

# Powering Jobs 2019: The Energy Access Workforce

The logo for Power For All, featuring the words "POWER FOR ALL" in a bold, sans-serif font. The word "FOR" is smaller and positioned between "POWER" and "ALL". The text is centered between two thick horizontal white bars.

**POWER FOR ALL**

Dr. Rebekah Shirley, Director of Research, Power for All  
July 25, 2019

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# 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).

The infographic features a dark blue header with the hashtag #PoweringJobs. Below this, a light blue section contains a circular graphic with '10.3 MILLION JOBS' in white and '76,000 JOBS' in green. To the right, text reads 'WORLDWIDE RENEWABLE ENERGY JOBS TODAY' and 'RENEWABLE ENERGY JOBS IN AFRICA'. A source attribution 'Source: IRENA' is present. The bottom section is dark blue with white text stating: 'Electrifying 1 billion people can create millions of jobs if the proper workforce is developed.' and 'The #PoweringJobs campaign will strengthen the data linking SDG7 to SDG8, and mobilize the resources needed to close the skills gap and ensure we achieve power for all by 2030.' The footer includes the website 'powerforall.org/poweringjobs' and the 'POWER FOR ALL' logo.

## #PoweringJobs

10.3 MILLION  
**JOBS**  
76,000  
JOBS

WORLDWIDE  
RENEWABLE ENERGY  
JOBS TODAY

RENEWABLE ENERGY  
JOBS IN AFRICA

Source: IRENA

Electrifying 1 billion people can create millions of jobs if the proper workforce is developed.

The #PoweringJobs campaign will strengthen the data linking SDG7 to SDG8, and mobilize the resources needed to close the skills gap and ensure we achieve power for all by 2030.

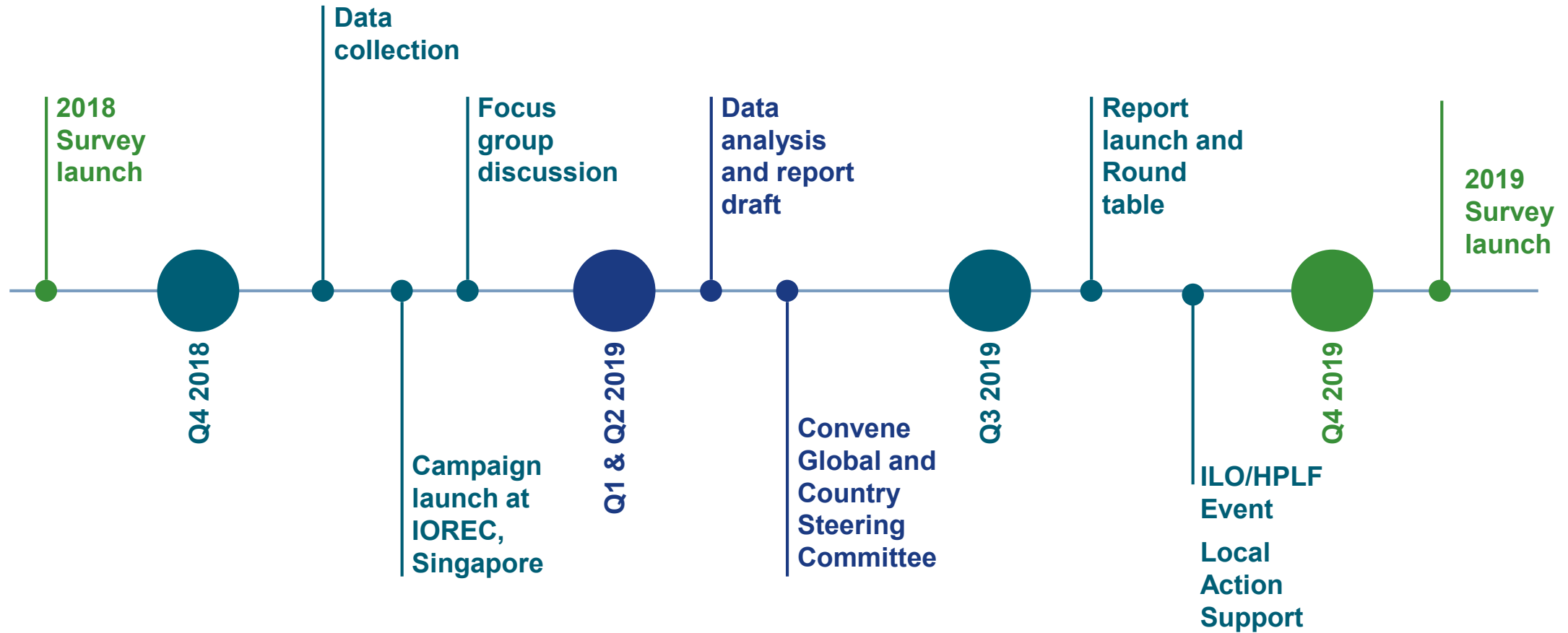
powerforall.org/poweringjobs

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# Partners: Community of Action

Global	Global	India	Kenya	Nigeria
				
Funding Partners				
				

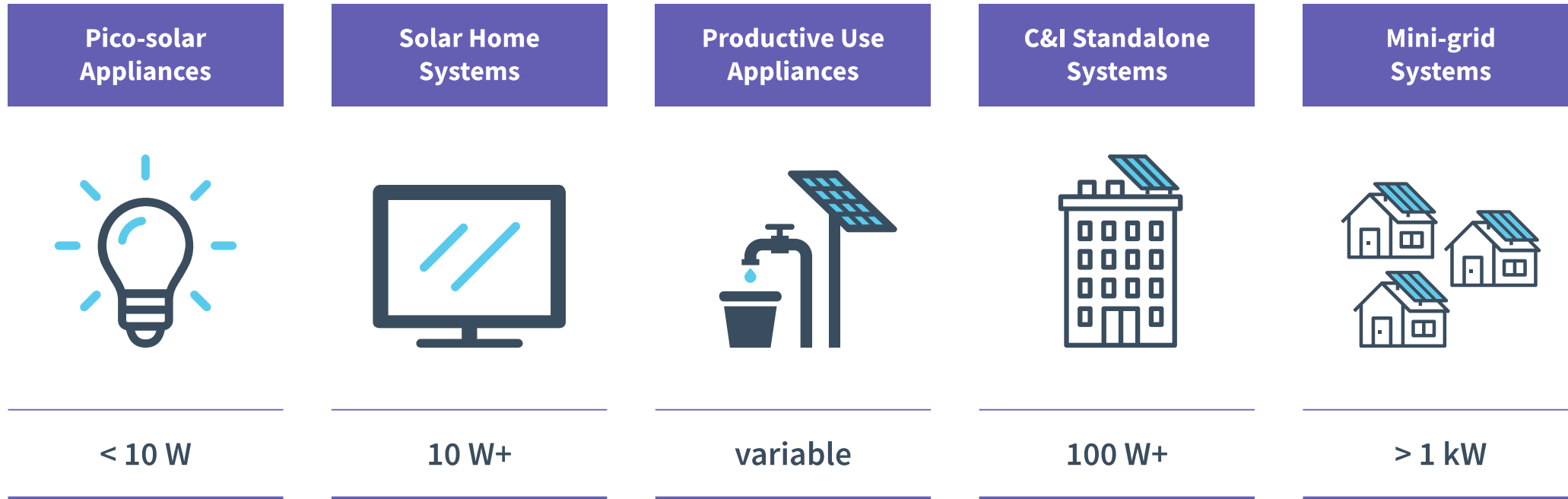
# #PoweringJobs Campaign Timeline





# RESEARCH SCOPE

# Technology and Jobs Scope



**Direct Jobs**

Formal	Informal
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Data from survey and focus groups

**Productive Use Jobs**

Formal	Informal
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Data from focus groups and literature

**Indirect Jobs**

Formal	Informal
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Data from literature where possible

**Induced Jobs**

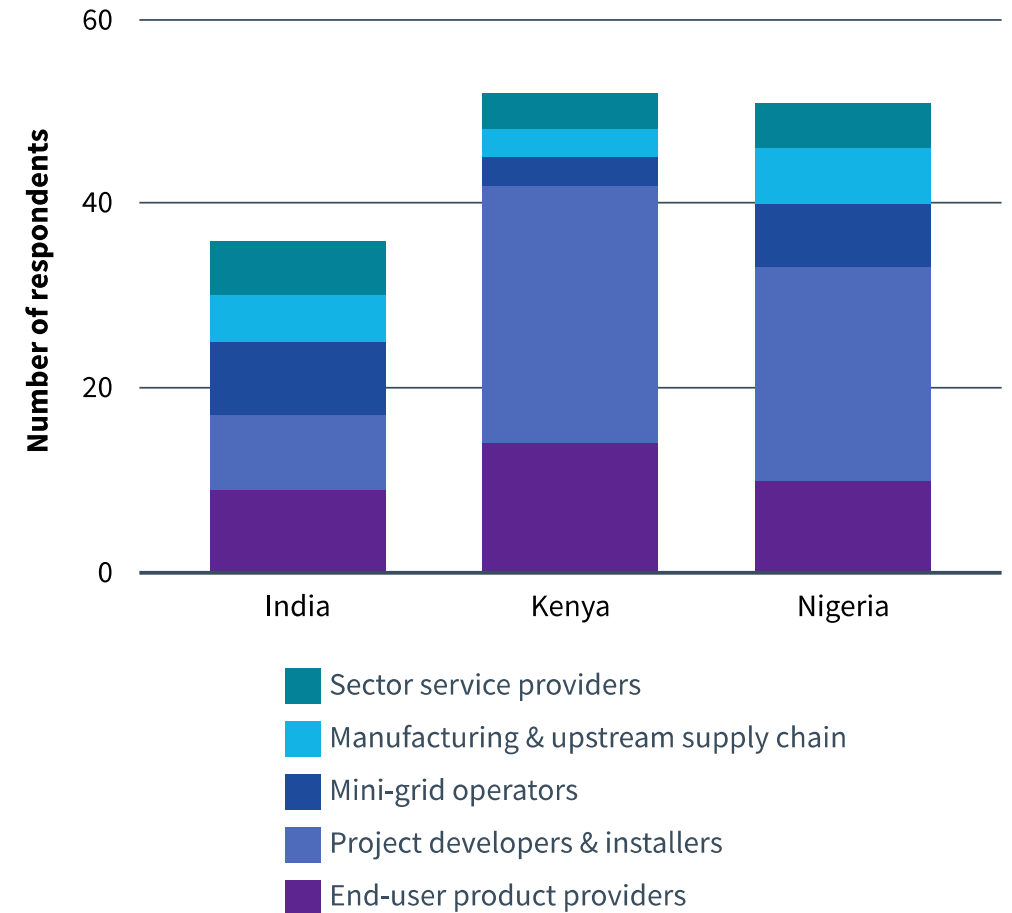
Formal	Informal
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Not included in survey scope

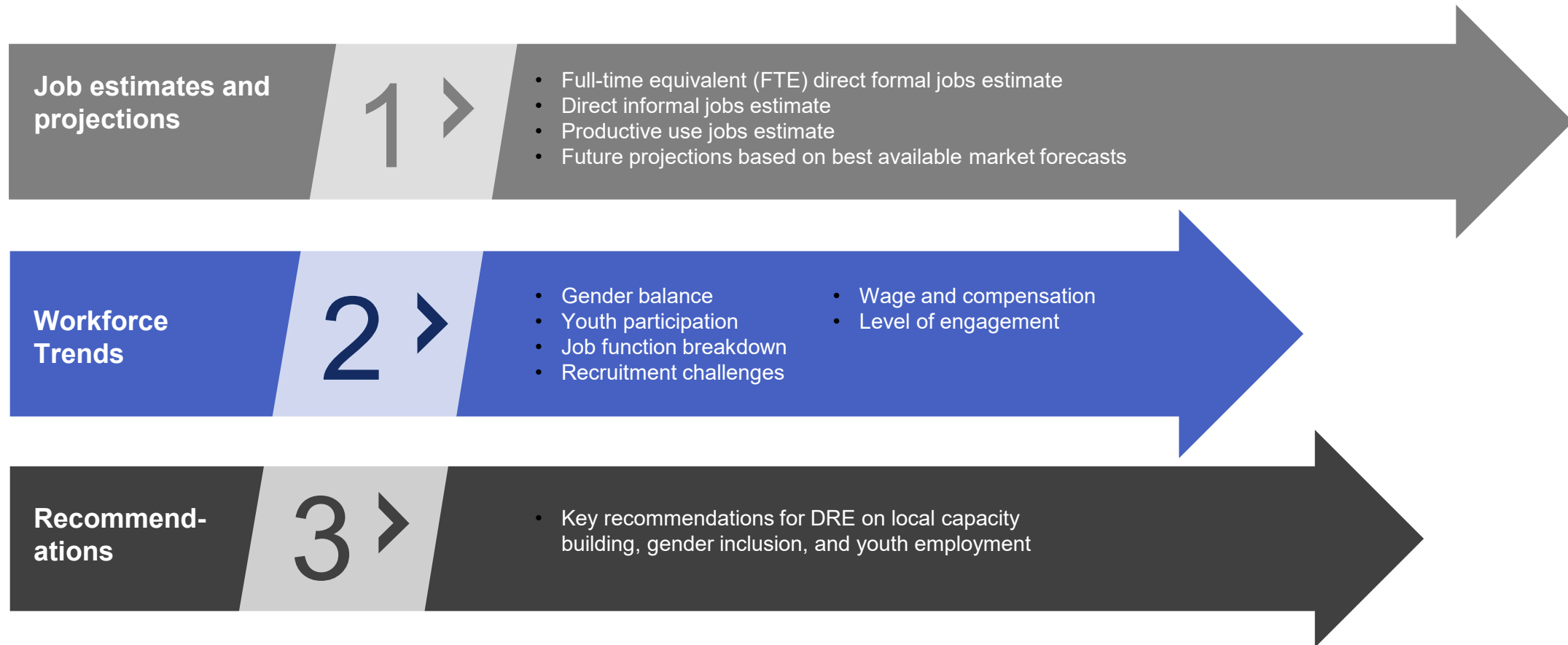


# Survey Sample: 3 countries; 139 respondents

- **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



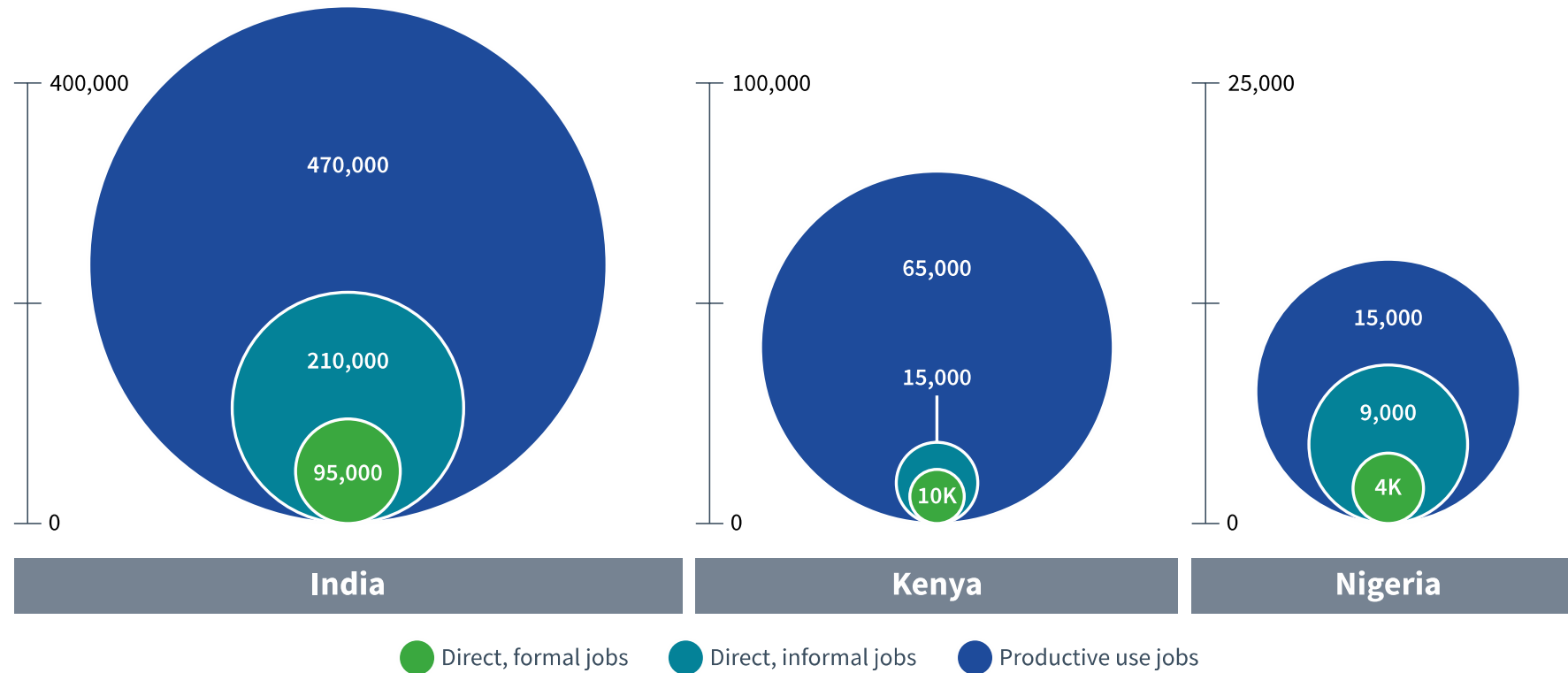
# The DRE Energy Access Workforce

- **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.

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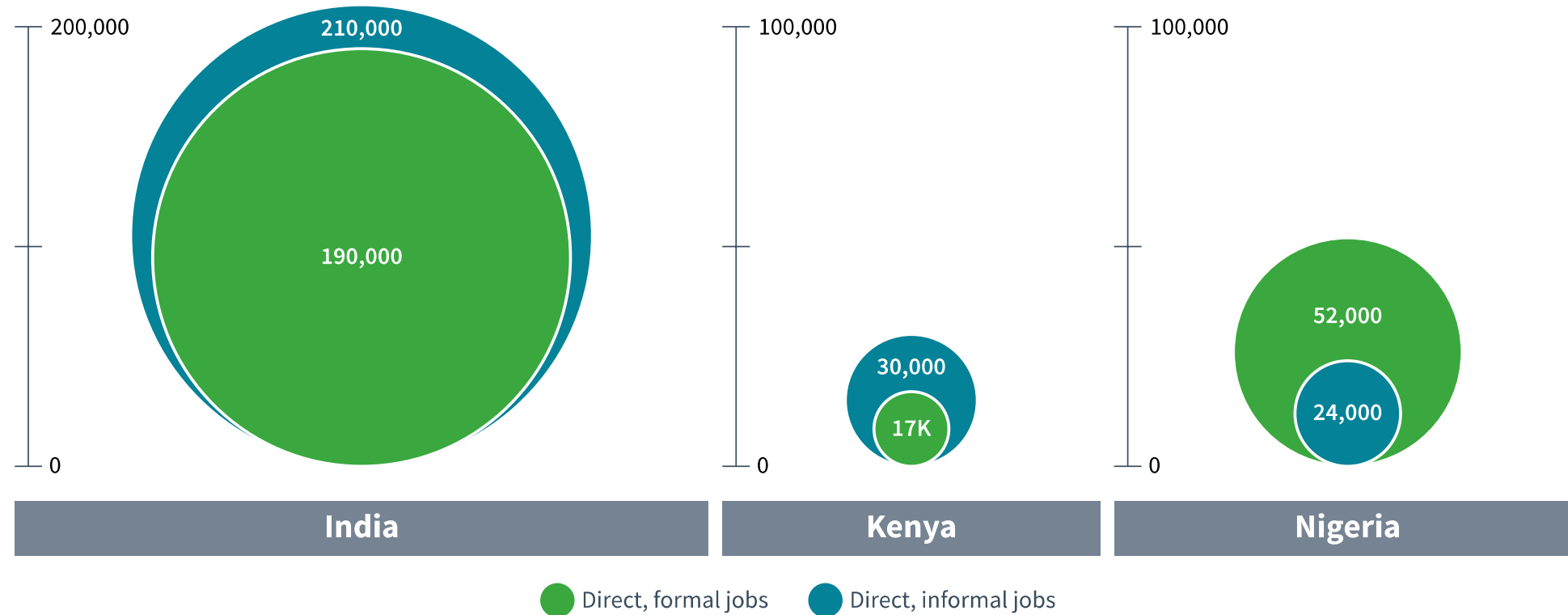
# **JOBS ESTIMATES & PROJECTIONS**

# 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

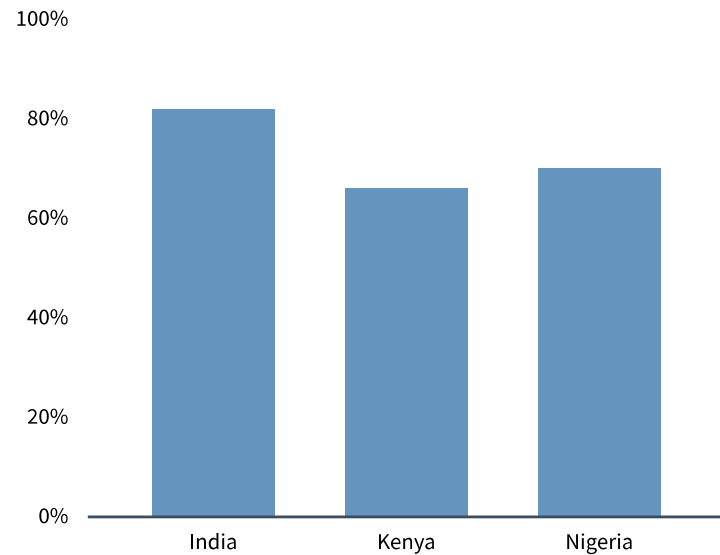


- Direct, formal jobs may grow by 100%, 70% and more than 10x in India, Kenya and Nigeria between 2017–18 and 2022–23.
- Direct, informal jobs remain constant in India, double in Kenya and more than double in Nigeria between 2017–18 and 2022–23.

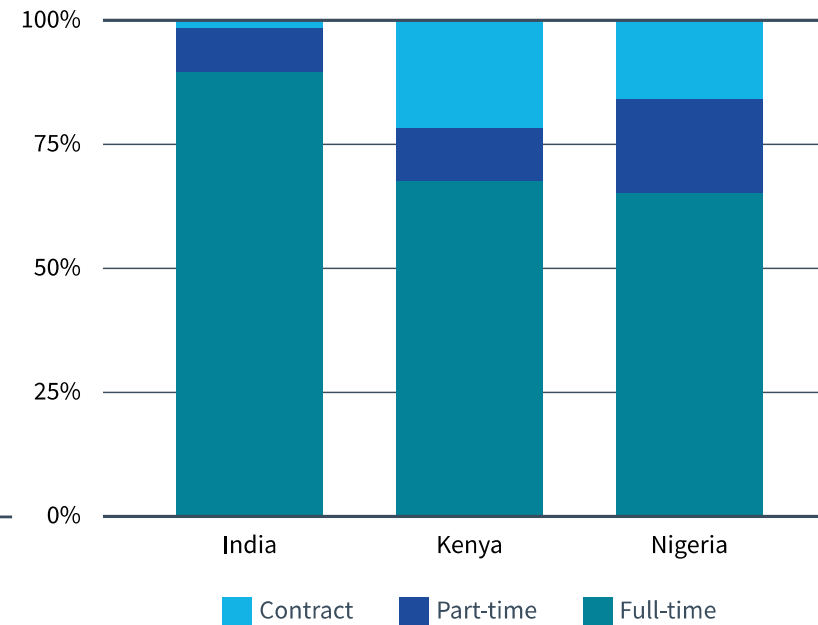
# Engagement and Retention

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.

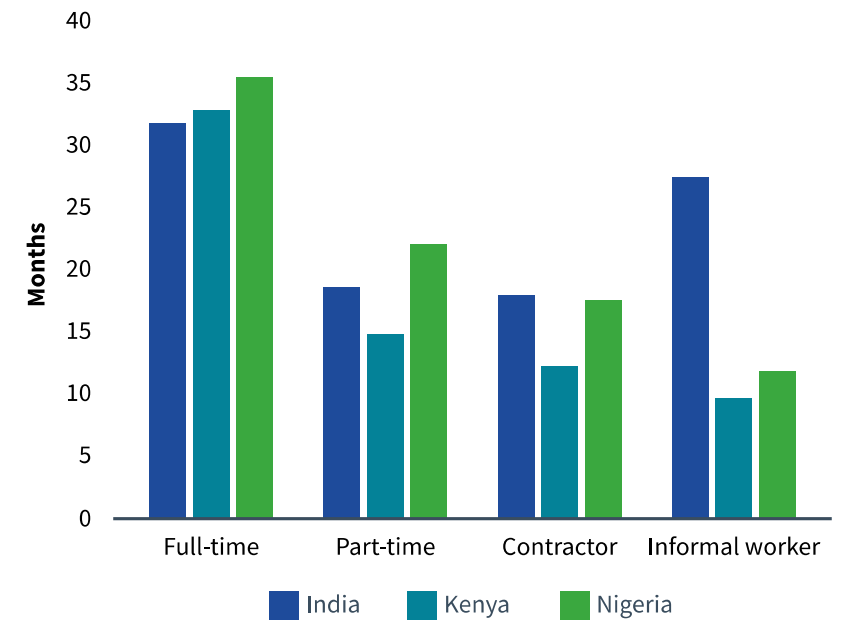
### Skilled labor



### Level of Engagement

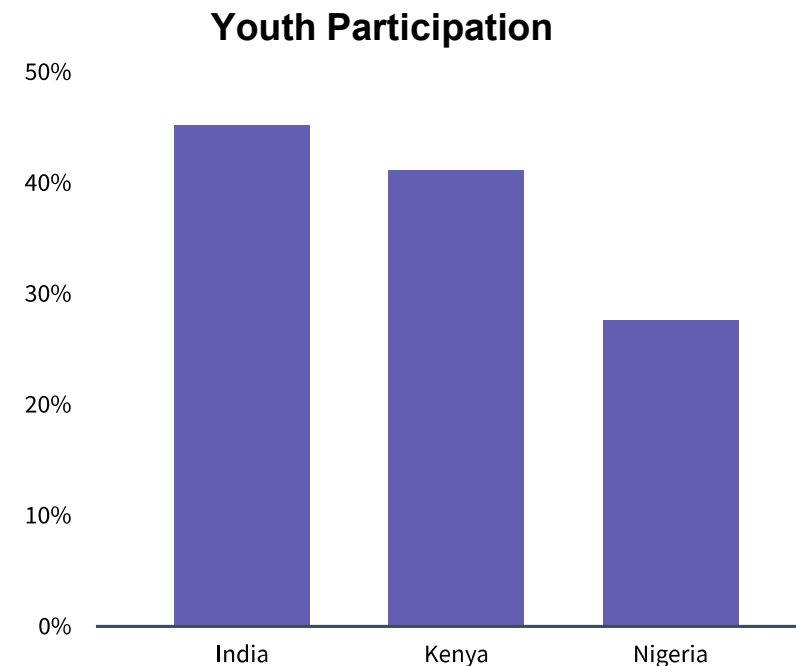
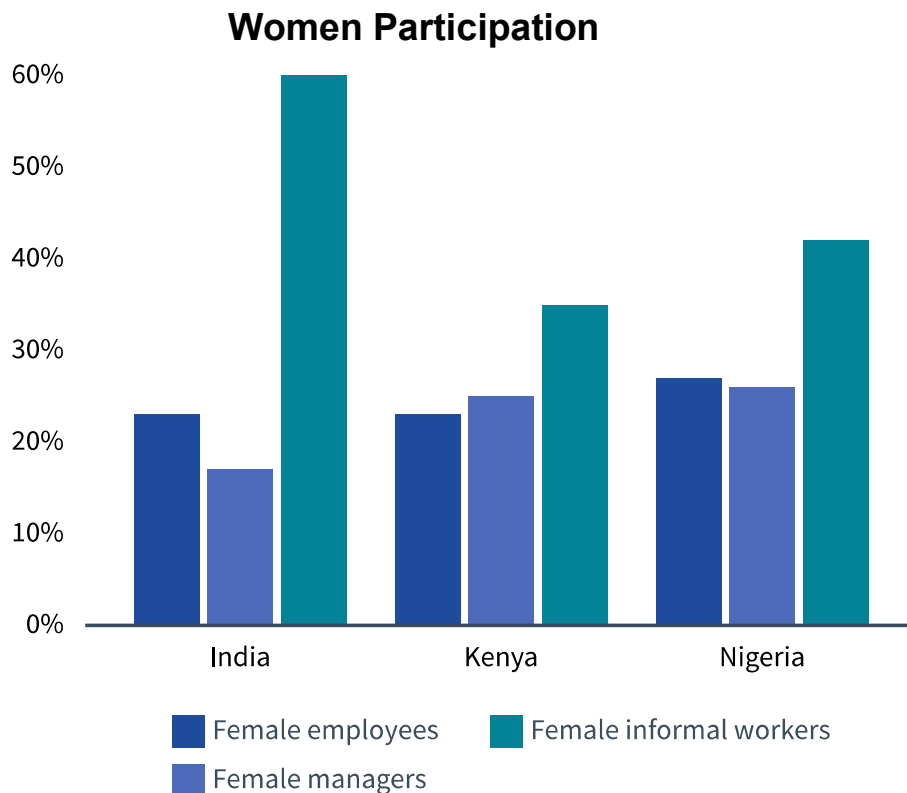


### Average Retention in Months



# Women and Youth Participation

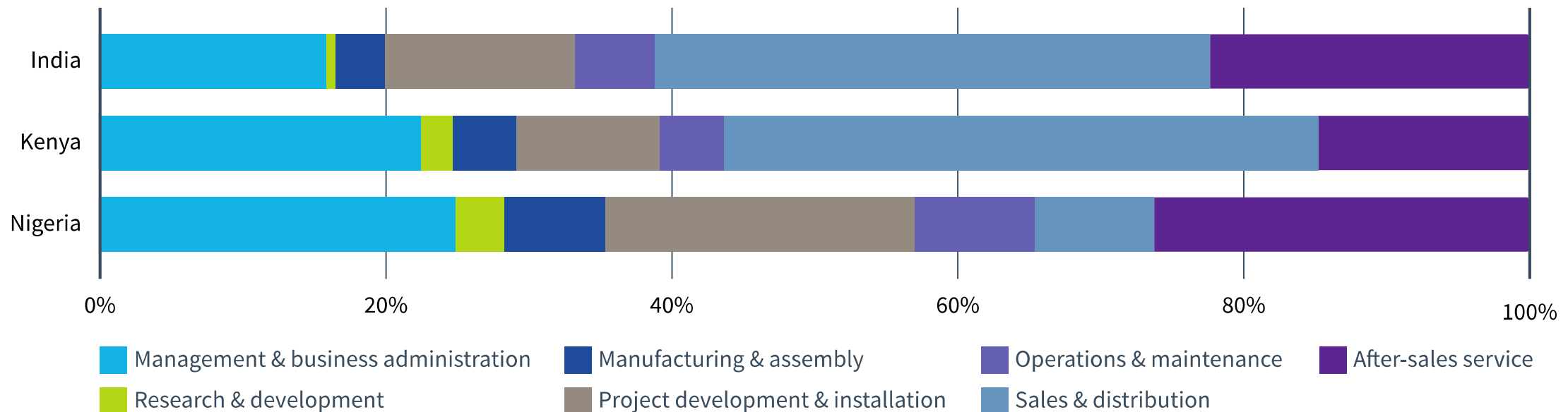
- Women account for less than 30% of the direct formal jobs, as compared to 32% for the global renewable energy sector.
- Women constitute higher percentage of the informal workforce.
- Youth participation is high. Companies express strong interest in hiring young people.



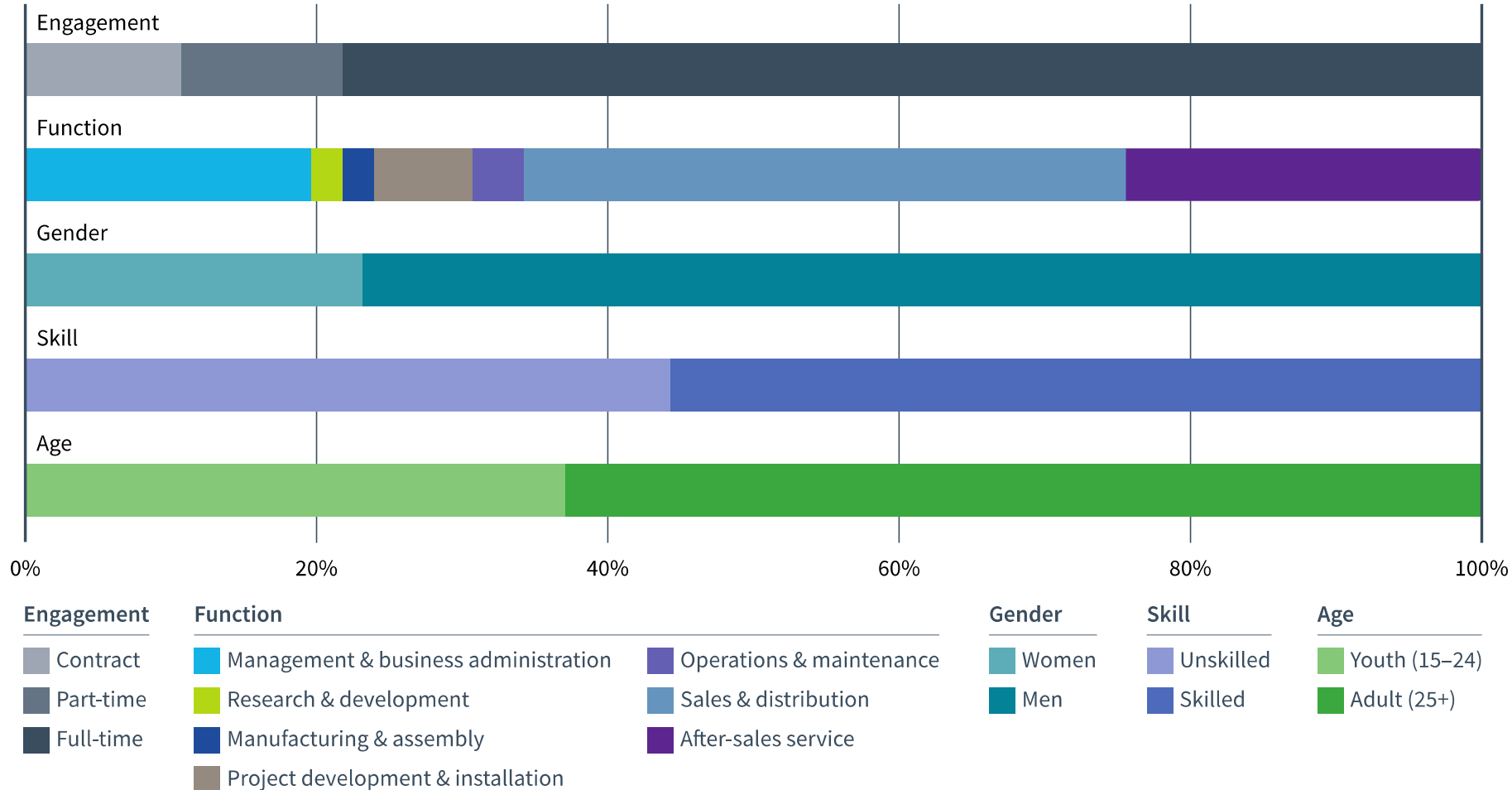


# Job Function Breakdown in 2017–18

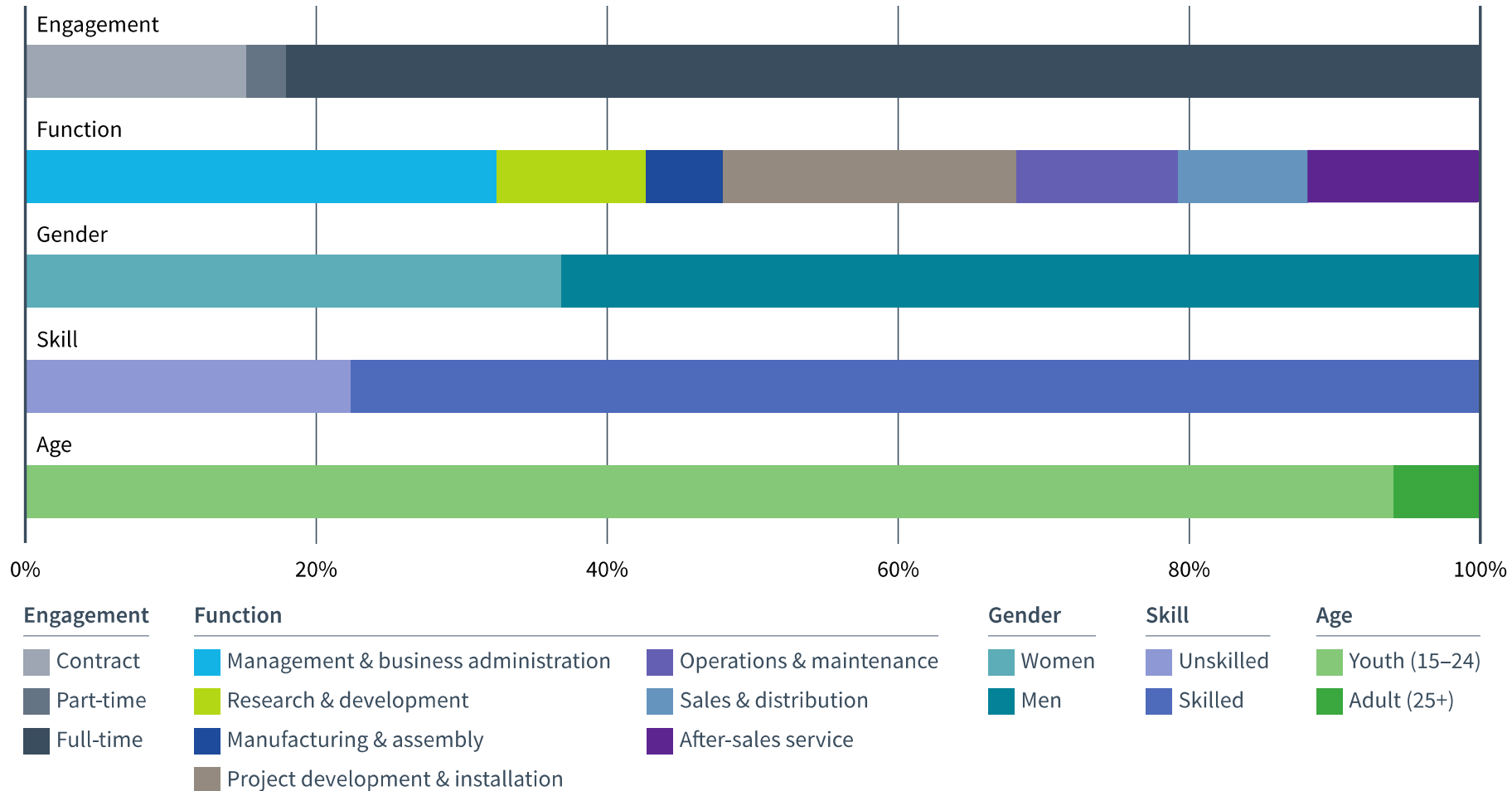
- In India and Kenya, approximately 40% of the jobs are in sales and distribution
- In Nigeria, project development and installation makes up a large part of the workforce
- In all three countries, management and business administration are an important part of the workforce



# Kenya: End-User Product Provider Workforce Profile

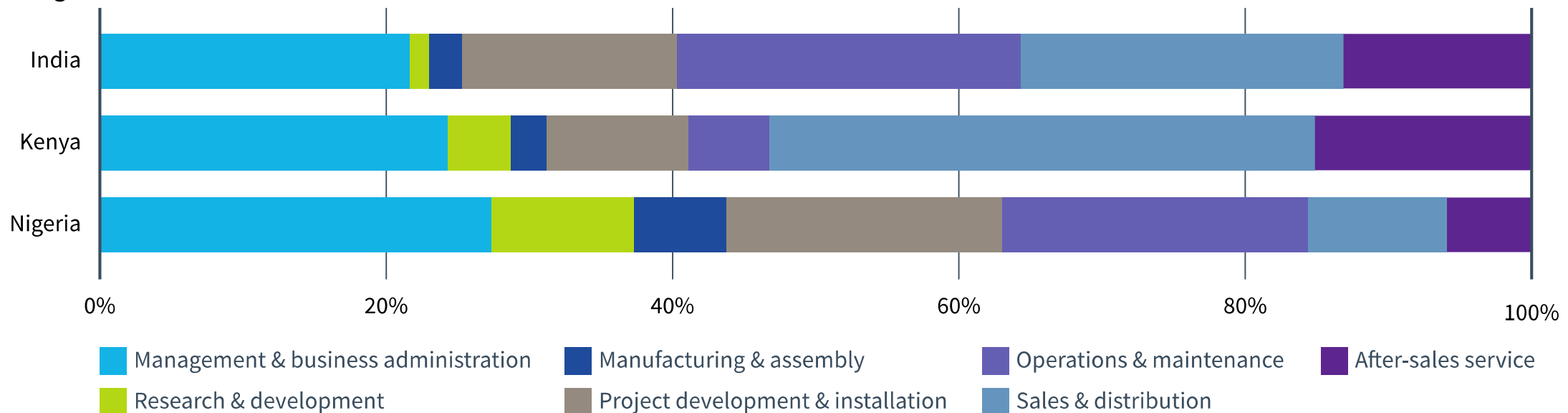


# Kenya: Mini-grid Operator Workforce Profile



# Job Function Breakdown in 2022–23

- 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

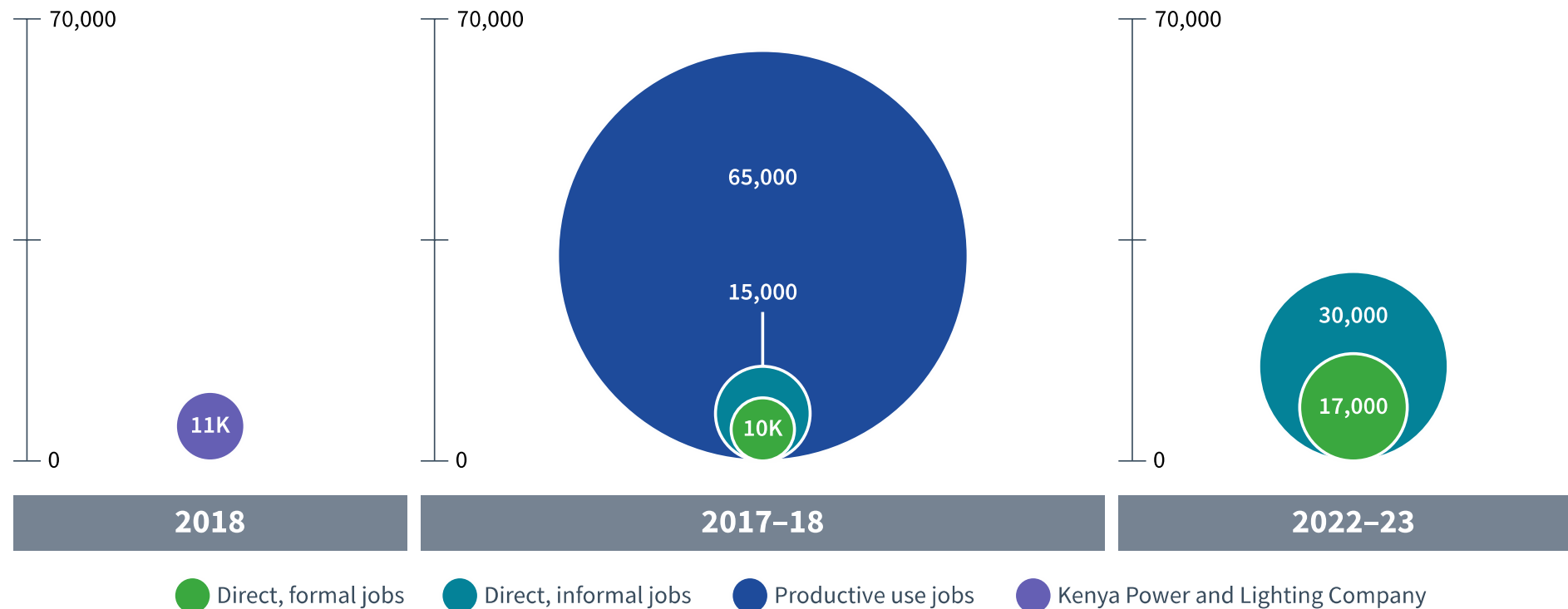
- There are clear skills needed to unlock the DRE sector's potential to scale and create more employment, presenting an opportunity for **collaboration** between government, academia, training organizations, and industry associations. **Managerial skills** are in high demand, being identified as the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



# APPENDI X

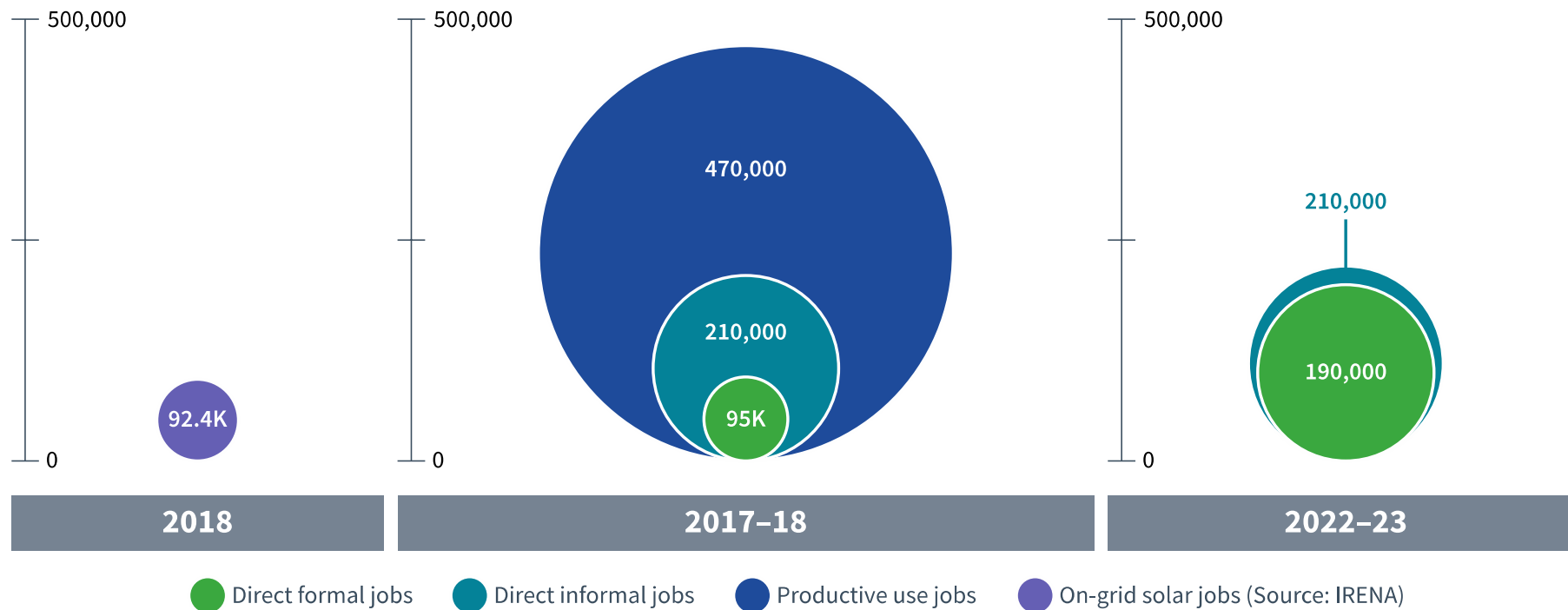
# Jobs Estimates and Projections in Kenya

- 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

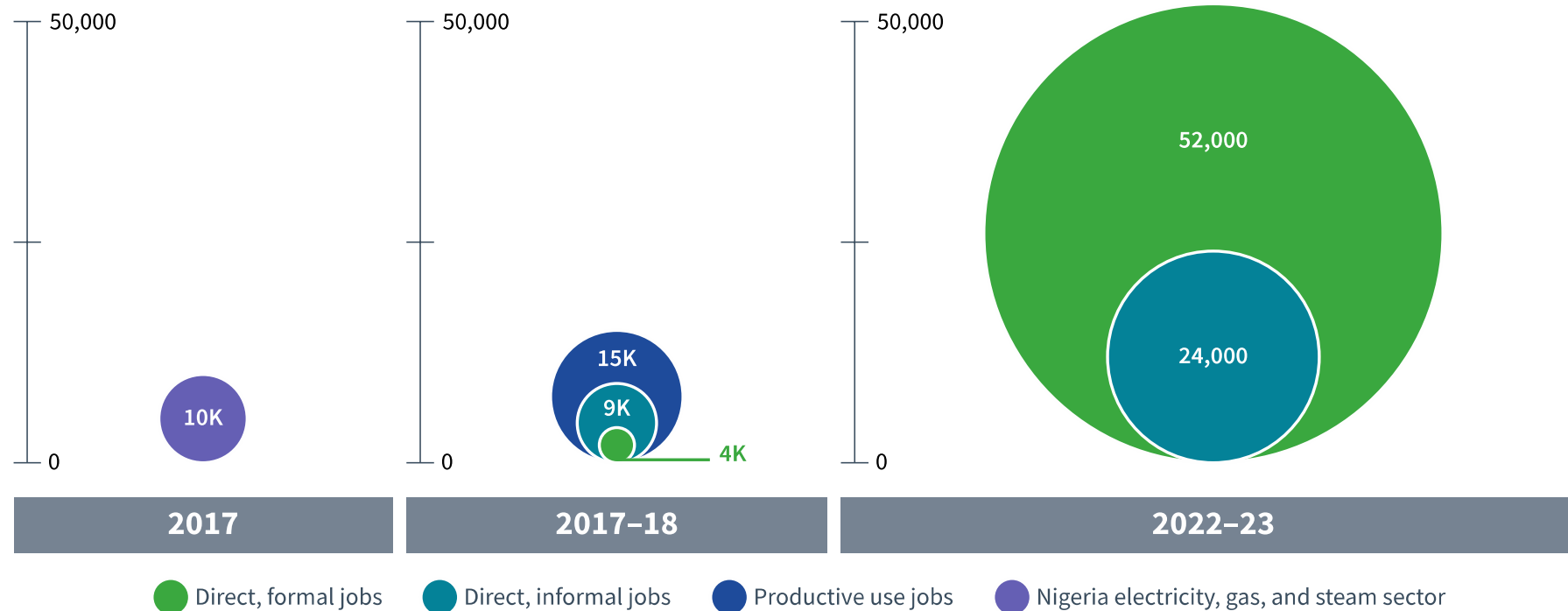
- Direct, formal jobs is on the order of on-grid solar jobs.
- DRE direct, formal jobs will double and informal jobs remain the same by 2022–23.





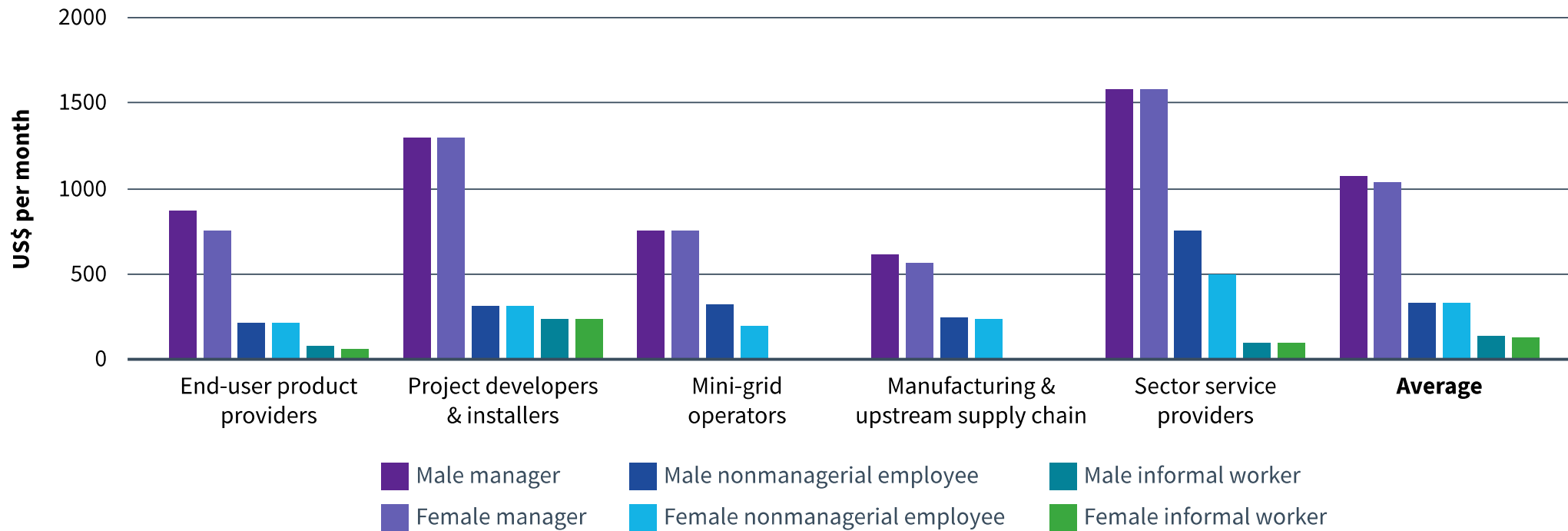
# Jobs Estimates and Projections in Nigeria

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



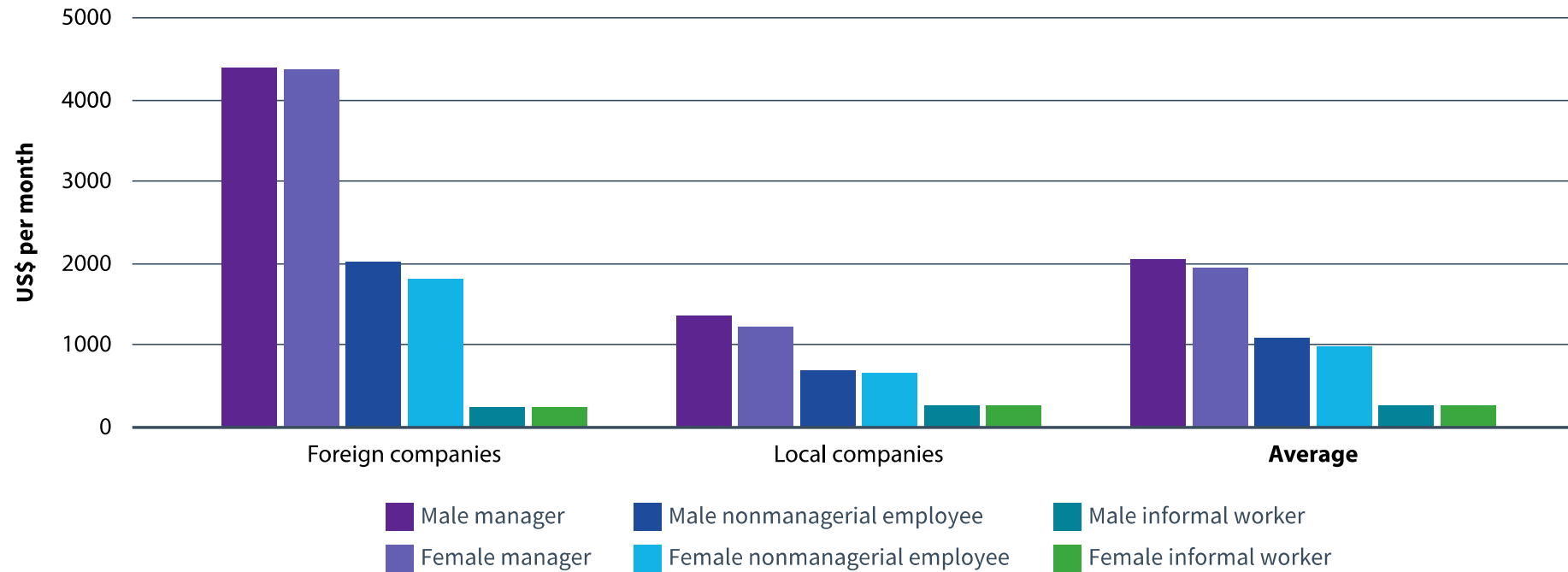
# India Wages and Compensation

- 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.



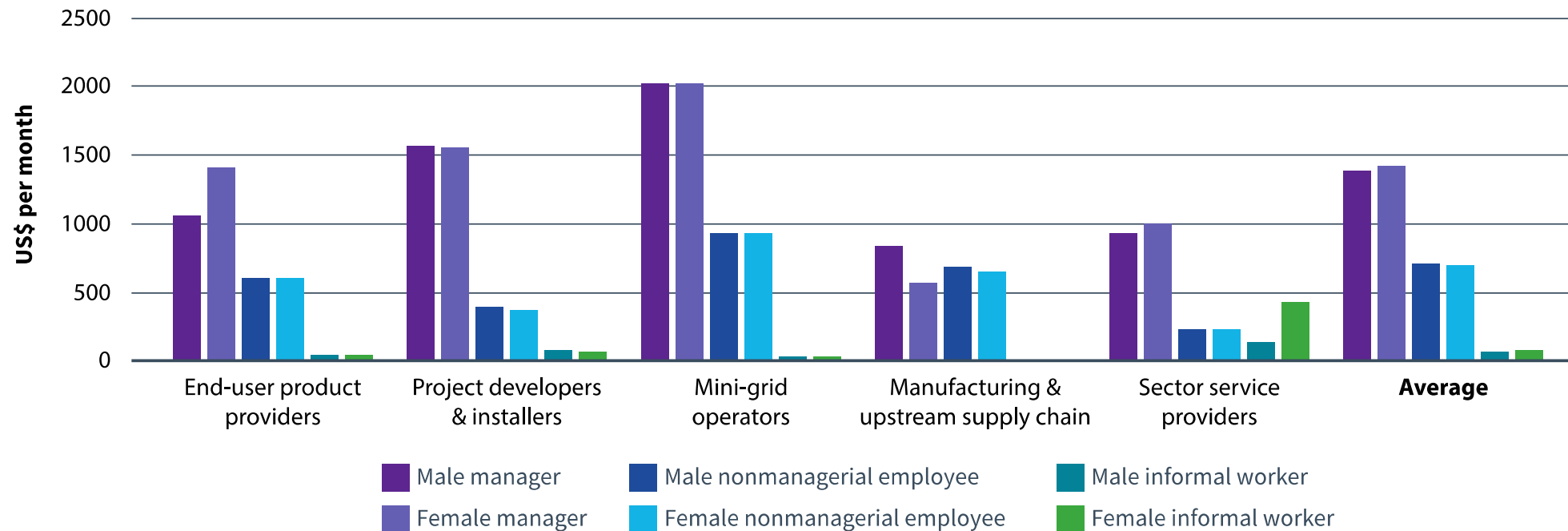
# Kenya Wages and Compensation

- 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% or less of respondents answered questions on wage



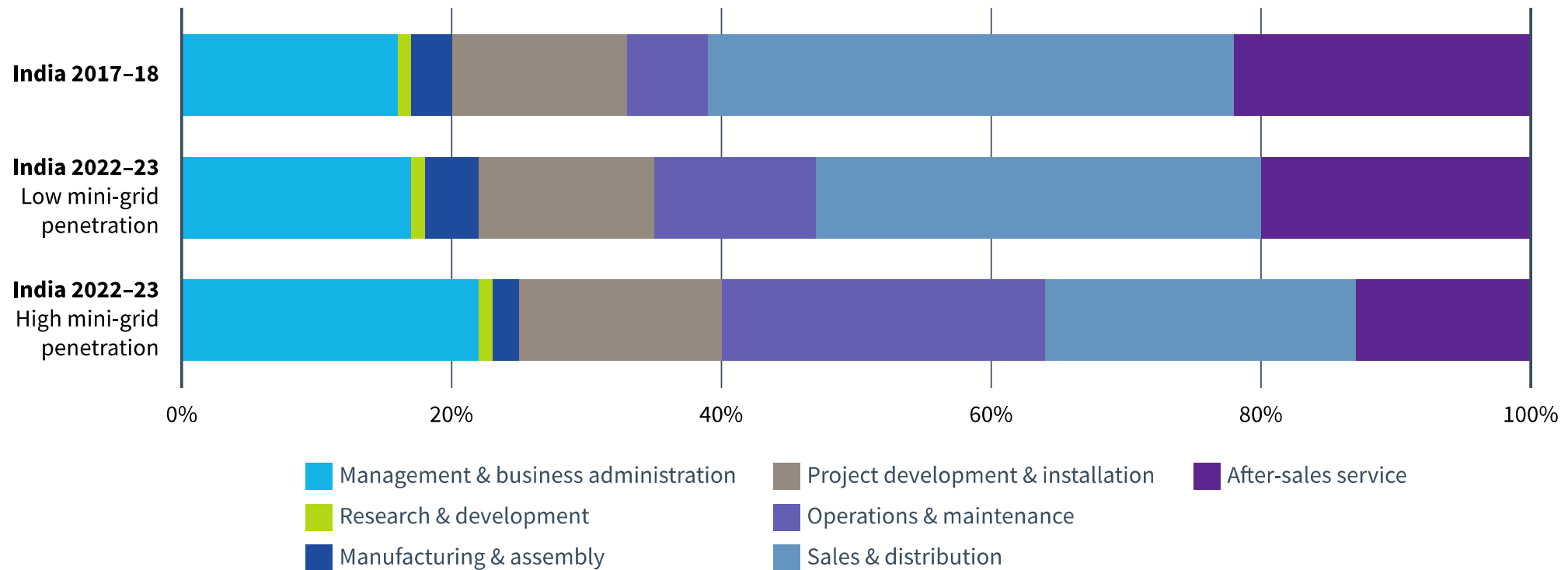
# Nigeria Wages and Compensation

- 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.



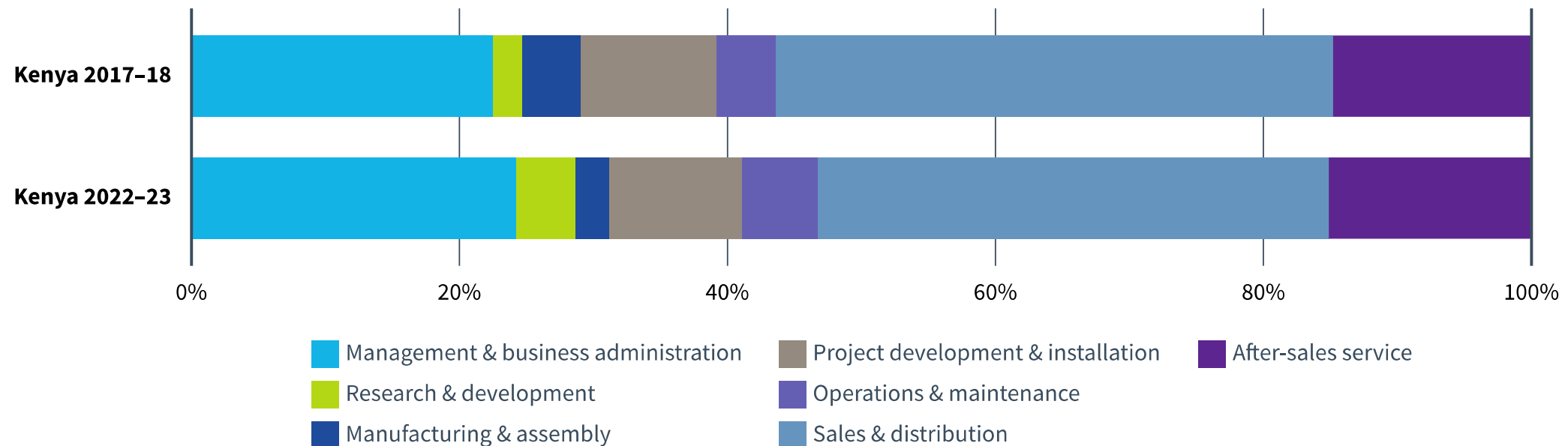
# Change in Skills Needs in India

- 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.



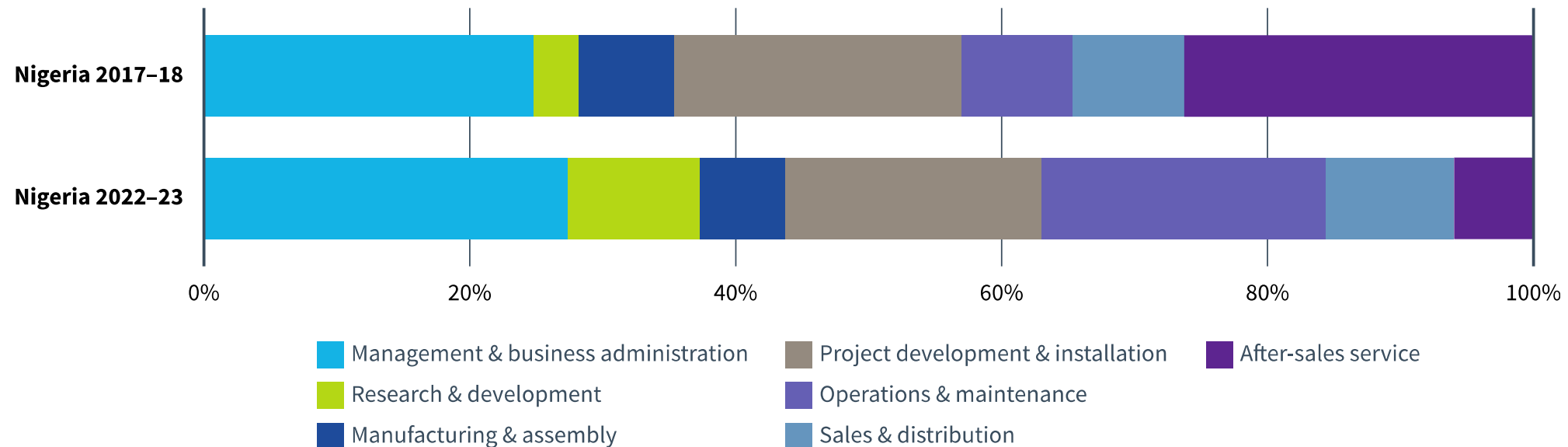
# Change in Skills Needs in Kenya

- 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.



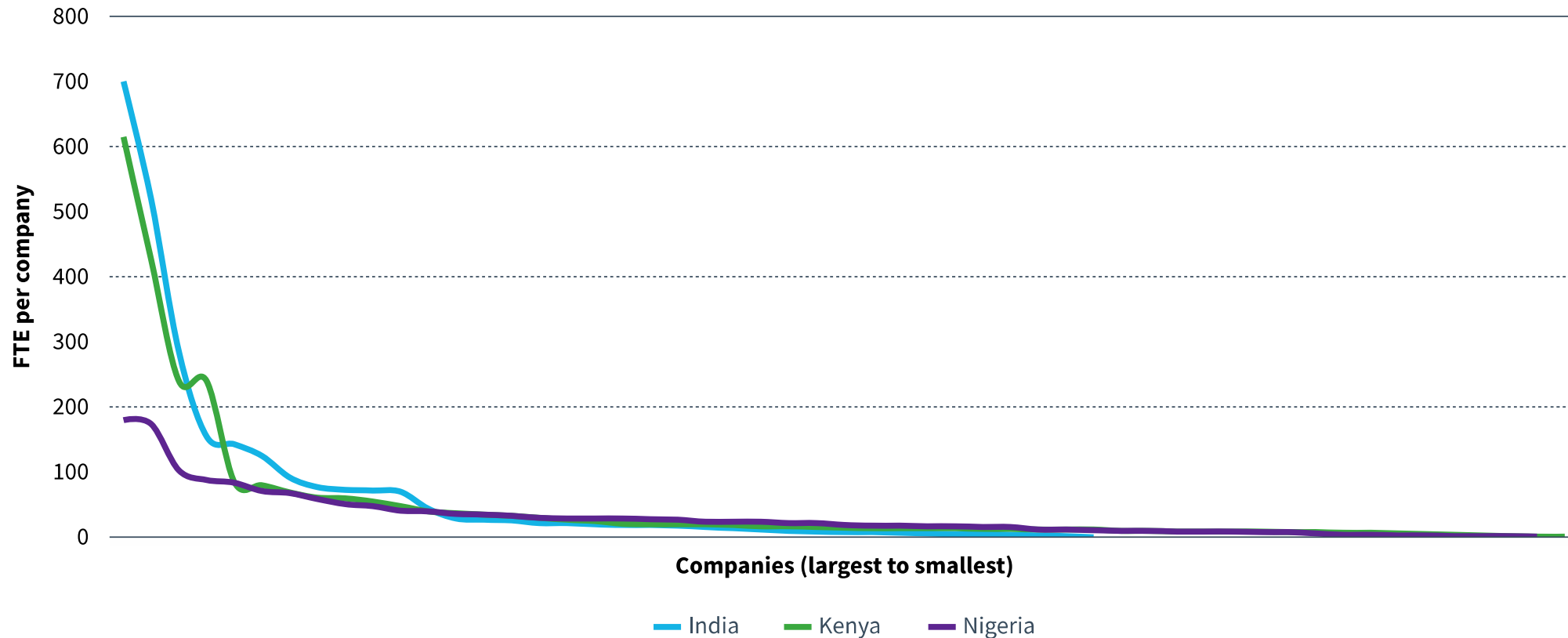
# Change in Skills Needs in Nigeria

- 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; where as in Nigeria, job creation is more evenly contributed by different actors





**TABLE 2. SURVEY SAMPLE SIZE AND STATISTICS**

<b>Country</b>	<b>India</b>	<b>Kenya</b>	<b>Nigeria</b>
<b>Estimated total companies*</b>	300–350	150–200	150–200
<b>Desired confidence level</b>	90%	90%	90%
<b>Desired margin of error</b>	10%	10%	10%
<b>Ideal sample size</b>	57	51	51
<b>Total survey responses</b>	36	52	51
<b>Estimated response rate</b>	10%	25%	25%

*\*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**

Job category	Direct, formal		Direct, informal		Productive use
	2017-18	2022-23	2017-18	2022-23	
Pico-solar appliance and SHS	92,000	86,000	210,000	200,000	470,000
Standalone and grid-tied C&I	770	1,600	190	400	N/A*
Solar water pump	1,500	10,000	N/A*	N/A*	N/A*
Mini-grid	630	90,000	57	8,200	950
<b>Approximate total</b>	<b>95,000</b>	<b>190,000</b>	<b>210,000</b>	<b>210,000</b>	<b>470,000</b>

*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**

<b>Job category</b>	<b>Direct, formal</b>	<b>Direct, formal</b>	<b>Direct, informal</b>	<b>Direct, informal</b>	<b>Productive use</b>
<b>Years</b>	<b>2017-18</b>	<b>2022-23</b>	<b>2017-18</b>	<b>2022-23</b>	<b>2017-18</b>
Pico-solar appliance and SHS	7,500	12,000	15,000	24,000	64,000
Standalone and grid-tied C&I	1,800	N/A*	200	N/A*	N/A*
Solar water pump	95	N/A*	N/A*	N/A*	N/A*
Mini-grid	260	5,000	290	5,800	590
<b>Approximate total</b>	<b>10,000</b>	<b>17,000</b>	<b>15,000</b>	<b>30,000</b>	<b>65,000</b>

*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**

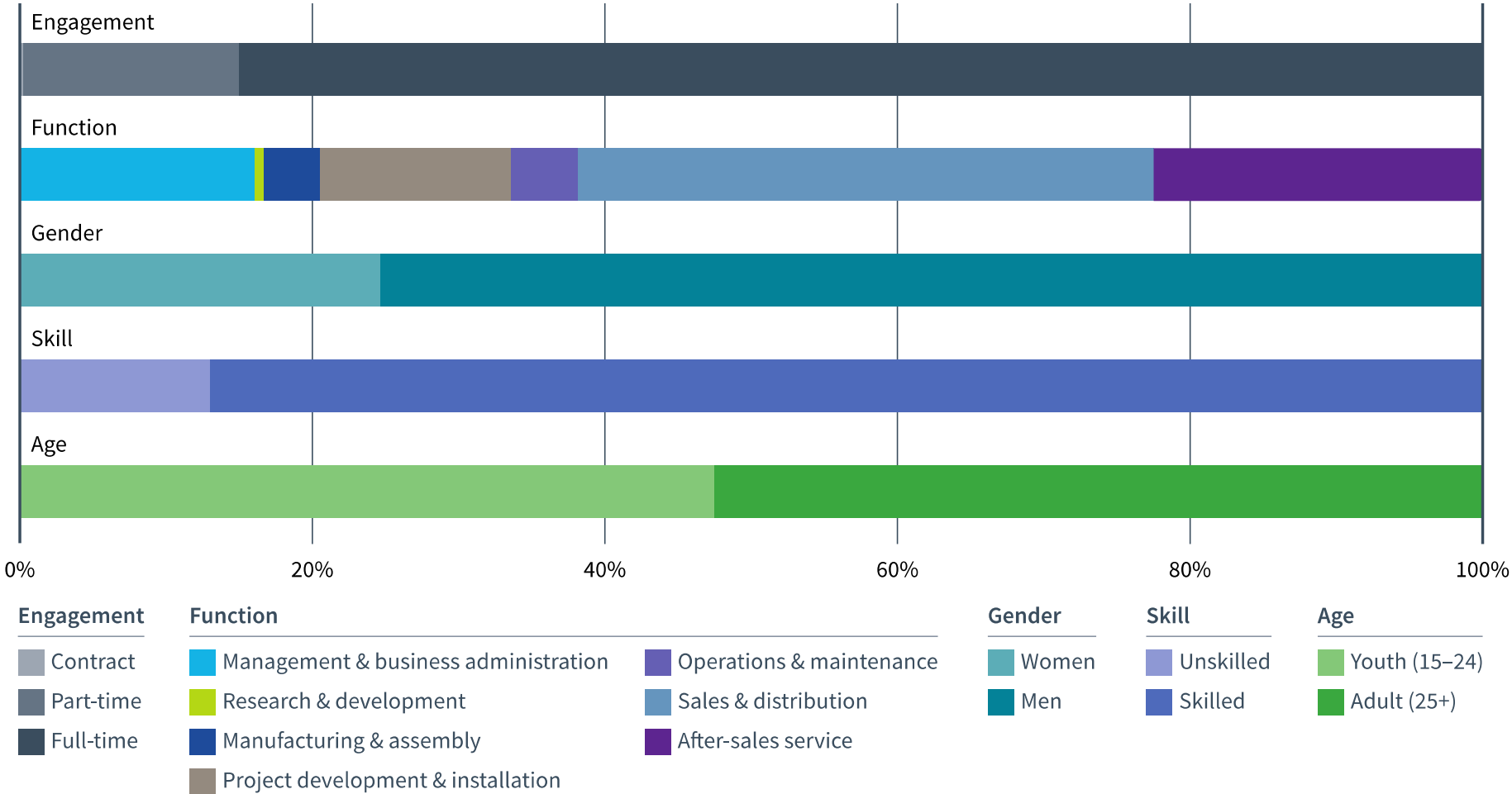
<b>Job category</b>	<b>Direct, formal</b>		<b>Direct, informal</b>		<b>Productive use</b>
<b>Years</b>	<b>2017-18</b>	<b>2022-23</b>	<b>2017-18</b>	<b>2022-23</b>	<b>2017-18</b>
Pico-solar appliance and SHS	1,100	2,000	8,400	14,000	15,000
Standalone and grid-tied C&I	2,700	N/A*	390	N/A*	N/A*
Solar water pump	N/A*	N/A*	N/A*	N/A*	N/A*
Mini-grid	120	50,000	9	9,500	270
<b>Approximate total</b>	<b>4,000</b>	<b>52,000</b>	<b>9,000</b>	<b>24,000</b>	<b>15,000</b>

*Numbers rounded to two significant figures.*

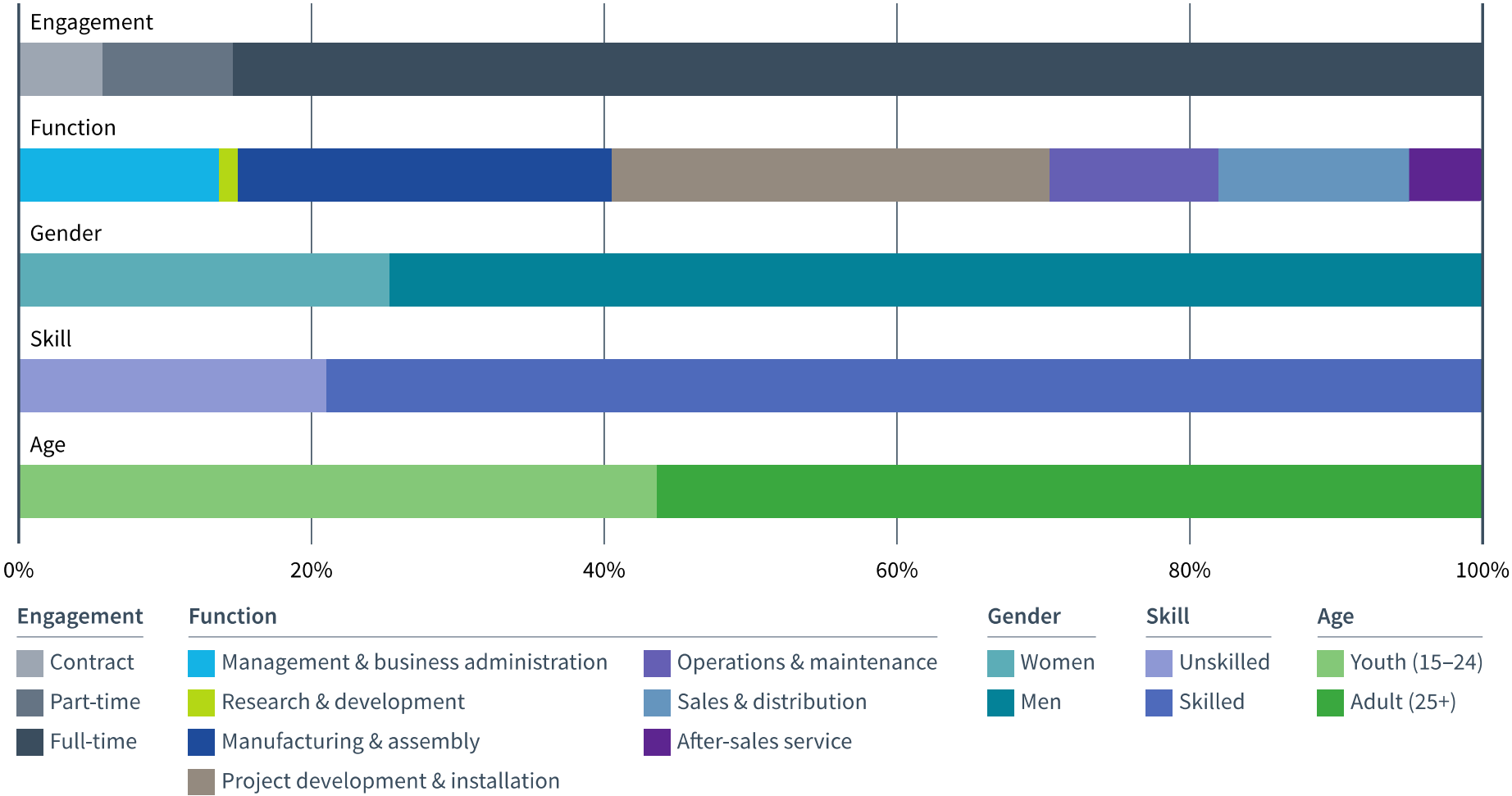
*\* Survey or market insight data unavailable.*

# India:

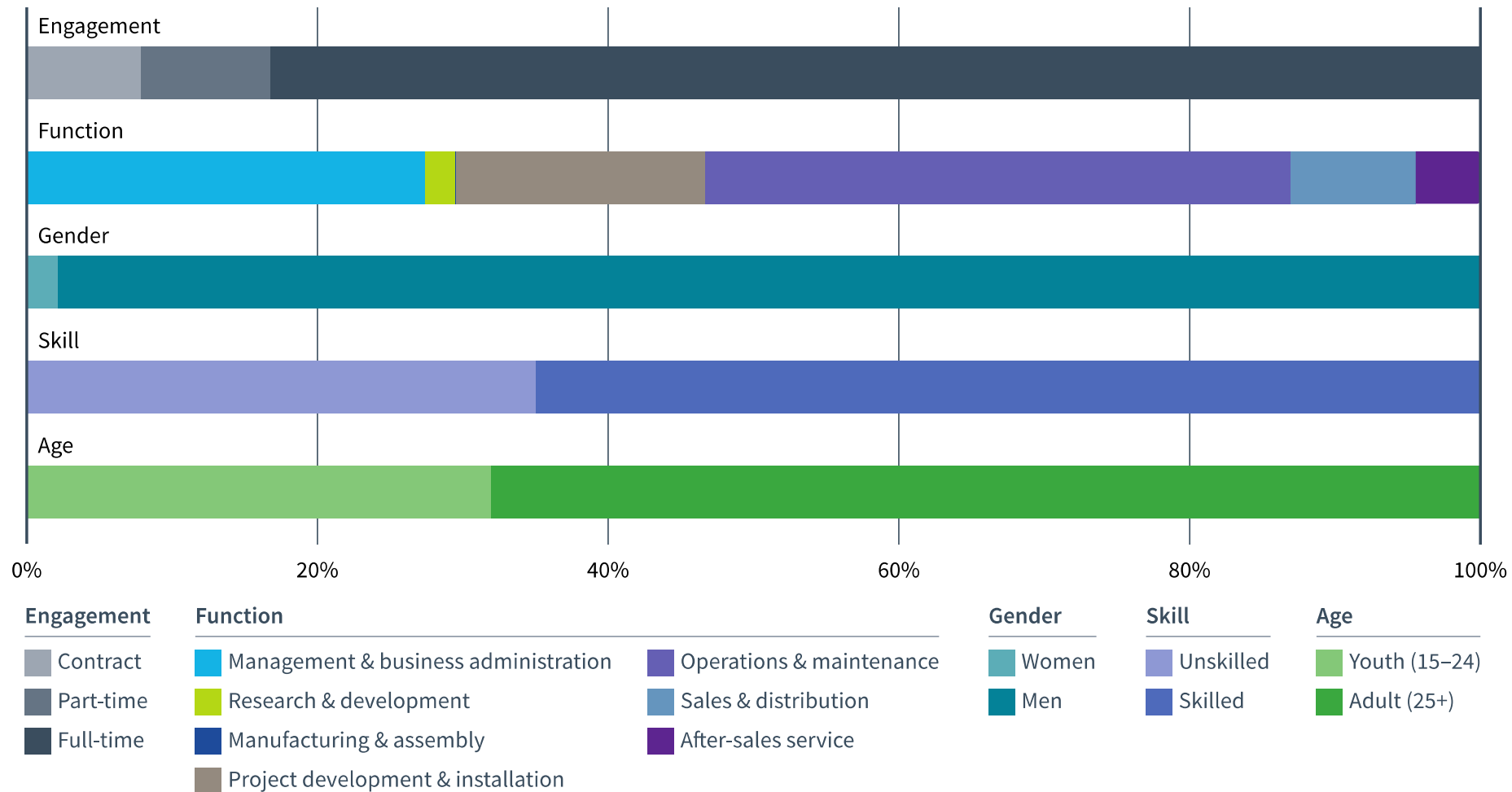
# End-User Product Provider Workforce Profile



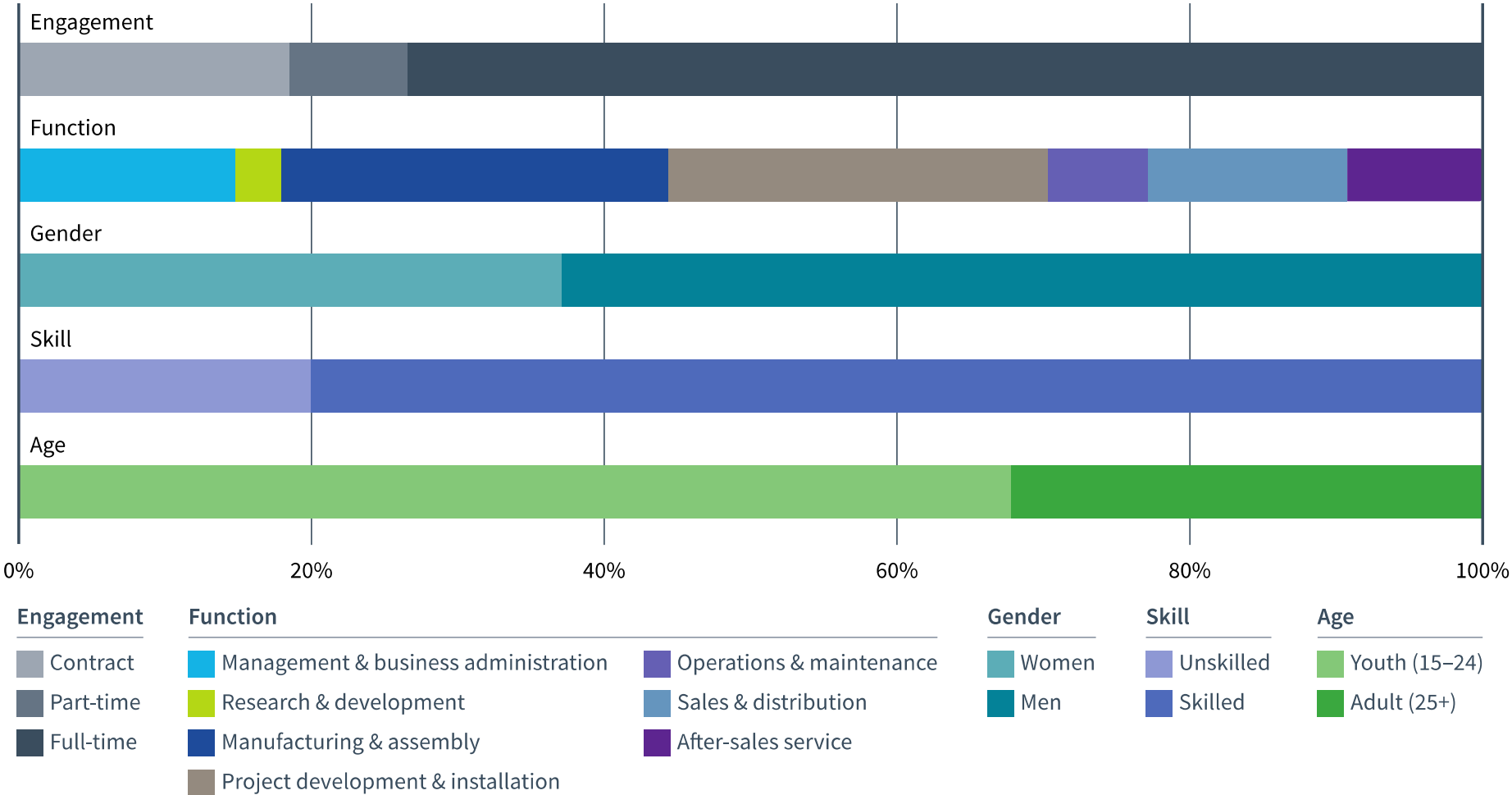
# India: Project Developer & Installer Workforce Profile



# India: Mini-grid Operator Workforce Profile

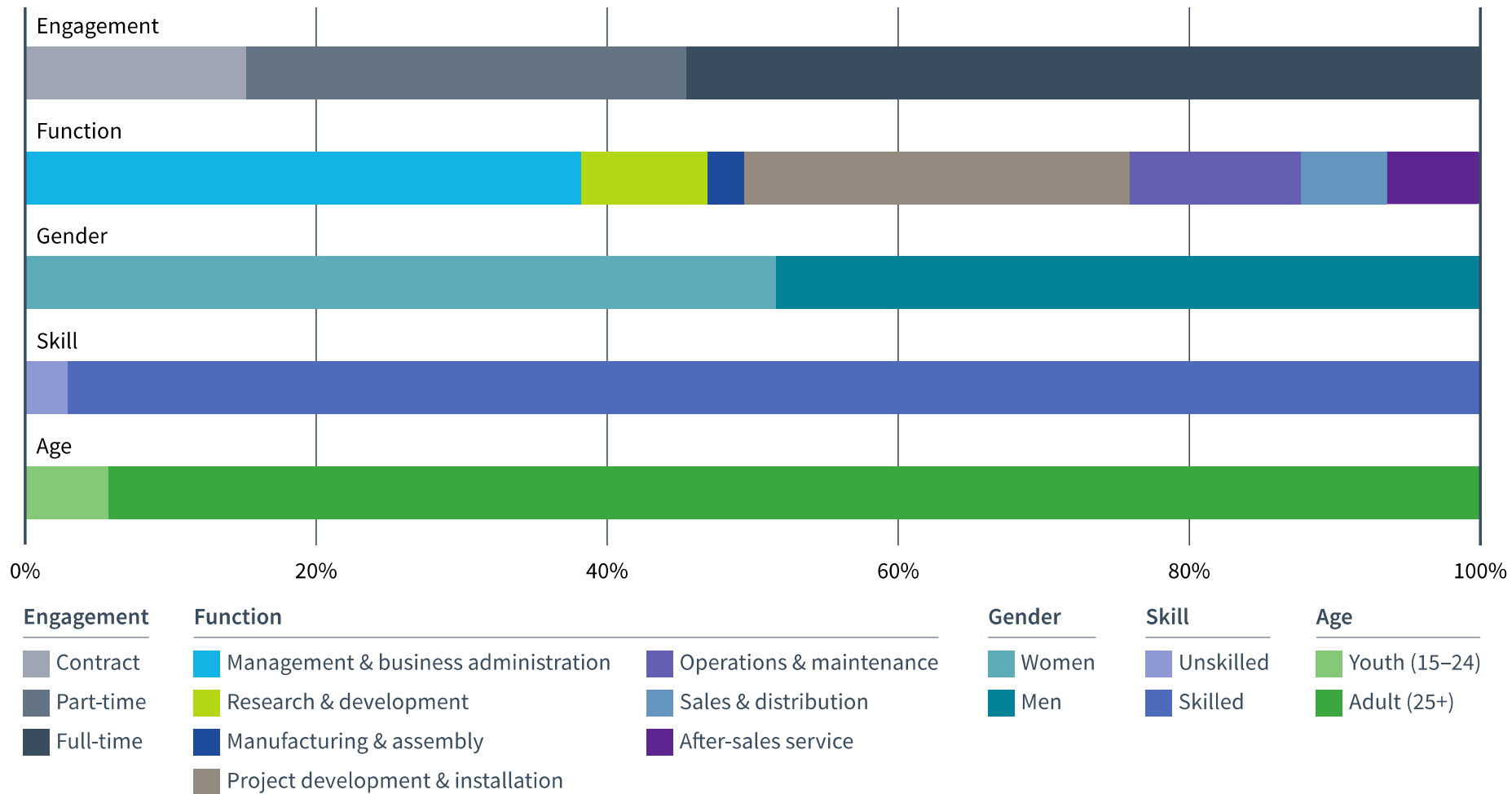


# India: Manufacturing & Upstream Supply Chain Workforce Profile

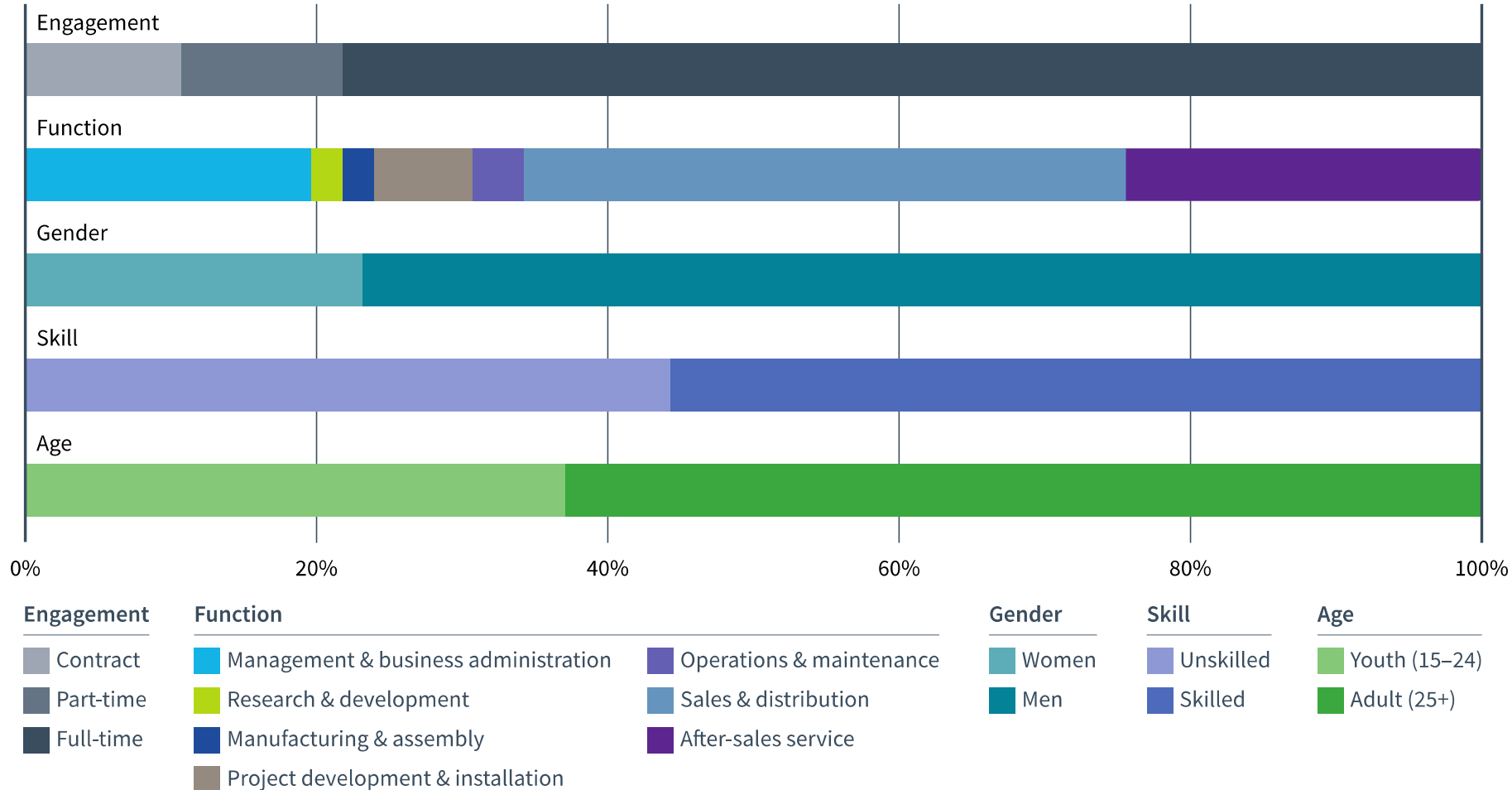




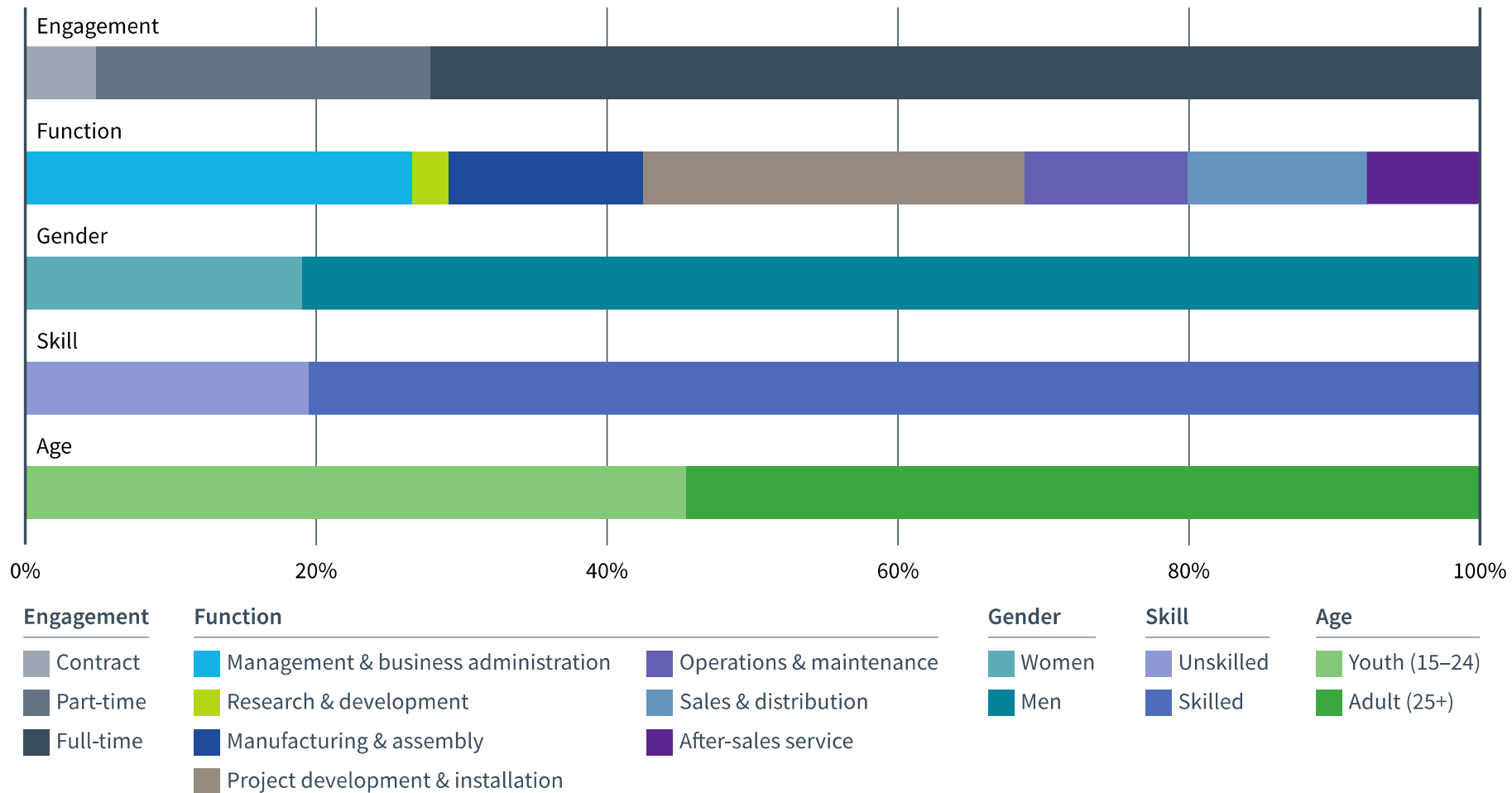
# India: Sector Service Provider Workforce Profile



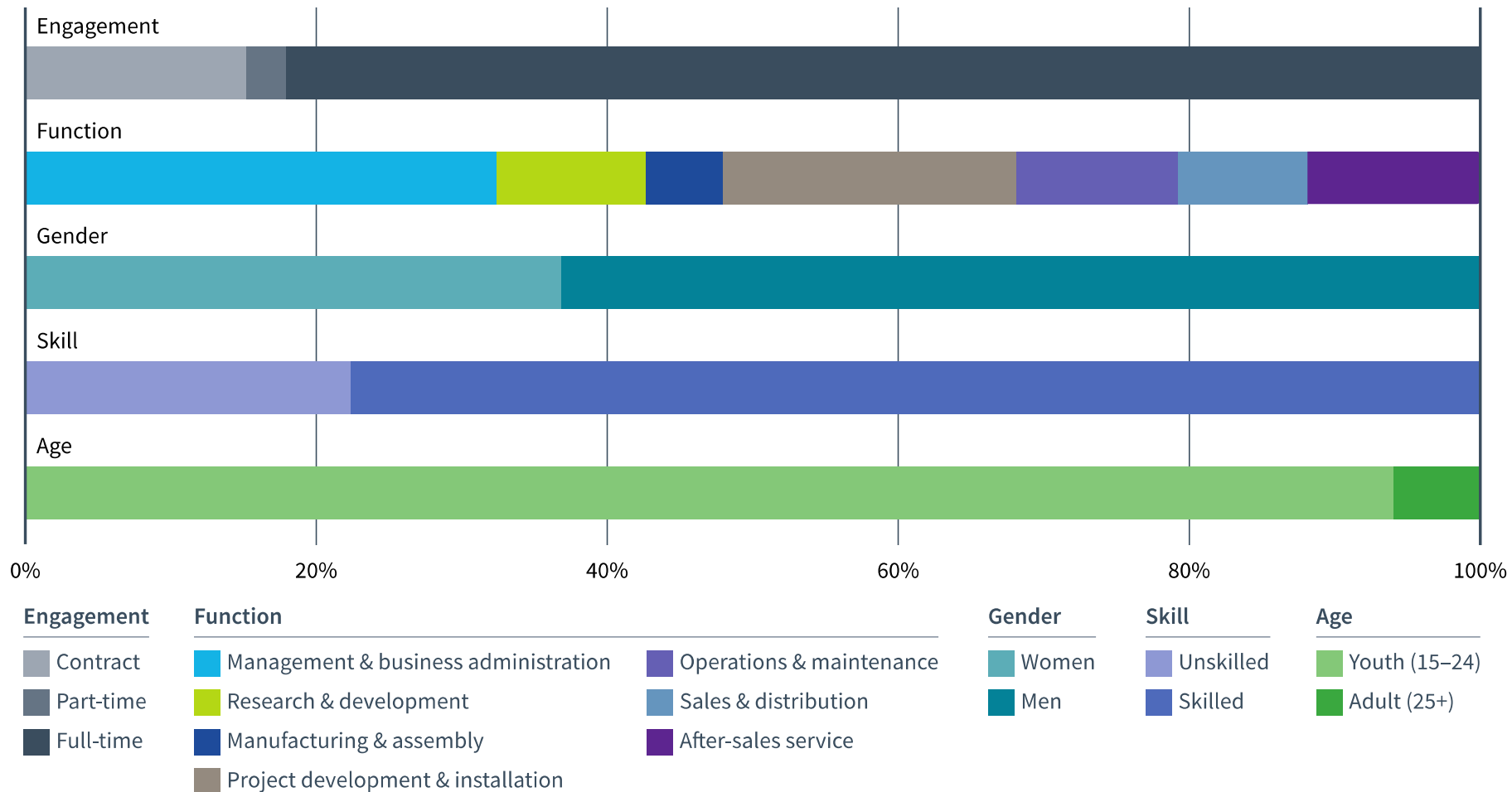
# Kenya: End-User Product Provider Workforce Profile



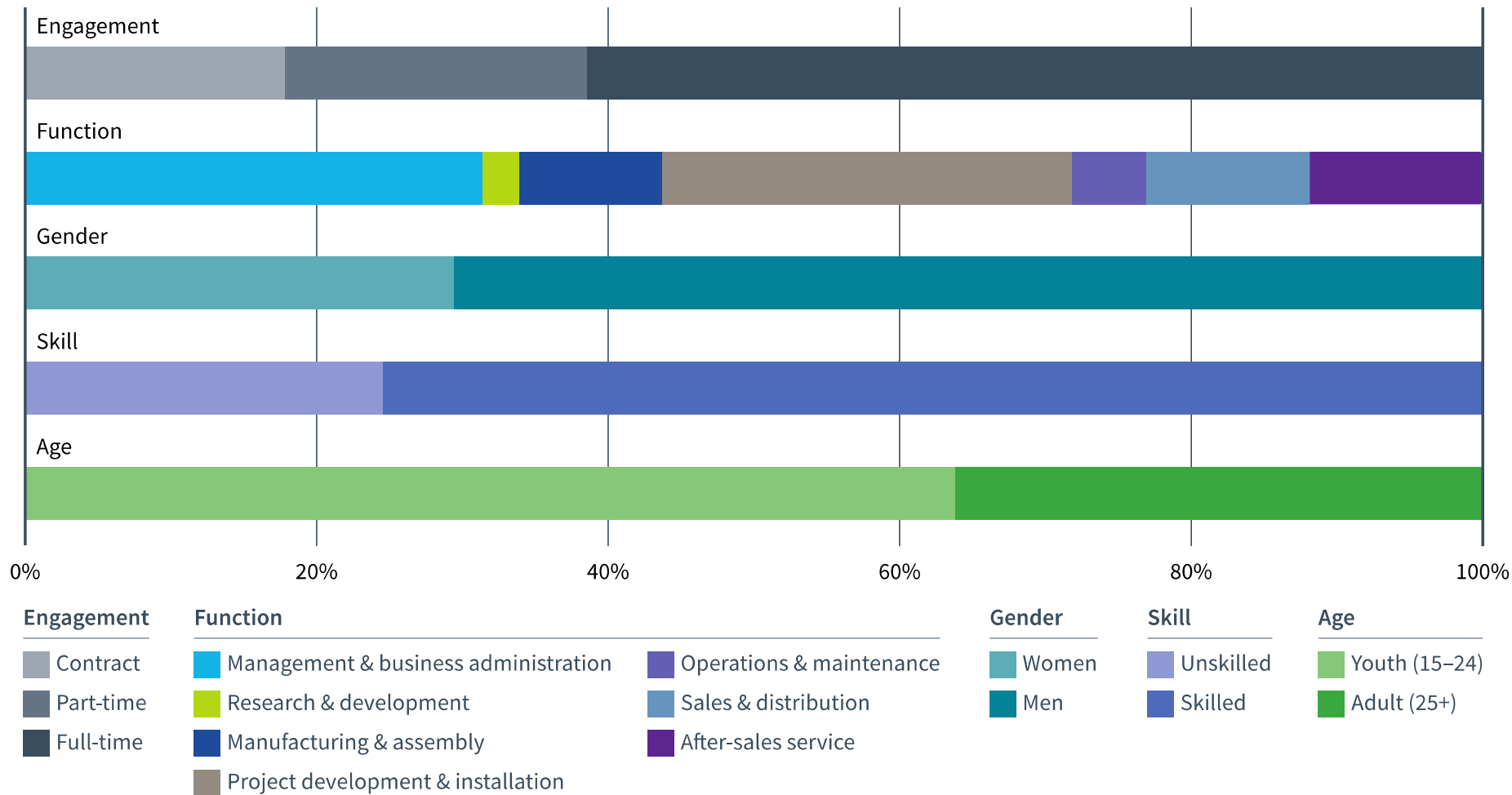
# Kenya: Project Developer & Installer Workforce Profile



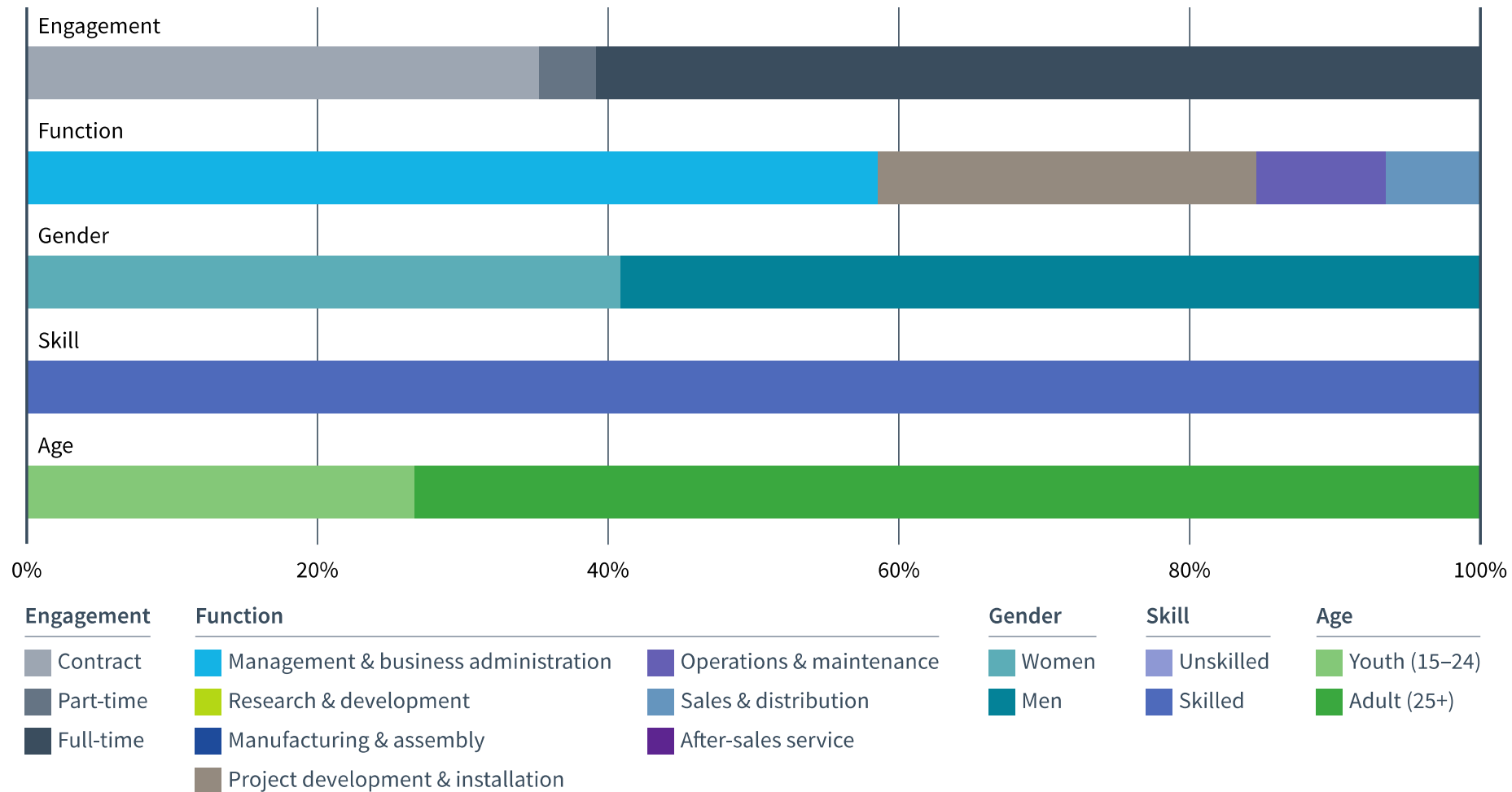
# Kenya: Mini-grid Operator Workforce Profile



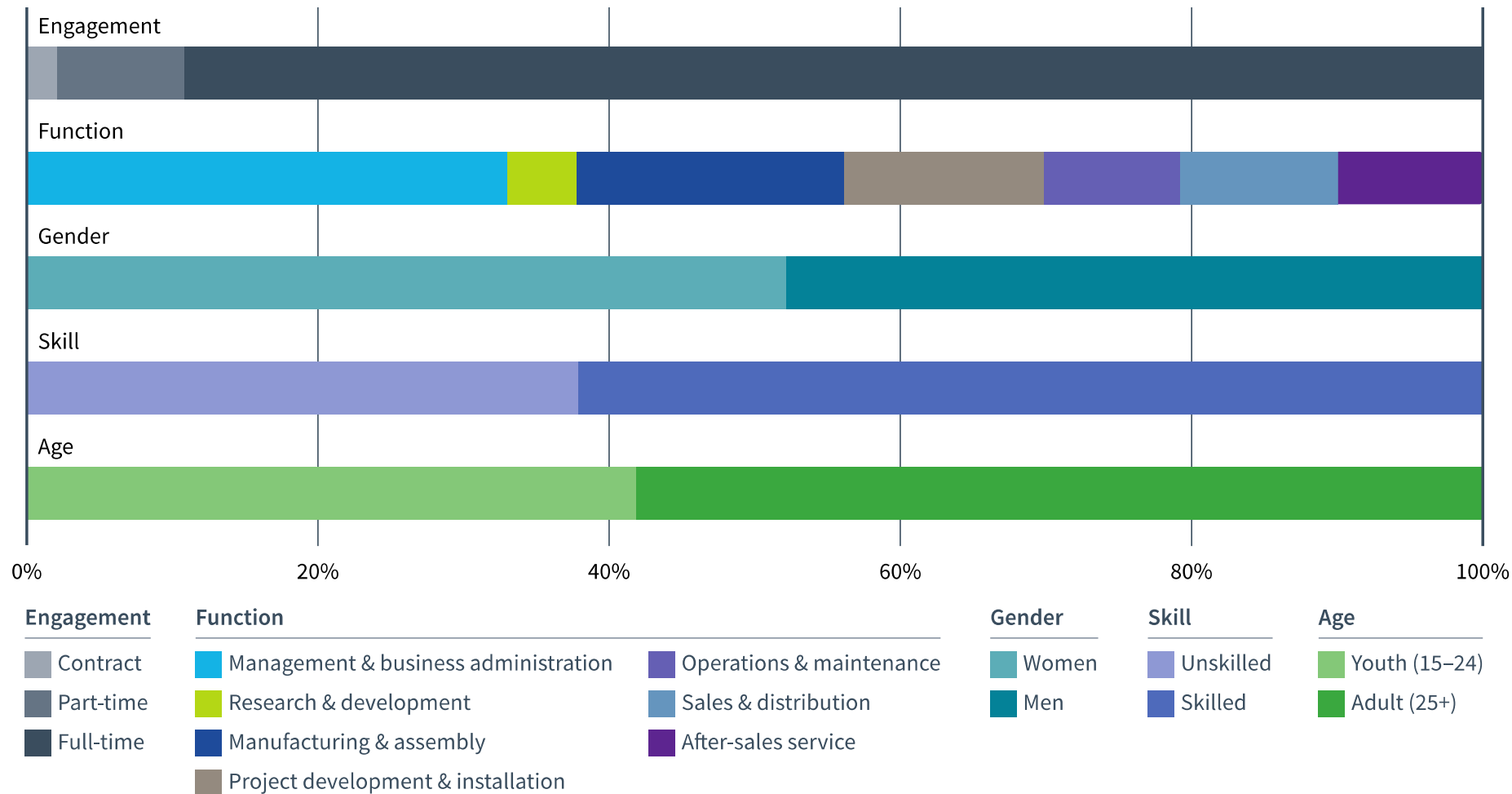
# Kenya: Manufacturing & Upstream Supply Chain Workforce Profile



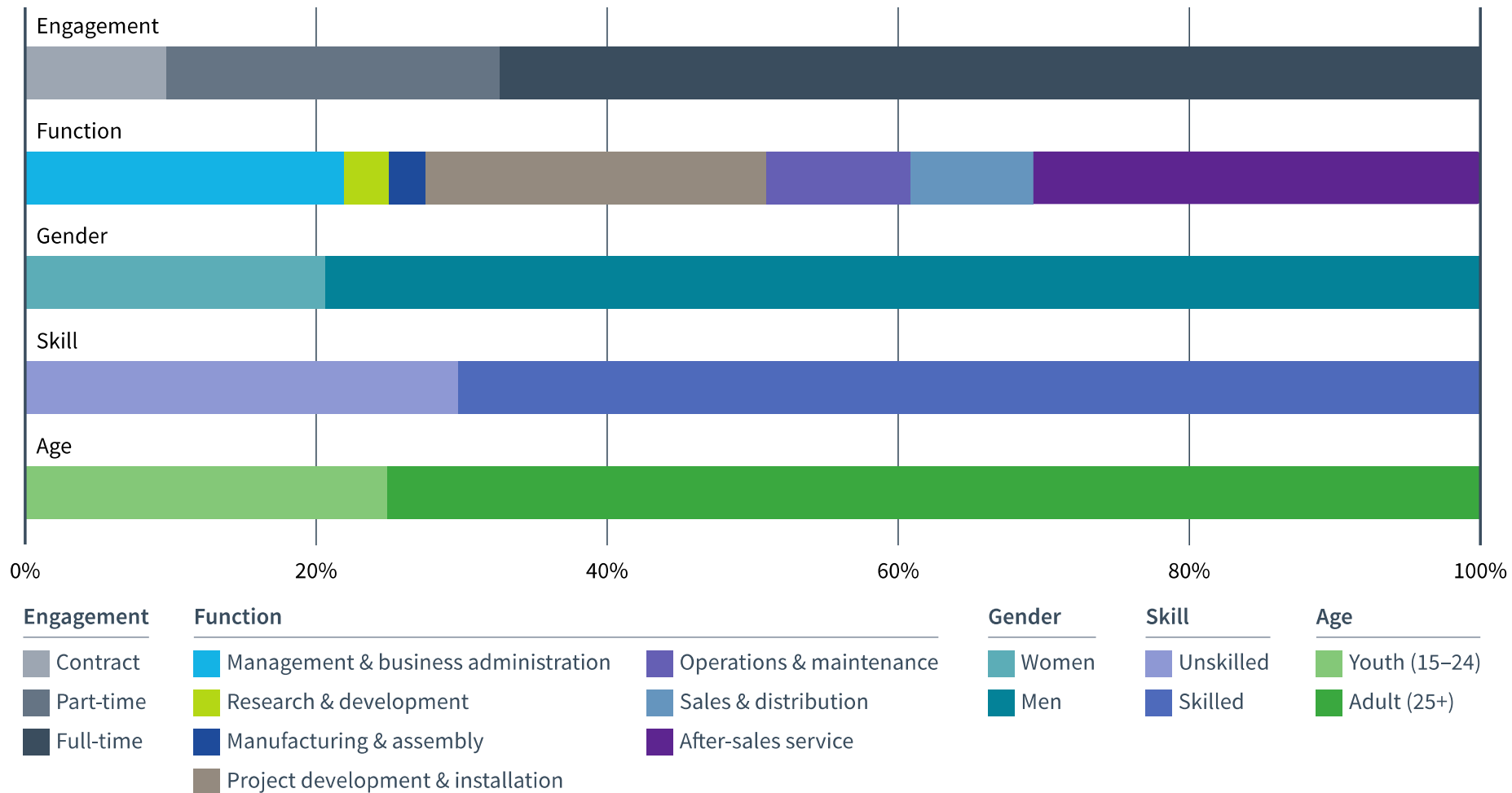
# Kenya: Sector Service Provider Workforce Profile



# Nigeria: End-User Product Provider Workforce Profile

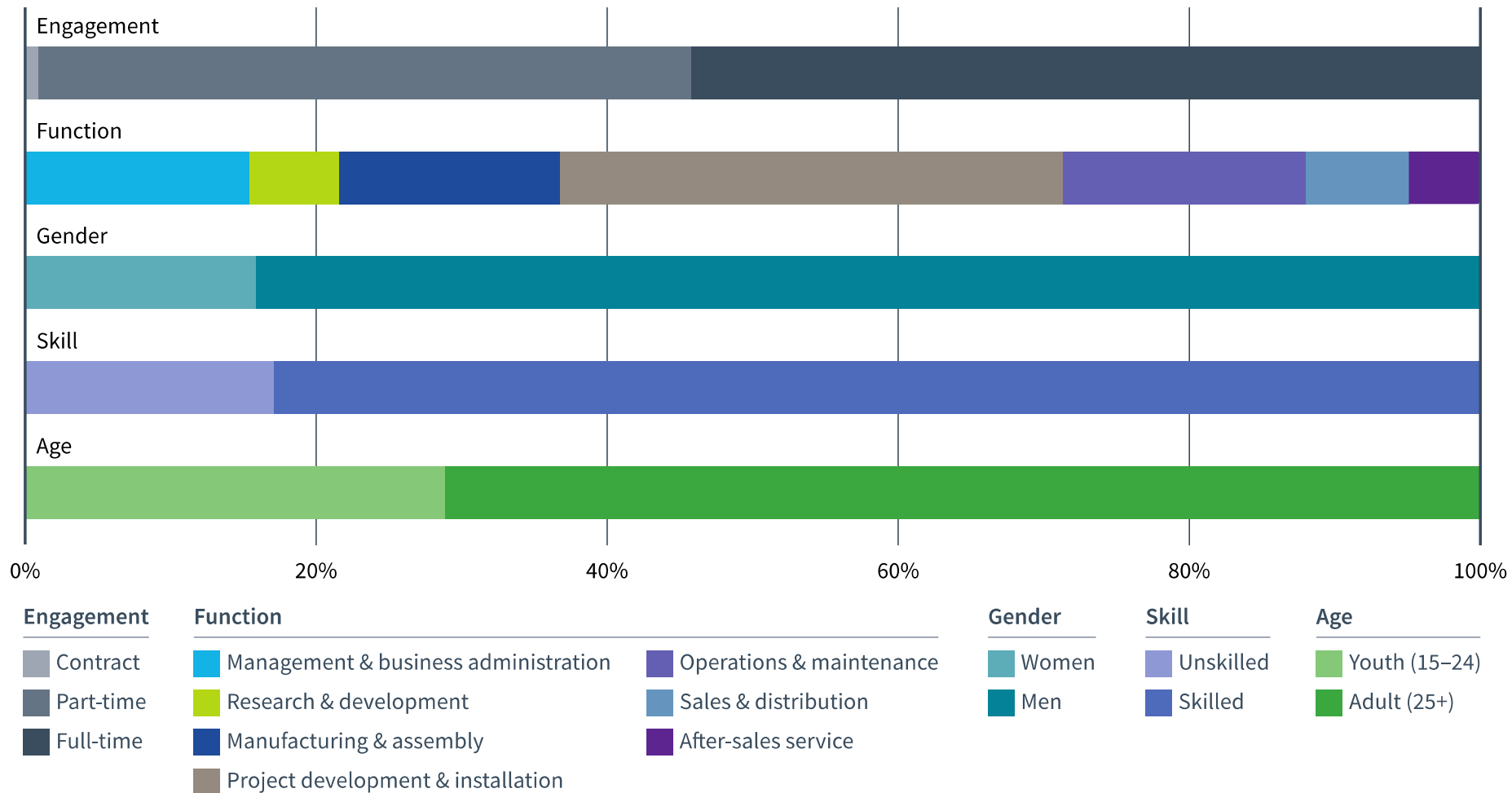


# Nigeria: Project Developer & Installer Workforce Profile



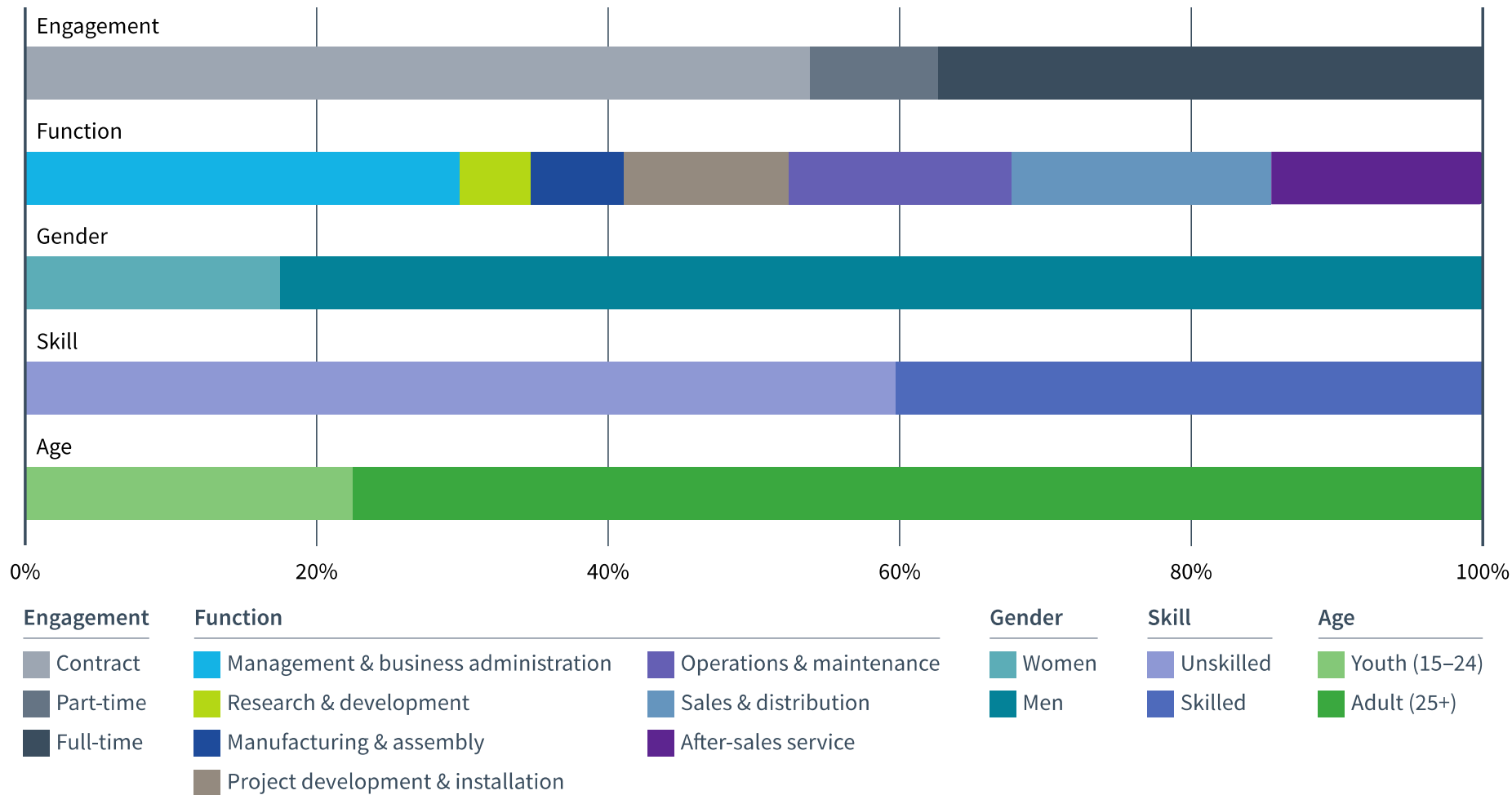


# Nigeria: Mini-grid Operator Workforce Profile

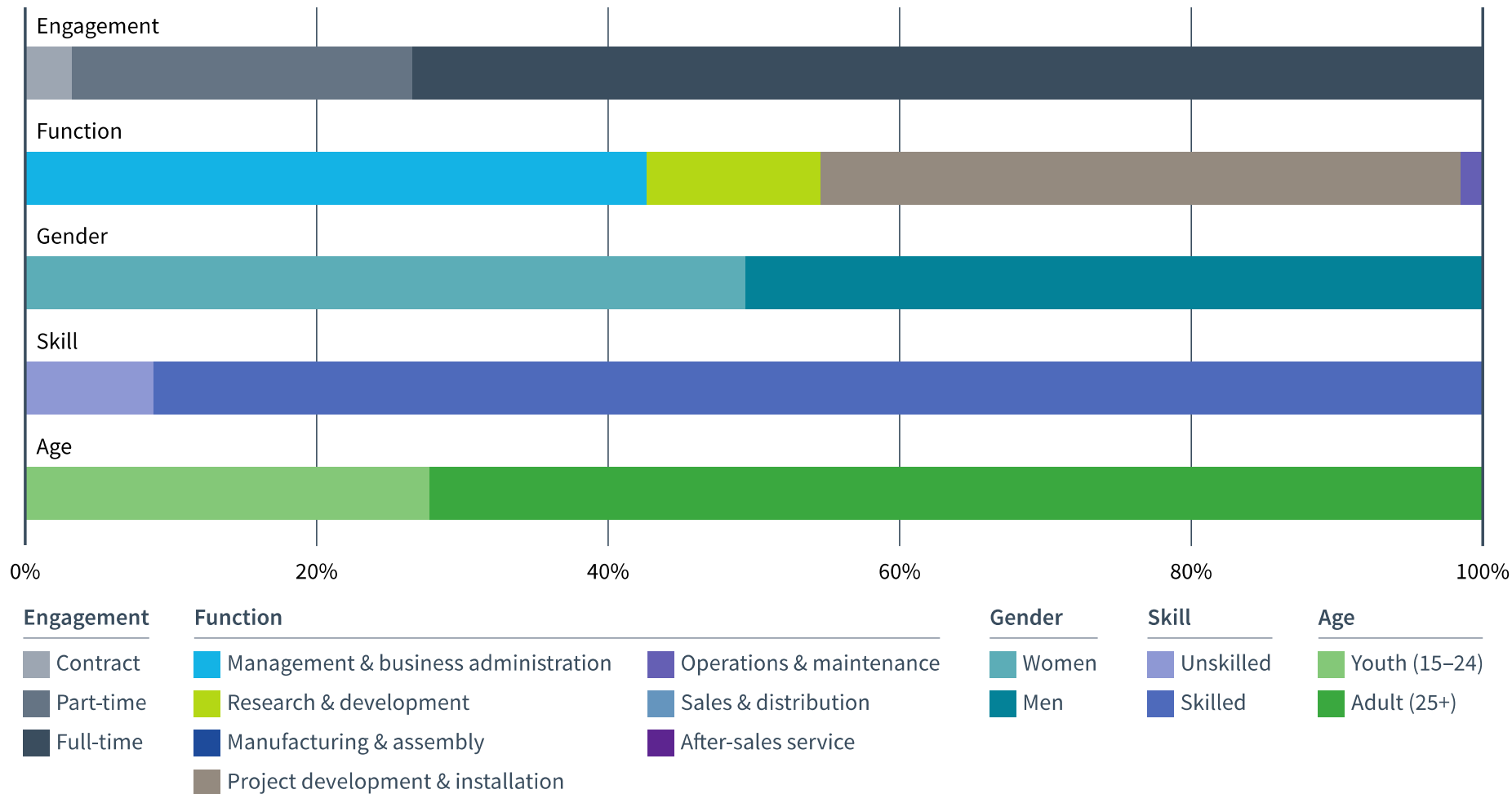


# Nigeria:

## Manufacturing & Upstream Supply Chain Workforce Profile



# Nigeria: Sector Service Provider Workforce Profile



# #PoweringJobs

A Global Campaign to Build an Energy  
Access Workforce

[powerforall.org/poweringjobs](https://powerforall.org/poweringjobs)  
#PoweringJobs