportunities offered by the sector, and the lack of youth experience and the lack of established pipelines for youth recruitment present their own challenges that Universities and TVET institutions can help solve.

• Similarly, there is a need for greater participation of women in the sector. Encouraging women’s participation in the labor force is important, as unemployment rates are higher among women, especially rural women. At the same time, women are beneficial to the DRE sector in particular areas of the value chain.

• The sector’s massive footprint in the informal and productive use sectors presents an opportunity to encourage direct training interventions, and the formalization of labor to align with local and international decent work standards, compensation standards, and social protections.
Jobs Estimates and Projections in Kenya

- DRE direct, formal jobs will grow by 70% and informal jobs will double.
- The five-year increase of direct, informal jobs is faster than direct, formal jobs.
Jobs Estimates and Projections in India

- Direct, formal jobs is on the order of on-grid solar jobs.
- DRE direct, formal jobs will double and informal jobs remain the same by 2022–23.
Jobs Estimates and Projections in Nigeria

- DRE direct, formal jobs will expand rapidly
- The five-year increase of direct, informal jobs is faster than direct, formal jobs.
India Wages and Compensation

- In India, data shows that there is a slight gender wage gap; however, many companies chose not to provide female wage condition and therefore puts question on the significance of the result.
- Sector service providers have the highest average wage and end-user product providers the lowest.
Kenya Wages and Compensation

- DRE employees' wage falls under the middle-income range of US$764–1,204.
- Foreign companies are paying 2x–3x higher wages than local companies.
- In each country 50% of less of respondents answered questions on wage
Nigeria Wages and Compensation

- DRE employees’ wage falls under the middle-income range of US$480–645 in Nigeria.
- Data shows that there is a slight gender wage gap; however, many companies chose not to provide female wage condition and therefore puts question on the significance of the result.
In India, the sector will see a higher share of management, business administration and O&M skills by 2022–23.

Such trend is mainly dependent on mini-grid market growth. The higher the mini-grid market penetration, the more business and O&M skills are in demand.
In Kenya, the sector sees a higher share of management and business skills, R&D and O&M, mainly because of mini-grid market growth.

Sales and distribution skills will continue to be in high demand, as pico-solar appliance and SHS sales continue to go strong.
Change in Skills Needs in Nigeria

• In Nigeria, management and business administration is in high demand and will continue to be in the next five years.
• Project development and installation is currently one of the most important skills, by 2022–23, O&M skills needs will grow.
Sample Distribution

- In India, 81% of the jobs are created by companies in the top quartile by number of full-time equivalent jobs, in Kenya 80%, Nigeria 64%
- In India and Kenya, the market is led by a few large players; whereas in Nigeria, job creation is more evenly contributed by different actors
<table>
<thead>
<tr>
<th>Country</th>
<th>India</th>
<th>Kenya</th>
<th>Nigeria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estimated total companies*</td>
<td>300–350</td>
<td>150–200</td>
<td>150–200</td>
</tr>
<tr>
<td>Desired confidence level</td>
<td>90%</td>
<td>90%</td>
<td>90%</td>
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<tr>
<td>Desired margin of error</td>
<td>10%</td>
<td>10%</td>
<td>10%</td>
</tr>
<tr>
<td>Ideal sample size</td>
<td>57</td>
<td>51</td>
<td>51</td>
</tr>
<tr>
<td>Total survey responses</td>
<td>36</td>
<td>52</td>
<td>51</td>
</tr>
<tr>
<td>Estimated response rate</td>
<td>10%</td>
<td>25%</td>
<td>25%</td>
</tr>
</tbody>
</table>

*Total number of company estimates are based on detailed contacts lists for all companies known to operate in each country, compiled through data provided by country research partners and trade associations.
# Direct, Formal and Informal Jobs in India

## TABLE 2. DIRECT, FORMAL AND INFORMAL JOB TRENDS BY TECHNOLOGY TYPE

<table>
<thead>
<tr>
<th>Job category</th>
<th>Direct, formal</th>
<th>Direct, formal</th>
<th>Direct, informal</th>
<th>Direct, informal</th>
<th>Productive use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pico-solar appliance and SHS</td>
<td>92,000</td>
<td>86,000</td>
<td>210,000</td>
<td>200,000</td>
<td>470,000</td>
</tr>
<tr>
<td>Standalone and grid-tied C&amp;I</td>
<td>770</td>
<td>1,600</td>
<td>190</td>
<td>400</td>
<td>N/A*</td>
</tr>
<tr>
<td>Solar water pump</td>
<td>1,500</td>
<td>10,000</td>
<td>N/A*</td>
<td>N/A*</td>
<td>N/A*</td>
</tr>
<tr>
<td>Mini-grid</td>
<td>630</td>
<td>90,000</td>
<td>57</td>
<td>8,200</td>
<td>950</td>
</tr>
<tr>
<td>Approximate total</td>
<td>95,000</td>
<td>190,000</td>
<td>210,000</td>
<td>210,000</td>
<td>470,000</td>
</tr>
</tbody>
</table>

*Estimates rounded to two significant figures.*

*Survey or market insight data unavailable.*
# Direct, Formal and Informal Jobs in Kenya

## TABLE 1. DIRECT, FORMAL AND INFORMAL JOB TRENDS BY TECHNOLOGY TYPE

<table>
<thead>
<tr>
<th>Job category</th>
<th>Direct, formal</th>
<th>Direct, formal</th>
<th>Direct, informal</th>
<th>Direct, informal</th>
<th>Productive use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pico-solar appliance and SHS</td>
<td>7,500</td>
<td>12,000</td>
<td>15,000</td>
<td>24,000</td>
<td>64,000</td>
</tr>
<tr>
<td>Standalone and grid-tied C&amp;I</td>
<td>1,800</td>
<td>N/A*</td>
<td>200</td>
<td>N/A*</td>
<td>N/A*</td>
</tr>
<tr>
<td>Solar water pump</td>
<td>95</td>
<td>N/A*</td>
<td>N/A*</td>
<td>N/A*</td>
<td>N/A*</td>
</tr>
<tr>
<td>Mini-grid</td>
<td>260</td>
<td>5,000</td>
<td>290</td>
<td>5,800</td>
<td>590</td>
</tr>
<tr>
<td><strong>Approximate total</strong></td>
<td><strong>10,000</strong></td>
<td><strong>17,000</strong></td>
<td><strong>15,000</strong></td>
<td><strong>30,000</strong></td>
<td><strong>65,000</strong></td>
</tr>
</tbody>
</table>

*Numbers rounded to two significant figures.  
*Survey or market insight data unavailable.*
# Direct, Formal and Informal Jobs in Nigeria

## Table 1. Direct, Formal and Informal Job Trends by Technology Type

<table>
<thead>
<tr>
<th>Job category</th>
<th>Direct, formal</th>
<th>Direct, formal</th>
<th>Direct, informal</th>
<th>Direct, informal</th>
<th>Productive use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pico-solar appliance and SHS</td>
<td>1,100</td>
<td>2,000</td>
<td>8,400</td>
<td>14,000</td>
<td>15,000</td>
</tr>
<tr>
<td>Standalone and grid-tied C&amp;I</td>
<td>2,700</td>
<td>N/A*</td>
<td>390</td>
<td>N/A*</td>
<td>N/A*</td>
</tr>
<tr>
<td>Solar water pump</td>
<td>N/A*</td>
<td>N/A*</td>
<td>N/A*</td>
<td>N/A*</td>
<td>N/A*</td>
</tr>
<tr>
<td>Mini-grid</td>
<td>120</td>
<td>50,000</td>
<td>9</td>
<td>9,500</td>
<td>270</td>
</tr>
<tr>
<td><strong>Approximate total</strong></td>
<td><strong>4,000</strong></td>
<td><strong>52,000</strong></td>
<td><strong>9,000</strong></td>
<td><strong>24,000</strong></td>
<td><strong>15,000</strong></td>
</tr>
</tbody>
</table>

*Numbers rounded to two significant figures.*

*Survey or market insight data unavailable.*
India:
End-User Product Provider Workforce Profile
India:
Project Developer & Installer Workforce Profile
India:
Manufacturing & Upstream Supply Chain Workforce Profile
India: Sector Service Provider Workforce Profile
Kenya:
End-User Product Provider Workforce Profile
Kenya:
Project Developer & Installer Workforce Profile
Kenya: Manufacturing & Upstream Supply Chain Workforce Profile

Engagement:
- Contract
- Part-time
- Full-time

Function:
- Management & business administration
- Research & development
- Manufacturing & assembly
- Project development & installation
- Operations & maintenance
- Sales & distribution
- After-sales service

Gender:
- Women
- Men

Skill:
- Unskilled
- Skilled

Age:
- Youth (15-24)
- Adult (25+)
Nigeria:
Manufacturing & Upstream Supply Chain Workforce Profile

- Engagement: Contract, Part-time, Full-time
- Function: Management & business administration, Research & development, Manufacturing & assembly, Project development & installation, Operations & maintenance, Sales & distribution, After-sales service
- Gender: Women, Men
- Skill: Unskilled, Skilled
- Age: Youth (15-24), Adult (25+)
#PoweringJobs
A Global Campaign to Build an Energy Access Workforce

powerforall.org/poweringjobs
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