Scaling African manufacturing of electrical components

Final report

April 2026

This programme is funded by UK aid from the UK Government; however, the views expressed do not necessarily reflect the UK government's official policies

Agenda

Executive summary

Detailed report

Component deep dives

Executive summary

Mission 300 (M300) creates **Africa's first large scale**, multi-country predictable **electrification demand wave**: a once-off opportunity to anchor local industrial participation at scale

Without targeted coordination, delivery of M300 will **rely on** (and is already dependent on) **imported components**, which would be a significant lost opportunity for the continent

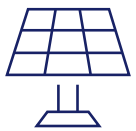
Total addressable component demand is ~$33–37bn on grids and mini grids based on current M300 announcements. This covers 6 major component categories associated with low-voltage connections

Existing manufacturing capacity is sufficient and able to capture a significant portion of the M300 demand in leading markets but remains under-leveraged; fragmentation and low utilization are the primary barriers to competitiveness

Four no-regret plays can capture ~35–50% of opportunity: maximize cable factories utilization in large markets; establish Kenya/Nigeria as regional multi-component hubs; scale local production in protected markets; and localize meter assembly via procurement and OEM partnerships

Addressing structural bottlenecks in capital, working capital, and demand visibility through targeted interventions can **unlock approximately 44,000 jobs** without hindering electrification or disrupting market equilibrium

Engaging multiple stakeholders has enabled us to appropriately size the opportunity and generate enthusiasm for its implementation



Mini grid companies

Collaborated with **5+** mini grid companies to obtain accurate insights into bill of material costs for completed projects

Expert interviews

Interviewed grid specialists and EPC procurement leaders from **Kenya** and **Nigeria** to refine hypotheses for grid extension strategies

Stakeholder consultations

Secured consensus among diverse stakeholders **(e.g., WB, SEforAll, GCPA, Schneider)** to ensure collective commitment and drive successful implementation

Local manufacturers

Validated key assumptions and identified obstacles to scaling, while exploring opportunities for unlocks with **15+** local manufacturers from **Kenya, Nigeria and Ethiopia**

Our five-step approach to assess market opportunity, competitiveness and scale-up potential unlocks of local manufacturing under M300

1. **M300 market potential**
2. **Existing manufacturing**
3. **Key plays**
4. **Potential unlocks**
5. **Job creation potential**

Bottom-up sizing of market potential (in USD) of electrical components using country-level electrification targets (grid and mini-grid connections)

Benchmark of existing manufacturing capacity, utilization, cost competitiveness, and structural constraints across key distribution components

Assessment of component-country opportunities and identification of priority plays based on demand scale, cost competitiveness, and policy environment

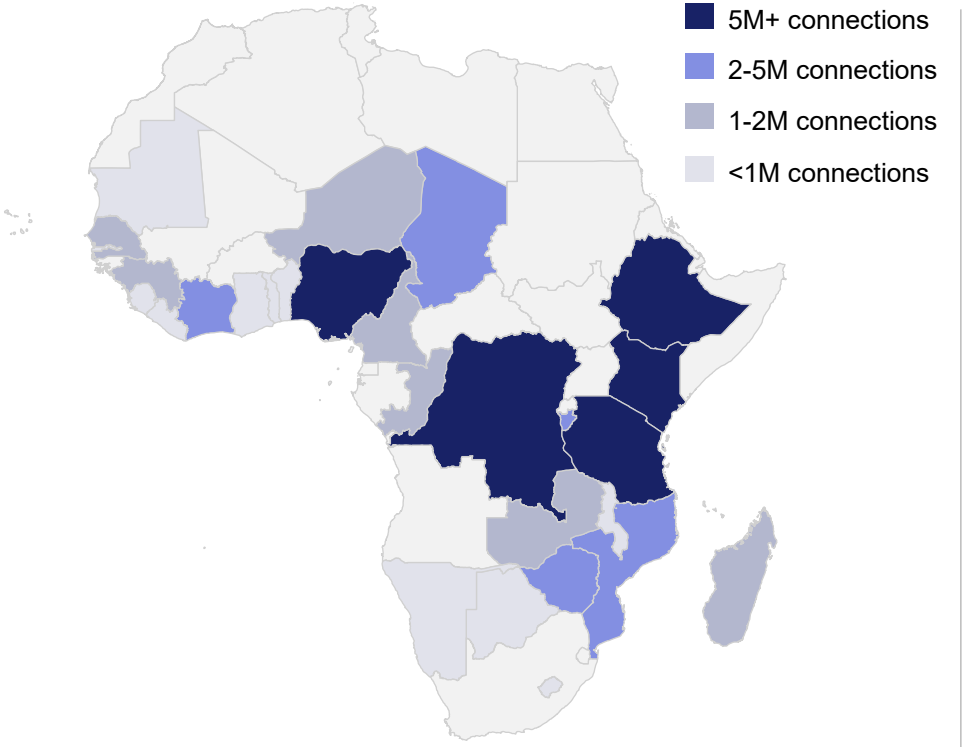
Identification of targeted demand-side, industrial, financial and policy unlocks required to enable and scale priority manufacturing plays

Estimation of jobs using component-level revenue pools and benchmarks of jobs per $m revenue, distinguishing direct and indirect jobs creation from the identified plays

1. Mission 300 creates the first predictable, multi-country electrification demand wave in Africa's history

Including only the 30 countries that published their National Compact before April 2026

Target grid and mini grid connections[1] (est. 2030)



Target connection type by 2030[1], mn		Scope	Rationale
Grid	47	• All electrical components including transformers, cables, meters, poles, …etc.	• Current competitors in Africa have established market presence and relative scale • Market not analyzed before
Mini grid	22	• Batteries and solar panels fall outside the scope of this initiative	• Multiples analysis conducted before • African players face high challenges to be competitive
Standalone Solar	23	• Standalone solar systems and their components are excluded from the project scope	• Very limited overlap with grid and mini grids • Highly commoditized market with scarce African production
Total	92		

1. Targets based on the announced National Energy Compacts, and the indicated split by country for these compacts before April 2026

Source: Market opportunity model, National Compacts, Expert interviews

1. ~$40-60bn total market under M300, concentrated in 5 network-intensive countries representing ~50% of the demand

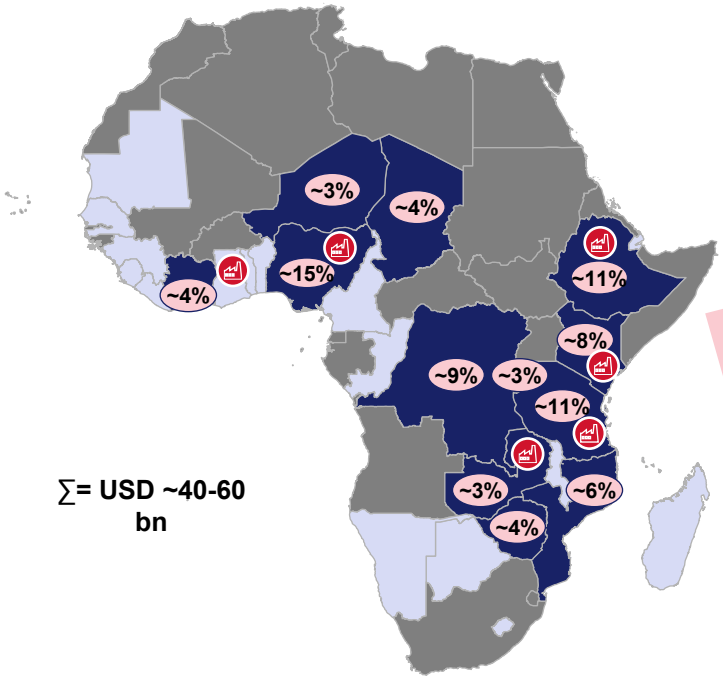
Including only the 30 countries that published their National Compact before April 2026

Excluding Solar Home Systems

Including only electrical components market related to distribution (i.e., MV, LV & solar cables, MV/LV transformers, MV & LV switchgears, distribution boards, electric meters and concrete & wood poles)

Total market value from M300 new connections (incl. all BOM items), 2025-'30, USD bn

USD 1+ bn | USD <1 bn | % Share of total M300 market, % | Identified local industrial capabilities or access to raw materials



∑= USD ~40-60 bn

Countries shown in subsequent pages are selected based on:
(i) **largest addressable electrical components market** (e.g., Kenya, Nigeria, Tanzania, DRC, Ethiopia), and/or
(ii) **existing industrial base** or access to key raw materials (e.g., Ghana, Zambia

Category	Total M300 market value, USD bn	Electrical components market value, USD bn		Value per year², USD
M300 grid market¹	~35-40	~27-32	A	~6bn
M300 mini-grid market	~12-17	~5-10	B	~1.5bn
Total M300 market	**~40-60**	**~33-37**		**~7.5bn**
+ Additional annual recurring opportunity from electrical components replacement market				**~4-6bn**

1. Including only distribution BOM items and excluding generation and transmission BOM items (e.g., electricity generators, HV cables) // 2. Electrical component market value amortized on 5 years (from 2025 to 2030)

Source: Market opportunity model, National Compacts, Expert interviews

1. Bottom-up value chain sizing of M300 electrical components reveals ~$33-37bn opportunity in distribution electrical components

Including only the 30 countries that published their National Compact before April 2026

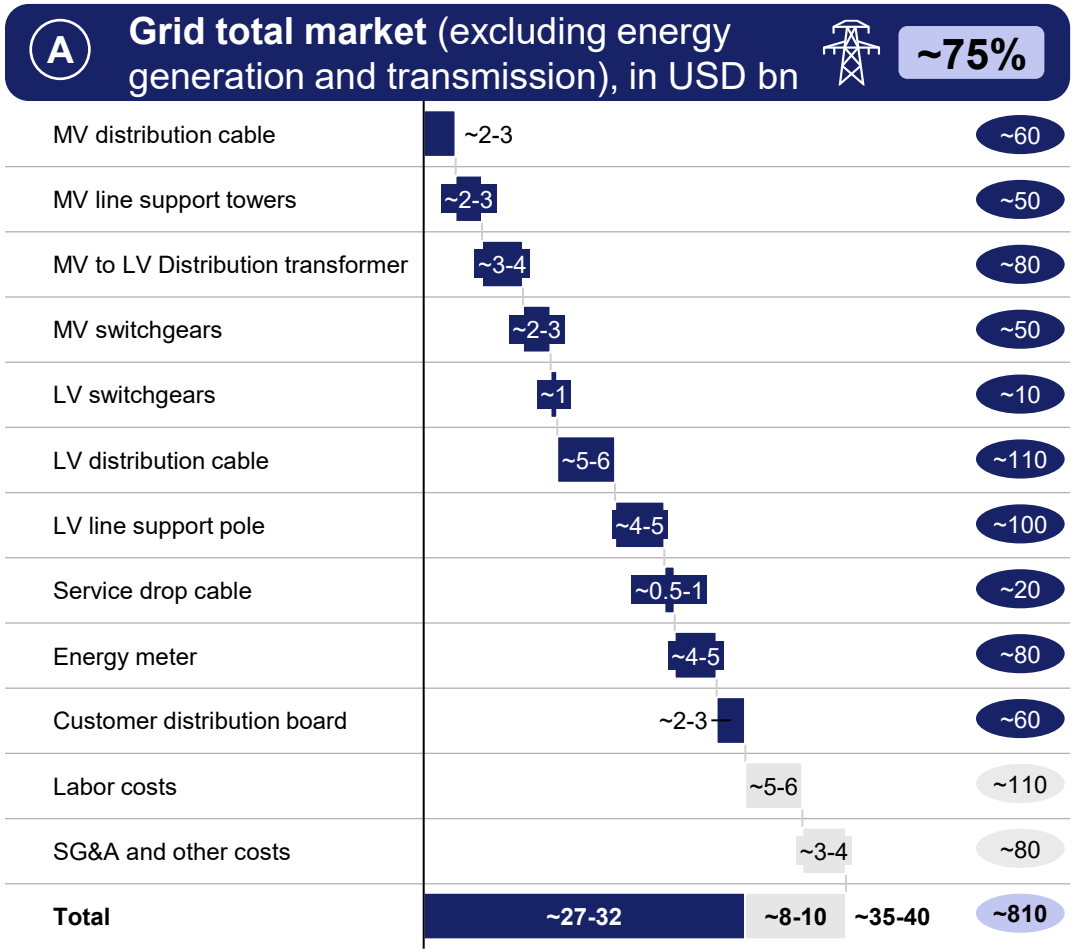
TOTAL MIGHT NOT SUM UP DUE TO ROUNDING

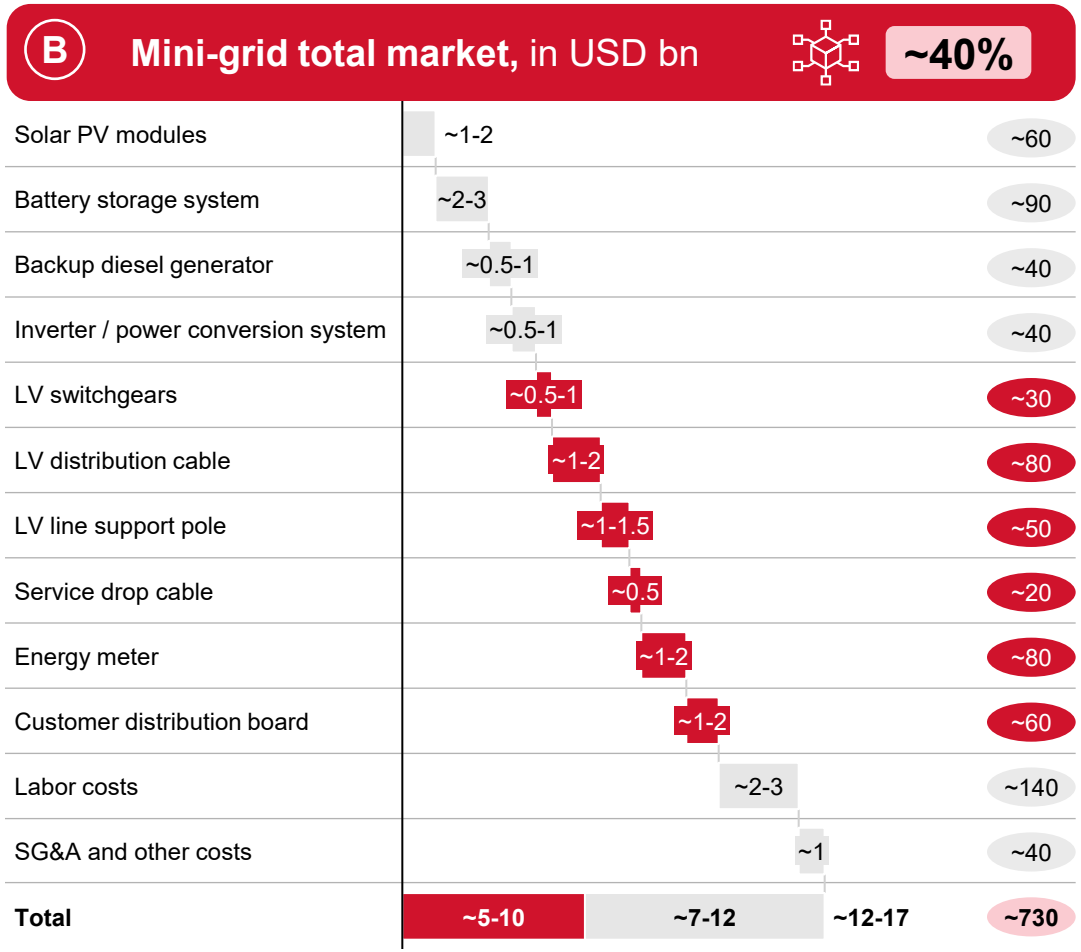
% Share of in-scope components for MA

Average cost per connection, in USD/connection

In scope for MA

Out of scope





Source: Market opportunity model, Expert interviews

2. Substantial, underutilized local manufacturing capacity in distribution components provides an immediate platform to capture M300 demand

NON-EXHAUSTIVE

Components	Identified M300 manufactuers[1]	Existing capacity[2]	Serviceable M300 demand[3]
Cables	70-80	~400,000 km	~60-80%[4]
MV/LV transformer	40-50	~100,000 units	~40-60%
Switchgear *(assembly)*	30-40	~80,000 units	~40-60%
Distribution board *(assembly)*	40-50	~5 mn units	~40-60%
Electric meters *(assembly)*	30-40	~12 mn units	~70-90%
Poles *(wood only)*	40-50	~4 mn units	~80-100%

200+ local manufacturers identified, currently running at **~20%** utilization, with the capacity to meet **~50-70%** of M300 demand

What we heard

> *We have a lot of capacity and capability, but the actual production is currently at 20%*
>
> ***– CEO of leading Kenyan cable manufacturer***

> *If we run the facility fully on distribution boards, our capacity is above what the local tenders can absorb*
>
> ***– CEO of leading Kenyan switchgear manufacturer***

> *Large electrification tenders are DFI-funded and duty-free, effectively locking local manufacturers out of utility-scale demand*
>
> ***– CEO of leading Kenyan cable manufacturer***

> *The quality is there, and maybe even better than what is being installed, but you need to trust local manufacturers*
>
> ***– CEO of leading Nigerian meter manufacturer***

1. Non-exhaustive mapping, includes local assembly, ranged numbers given some manufacturers' capabilites are hard to assess // 2. Based on assumed average size of factories: Cables – 5000km, Transformer – 2000, Switchgear – 2000, Distribution board – 100,000, Meter – 250,000, Poles – 100,000 // 3. Estimated yearly M300 demand covered by existing local production capacity at 100% utilization // 4. Covering up to 100% of LV demand and ~25% of MV demand

Source: S4G McKinsey, Manufacturer interviews

2. Local manufacturers face structural cost disadvantages vs imports, independent of policy environments

Components	Average price premium of African manufacturing vs Chinese imports (excl. tariffs)[1]
Cables	~5-20%
MV/LV transformer	~20-40%
Switchgear *(assembly)*	~10-30%
Distribution board *(assembly)*	~10-30%
Electric meters *(assembly)*	~20-40%
Poles *(wood only)*	*n.a*[2]

Structural cost drivers hindering competitivity of African manufacturers (excl. policy)

Scale and capacity utilization

Fragmented and inconsistent demand leads to low utilization rates (~20% vs. ~70–80% in China), preventing economies of scale and increasing unit costs

Cost of debt

High financing costs for both CAPEX and working capital (interest rates >15% vs. ~3–5% in China), combined with FX constraints, limit the ability to invest and scale

Unreliable and costly power

Frequent outages and grid instability force reliance on self-generation, driving electricity costs up to ~2-3x China levels and increasing operational inefficiencies

Labor productivity

Productivity gaps (~20–40% of China levels[3]) drive higher labor input per unit, eroding the benefit of lower African wages

Export incentives for Chinese manufacturers

Chinese exporting manufacturers benefit from government-backed incentives (e.g., VAT rebate system of ~13%), effectively lowering export prices and widening the cost gap vs African producers

1. Average cost difference of should cost analysis for Kenya and Nigeria relative to the China landed cost, before any duties are applied on the finished good // 2. Poles operate under a local-for-local manufacturing basis, with main competition coming from South African exports // 3. Based on ILO productivity index

Source: Should cost model, Manufacturer interviews, Press search

2. Structural barriers limit local manufacturers' access to high-value utility tenders

Duty-free imports	Large utility tenders are typically **exempt from import duties**, removing any tariff protection and exposing **higher-cost local manufacturers directly to lower-priced international competitors**
Eligibility requirements	**High minimum turnover, past contract requirements, and performance guarantees** effectively disqualify certain local manufacturers from participating in large-scale international tenders
Bundled contracts	**Bundled EPC contracts and large lot sizes** favor vertically integrated international firms, leaving standalone local manufacturers unable to compete or even participate
Perception of quality	Utilities **perceive a quality gap between local manufacturing and international suppliers** with proven large-scale track records, limiting local manufacturers' participation in tenders despite meeting international standards
Existing relationships	**Long-standing relationships with international OEMs**, combined with proven delivery track records and integration with existing systems, make it difficult for local manufacturers to displace incumbent suppliers

Source: Manufacturer interviews

2. Local manufacturers are already deploying targeted levers to overcome key competitiveness barriers

Barrier	Example unlocks in place by local manufacturers
Scale and capacity utilization	• **Diversifying into adjacent product lines** (e.g. phone kiosks, metal bed frames) to stabilize volumes and improve utilization of existing machinery
Cost of debt	• **Prioritizing phased, internally funded expansion** and minimizing external debt exposure to reduce financing costs • Leveraging **low-cost financing from local DFIs**
Unreliable and costly power	• Relocating or expanding to dedicated **industrial zones** offering **independent, reliable, and lower-cost power** vs. diesel self-generation
Labor productivity	• Implementing structured **training programs and apprenticeships** to build skills and improve operational efficiency

Other non-price competitiveness barriers

Upfront price premium vs imports

Higher unit costs vs imports limit competitiveness in tenders, leading manufacturers to **reframe their value proposition around total cost of ownership**, including faster delivery and after-sales support

Perception of quality

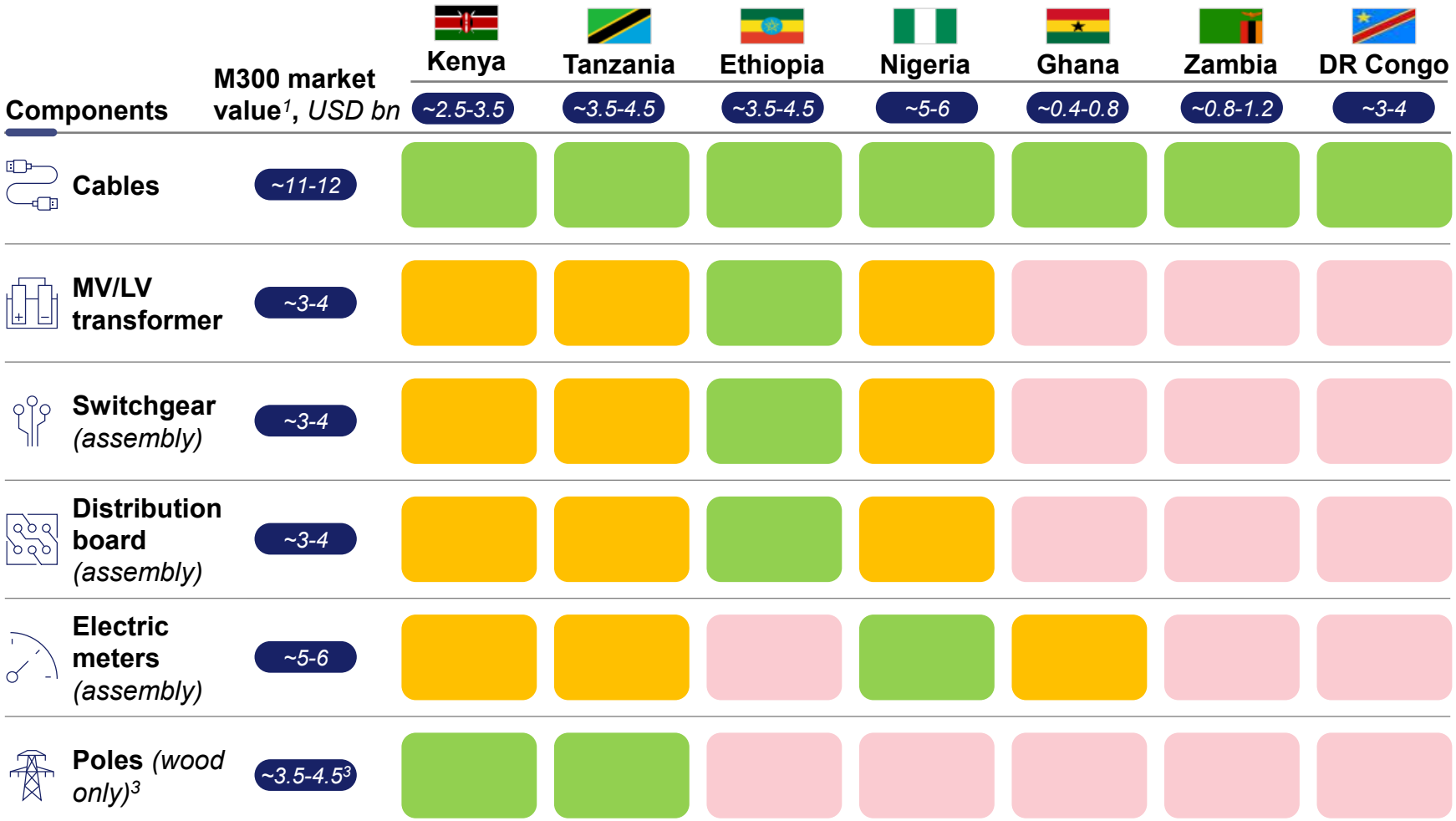
Perceived quality gap of local products vs imports constrain uptake despite meeting/exceeding standards, prompting manufacturers **to invest in international certifications, branding, and targeted awareness campaigns** to shift customer perception and build trust

Source: Manufacturer interviews

3. Under current tariff regimes, favorable local manufacturing conditions are concentrated across select components and priority markets

Base case scenario is a greenfield factory, running at high utilization across countries applying official tariffs vs China

Favorable | Unlockable | Unlikely



Methodology

- Benchmarking against imports is conducted using a standardized base case, while capturing local variations in cost structures, demand, and policy to reveal where competitiveness is structurally achievable
- We establish a three-tier classification of country-component viability:
  - **Favorable:** Local manufacturing is cost-competitive in our base case scenario, supported by sufficient scale and enabling conditions
  - **Unlockable:** Viability can be achieved under targeted interventions with precedent[2] (e.g., demand aggregation, local procurement policy, tariff enforcement)
  - **Unlikely**: Key barriers such as lack of demand, constrained industrial base & unsupportive policy make local manufacturing unfavorable

1. Market value of components includes all 30 M300 countries // 2. I.e., in the case of transformers in Kenya, there is precedent for protection tariffs to be put in place once local manufacturing capacity has been demonstrated // 3. Given we only focus on wood poles, stated market size is ~50% of total pole market size

Source: Expert & manufacturer interviews, Market, opportunity model, Should cost model, Press search

3. Based on the economics of base case, four targeted plays have been identified to capture M300-driven demand through regional scale-up of manufacturing and assembly hubs

Approaches :
- Identified plays
- Scale existing champions domestically
- Achieve scale through regionalization
- Build new champions

Components	Kenya	Tanzania	Ethiopia	Nigeria	Ghana	Zambia	DR Congo
Cables	1	1	1	1	1	1	1
MV/LV transformer	2	3		2	n.a	n.a	n.a
Switchgear *(assembly)*		3			n.a	n.a	n.a
Distribution board *(assembly)*		3			n.a	n.a	n.a
Electric meters *(assembly)*	4	4	n.a	4		n.a	n.a
Poles *(wood only)*			n.a	n.a	n.a	n.a	n.a

Identified plays

~35-50% of total market value can be met by scaling existing players or achieving scale through regionalization across 4 plays:

1. **Unlock domestic cable demand on largest countries to fully utilize existing manufacturing capacity**
   $5-7bn
2. **Make Kenya and Nigeria regional champions within regional economic zones**
   $3-5 bn[2]
3. **Scale locally anchored manufacturing in protected markets[1] to capture domestic demand**
   $2-4 bn
4. **Scaling local meter assembly through procurement policy and OEM partnerships**
   $2-3 bn

∑ = $12-19 bn

1. Ethiopia with strong import constraints (tariffs across components and FX access) create a protected domestic market; Tanzania has strong local presence/partner requirements and procurement practices which limit import penetration
2. Market size estimated based on full market demand for Nigeria and Kenya, plus additional ~33% of other ECOWAS & EAC countries demand. Market potential of other plays (e.g., cables and meters) excluded to avoid double-counting

Source: Expert & manufacturer interviews, Should cost model, Press search

4. Local manufacturing constraints can be addressed through a focused set of unlocks across 4 main categories

Key unlock

Demand & market structure

Industrial Ecosystem

Finance

Policy

A Commit utilities to long-term offtake agreements with guaranteed volumes to unlock demand visibility

B Establish M300 certification and pre-qualification to validate local manufacturing and unlock access to procurement

Develop integrated industrial zones with reliable power and infrastructure to ensure production continuity at scale

Enable OEM partnerships and local assembly models to accelerate capability transfer and scale-up

Provide supply chain finance and working capital solutions to enable production scale-up and reduce cash constraints

Mobilize blended finance to reduce cost of capital and unlock manufacturing CAPEX investment

C Implement local content and preferential procurement policies to prioritize certified local manufacturers in tenders

Ensure stable and transparent tariff regimes to protect local manufacturing and provide investor visibility

4. Translating M300 demand into bankable local manufacturing requires three priority demand-side unlocks

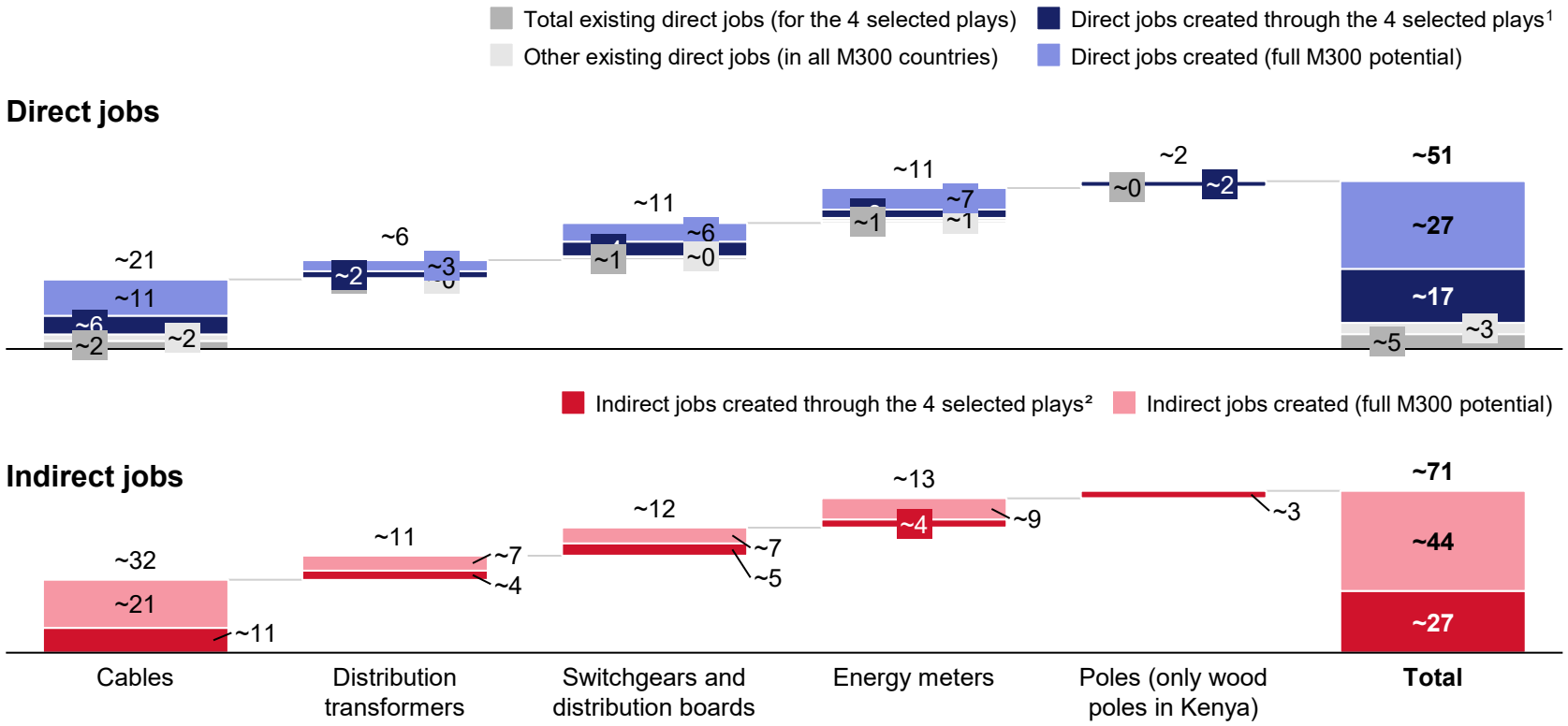
Unlock	A **Secure long-term off-take commitments**	B **Institutionalize M300 certification/ pre-qualification**	C **Implement local content and preferential procurement**
Description	Commit utilities to long-term offtake agreements with guaranteed volumes to unlock demand visibility	Establish M300 certification and pre-qualification to validate local manufacturing and unlock access to procurement	Implement local content and preferential procurement policies to prioritize certified local manufacturers in tenders
Key actions by stakeholder	**DFIs** provide payment guarantees and de-risk utility procurement **Governments** commit multi-year electrification budgets **Utilities** include minimum off-take clauses in contracts Banks lend against guaranteed receivables	**Governments and DFIs** define and enforce M300 standards **DFIs** support certification infrastructure and audits **OEMs** provide technical support and quality systems **Manufacturers** upgrade processes to meet pre-qualification/certification requirements	**Gov / Regulators** set local content thresholds and enforce procurement rules **Utilities** prioritize compliant local suppliers **Industry** scales capacity to meet demand
Examples	Eskom / NTCSA secured **long-term transformer procurement** (10-year pipeline), enabling local manufacturers to invest in capacity	Nigeria's NERC publishes **official metering supplier registries**, validating local manufacturing capacity in public tenders South Africa SABS certification system enforces **local content thresholds** in public procurement	Nigeria meter sector drove rapid growth of **local meter assembly capacity** Kenya meter assembly ecosystem attracted **OEM FDI under local procurement tenders** Morocco railway sector (ONCF) implemented a **phased localization strategy**, progressively increasing local content requirements to build a domestic rail manufacturing ecosystem

Source: Press release, interview with manufacturers, OEMs and grid/mini-grid operators

5. Strategic scaling of manufacturing capacity could create ~17k direct employment opportunities on top of ~8k current direct jobs to be maintained

Including only the 30 countries that published their National Compact before April 2026

Job creation assessment of M300 project (if all demand is captured by local manufacturers), in '000 jobs, by 2030



1. The direct jobs has been estimated using jobs ratio of African companies for each category
2. Benchmark based (e.g., Indirect jobs could include the jobs related to the production and supply of components such as glass and frames)

Source: Expert interviews, press search, UNIDO report on multiplicator

Note: Full M300 potential has been estimated on the full M300 installation market (regardless of capability to serve market with local manufactured items)

Key takeaways

- **Scaling manufacturing is not only about job creation** but also about sustaining and securing the existing industrial workforce
- **Job intensity is structurally higher in upstream components** (e.g., cables) vs assembly-led segments, reflecting higher localization of value chains
- **Each direct job drives significant indirect employment** across suppliers, logistics and services, highlighting strong ecosystem spillovers
- **Poles assessment remains partial (Kenya-focused)**, with potential upside but high country-level variability in materials, standards and supply chains

Next steps

Validate industrial feasibility with anchor manufacturers and transaction partners

Test demand aggregation and localization potential with public stakeholders (e.g., World Bank, SEforALL, national utilities)

Align stakeholders on the priority plays and define a coordination mechanism

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Context and objectives

- Market sizing
- Competitiveness assessment
- Current challenges
- Scaling approach and implementation
- Job creation
- Governance

Component deep dives

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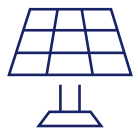


Mini grid companies

Collaborated with **5+** mini grid companies to obtain accurate insights into bill of material costs for completed projects

Expert interviews

Interviewed grid specialists and EPC procurement leaders from **Kenya** and **Nigeria** to refine hypotheses for grid extension strategies

Stakeholder consultations

Secured consensus among diverse stakeholders **(e.g., WB, SEforAll, GCPA, Schneider)** to ensure collective commitment and drive successful implementation

Local manufacturers

Validated key assumptions and identified obstacles to scaling, while exploring opportunities for unlocks with **15+** local manufacturers from **Kenya, Nigeria and Ethiopia**

Mission 300 creates the first predictable, multi-country electrification demand wave in Africa's history

With ~$48bn committed to electrify approximately 300 million people, M300 establishes a unique opportunity to enable local scaling

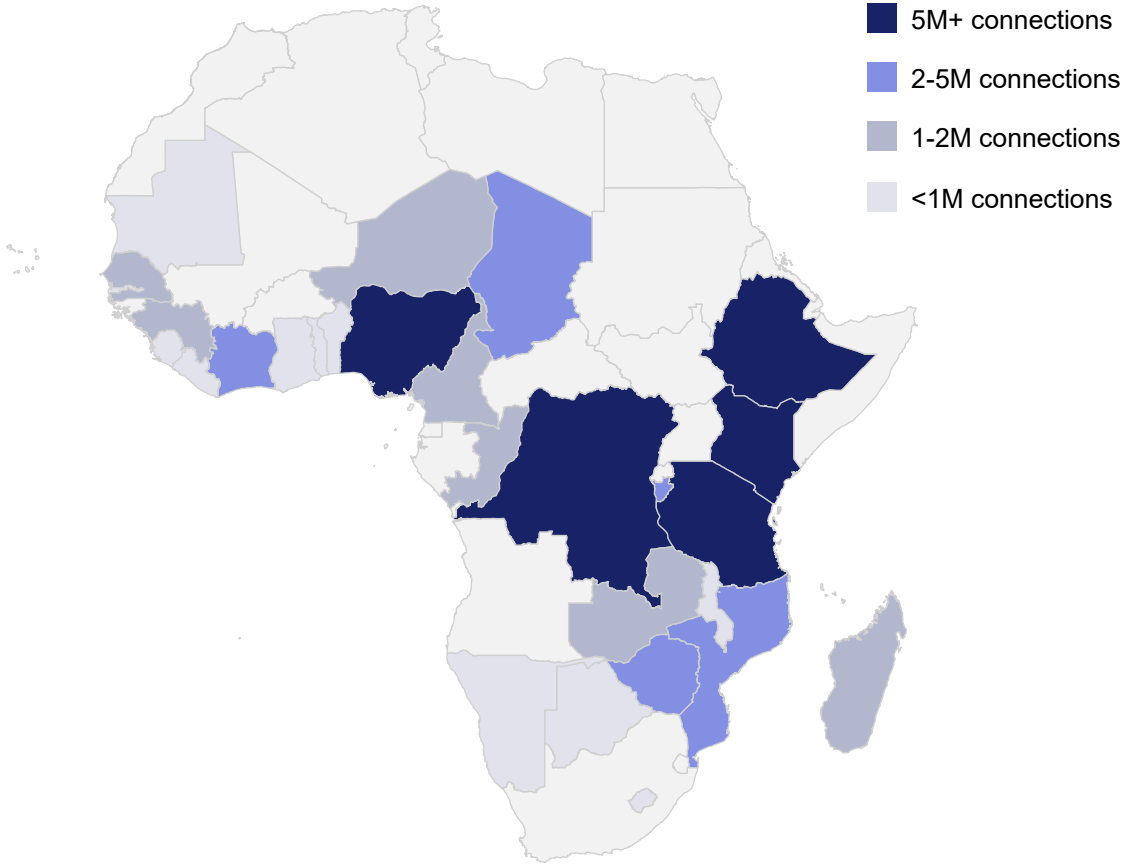
Mission 300 represents a structural scale opportunity:

- ~$48bn committed to expand grid and mini-grid access
- ~70 million new grid and mini-grid connections targeted by 2030 based on the National Energy Compacts published in 2025
- Multi-country rollout across 30 national compacts
- Creates the first predictable, time-bound demand wave for electrical distribution components

Concentration creates regional aggregation opportunities

- Over 40 million[1] total connections concentrated in just five countries
- Relatively balanced demand distribution across regions
- Regional hubs enable scalable aggregation of component demand

Target grid and mini grid connections[1] (est. 2030)



1. Targets based on the announced National Energy Compacts, and the indicated split by country for these compacts

Our primary focus is on grid and mini grid components, excluding batteries and generation assets

Target connection type by 2030[1], mn	Scope	Rationale
Grid 47	• All electrical components including transformers, cables, meters, poles, …etc.	• Current competitors in Africa have established market presence and relative scale • Market not analyzed before
Mini grid 22	• Batteries and solar panels fall outside the scope of this initiative	• Multiples analysis conducted before • African players face high challenges to be competitive
Standalone Solar 23	• Standalone solar systems and their components are excluded from the project scope	• Very limited overlap with grid and mini grids • Highly commoditized market with scarce African production
Total 92		

1. Targets based on the announced National Energy Compacts, and the indicated split by country for these compacts

Source: Country energy compacts

Market opportunity model focuses primarily on electricity distribution components in scope for manufacturing scaling in Africa

Electrical distribution components estimated in market model opportunity

Items costs estimated in market opportunity model but not electrical distribution components

Items excluding from market opportunity model

NOT EXHAUSTIVE

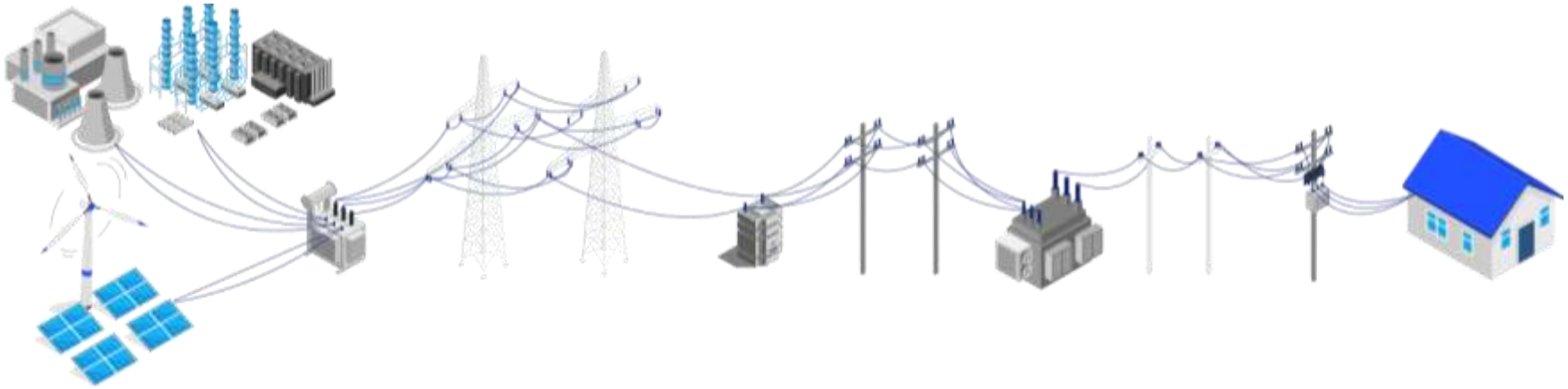
Electricity flow

Generation
Production of electricity through various energy sources

Transmission
Transport of electricity over long distances

Distribution
Delivery of electricity to homes and businesses

Illustration



Grid BOM items

Energy generator	HV transformer	MV transformer	MV switchgear	LV distribution cable	Service drop cable	Customer distribution board
	HV distribution cable	MV distribution cable	MV to LV transformer	LV line support pole	Energy meter	
	HV line support towers	MV line support towers	LV switchgear			

Mini-grid BOM items

Solar PV modules	Inverter / power conversion system	LV switchgear	LV distribution cable	Service drop cable	Customer distribution board
Battery storage system			LV line support pole	Energy meter	
Backup diesel generator					

Source: Market opportunity model, Expert interviews

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Component deep dives

Market opportunity model covers core bill of materials (BOM) items from grid connection and micro-grid of 30 African countries

	Countries	Costs type	Grid type & BOM items
What is included in Market opportunity model ✓	**30 countries who published their National Compacts[1] :** Benin, Botswana, Burundi, Cameroon, Chad, Comoros, Côte d'Ivoire, DR Congo, Ethiopia, Gambia, Ghana, Guinea, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mauritania, Mozambique, Namibia, Niger, Nigeria, Republic of Congo, Sao Tome and Principe, Senegal, Sierra Leone, Tanzania, Togo, Zambia, Zimbabwe	**CAPEX:** • Components (e.g., transformers, poles) • Labor costs for components installation[2] • SG&A related to components installation[2] **Some OPEX:** • Replacement parts on existing network	**Grid connection:** from MV/LV transformer to customer distribution board **Mini-grid connection:** from energy generation to customer distribution board
What is not included in Market opportunity model	**All other countries** (incl. Morocco, Egypt, South Africa)	**Other OPEX,** e.g., Maintenance labor, fuel for back-up gensets	**Solar home systems**

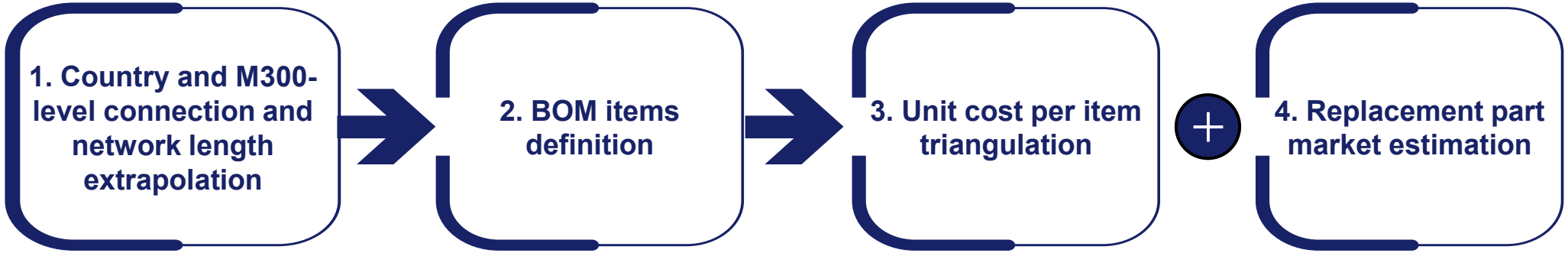
1. As of March 2026 // 2. Included in the market opportunity as high-level estimates from BOM, and split from components

Source: Market opportunity model, TOR

We employed a bottom-up BOM approach to accurately quantify component-level demand

Total market opportunity on installation, cumulative for 2025-'30

Total replacement market opportunity on installed base, yearly, starting 2026



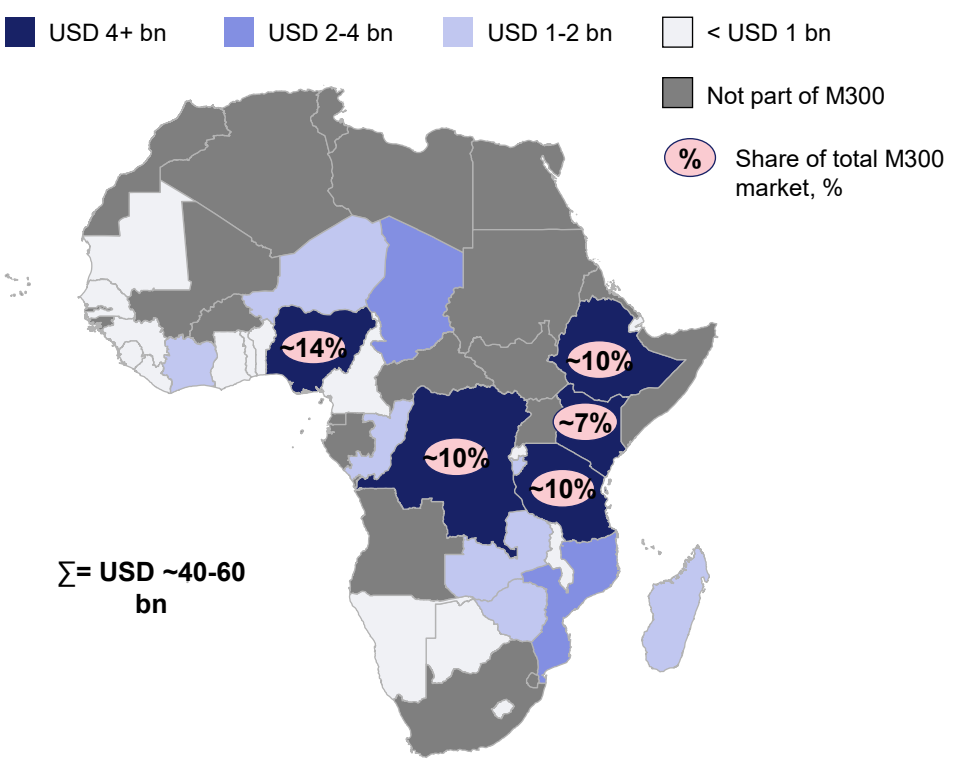
Modeling steps	1. Country and M300-level connection and network length extrapolation	2. BOM items definition	3. Unit cost per item triangulation	4. Replacement part market estimation
Description and methodology	**Estimate the total number of connections** between 2025-'30 per country for both grid and mini-grids connections (separately), and extrapolate the network length based on geo-economics data	**Define standardized Bills of Materials items** per grid and mini-grid household connection, with associated quantity needed per connection	**Estimate realistic unit prices per component,** by triangulating cost sheets and market benchmark, and extrapolating fully-landed cost (incl. tariffs) for 3 countries: Kenya, Nigeria, and Zambia	**Estimate annual replacement market volumes and value** from cumulative installed base using standard grid infrastructure component lifetime assumptions
Primary sources	• **National compacts** • **Economic databases** (e.g., World Bank, AfDB)	**Interviews** with: • mini-grid companies • grid connection companies • engineering firms	• **Cost sheets/BP** from grid & mini-grid companies • **Interview** with grid connection companies	• **OEM technical lifetime benchmarks** • **Interview** with grid/mini-grid companies • **National Compacts** and electrification data

Source: Market opportunity model

~$40-60bn total market under M300, concentrated in 5 network-intensive countries representing ~50% of the demand

Including only the 30 countries that published their National Compact before April 2026

Total market value from M300 new connections (incl. all BOM items), 2025-'30, USD bn



Category	Total M300 market value	Electrical components market value	Value per year[2], USD	
M300 grid market[1]	~35-40	~27-32	~6bn	A
M300 mini-grid market	~12-17	~5-10	~1.5bn	B
Total M300 market	~40-60	~33-37	~7.5bn	C
+ Additional annual recurring opportunity from electrical components replacement market			~4-6bn	D

1. Incl. only distribution BOM items and excluding generation and transmission BOM items (e.g., electricity generators, HV cables) // 2. Electrical component market value amortized on 5 years (from 2025 to 2030)

Source: Market opportunity model, National Compacts, Expert interviews

A. Electrical distribution components constitute ~80% of grid total Capex, representing a USD ~$27-32bn market

TOTAL MIGHT NOT SUM UP DUE TO ROUNDING

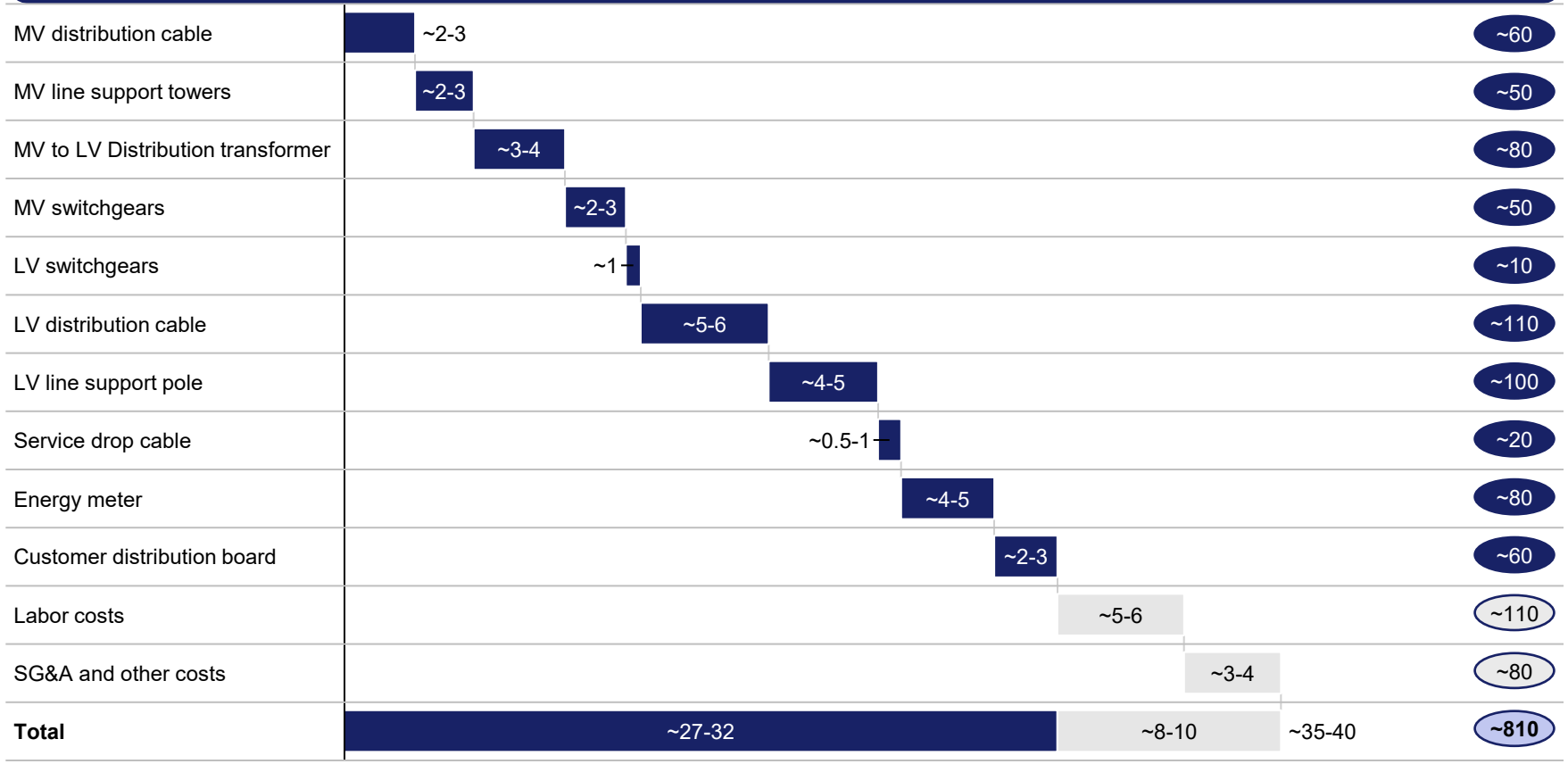
% Share of in-scope components for MA

Average cost per connection, in USD/connection

In scope for MA | Out of scope

Including only the 30 countries that published their National Compact before April 2026

Grid total market (excluding energy generation and transmission), in USD bn **~75%**



Key takeaways

- **MV cables typically represent only ~30–40% of total network length**, with LV making up the majority due as roll-out primarily grid densification, with most new connections extending existing networks
- **Substation equipment follows clustering logic**, with typically one MV/LV transformer and associated switchgear deployed per ~50 connections
- **~20–25% of total cost sits outside equipment**, with permitting, logistics, and local electricity management agencies (e.g., NEMSA in Nigeria) shaping final connection costs

> "MV and LV cable shares depend on the network design logic, with engineers often extending MV further to preserve future expansion optionality and minimize oversizing of LV lines"
>
> **- Former Head of Distribution Project Development at an East Africa EPC**

Source: Market opportunity model, Expert interviews

B. Electrical distribution components constitute ~40% of mini-grid total Capex, representing a USD ~5-10bn market

TOTAL MIGHT NOT SUM UP DUE TO ROUNDING

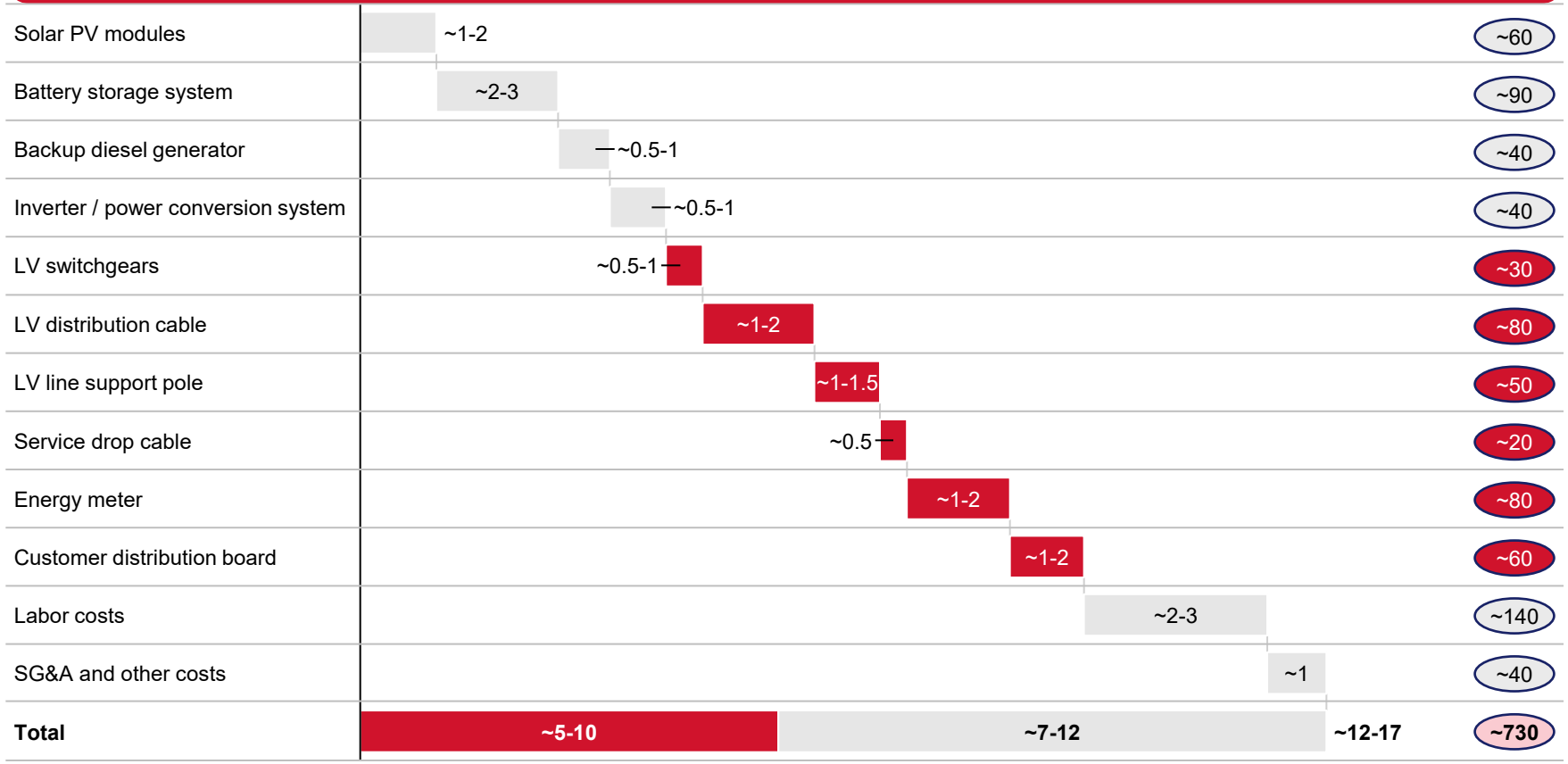
% Share of in-scope components for MA

Average cost per connection, in USD/connection

In scope for MA | Out of scope

Including only the 30 countries that published their National Compact before April 2026

Mini-grid total market, in USD bn — **~40%**



Key takeaways

- **Distribution electrical components represent** a material share of the BOM (i.e., ~40%), especially in large mini-grids, where longer LV lines and additional poles can push distribution components above ~40% of total system cost despite generation importance
- **LV network design is simpler and more compact than grid extension**, reducing infrastructure intensity per connection and rely more on wooden poles (~30–50% cheaper than concrete)
- **Labor costs are higher than grid** on a per-connection basis due to full system installation requirements, driven by site preparation, generation setup, civil works (e.g., fencing), and system integration

> "Mini-grids are designed to keep the LV network as simple as possible, often using wooden poles to reduce costs"
>
> **- Head of mini-grid operator in West Africa**

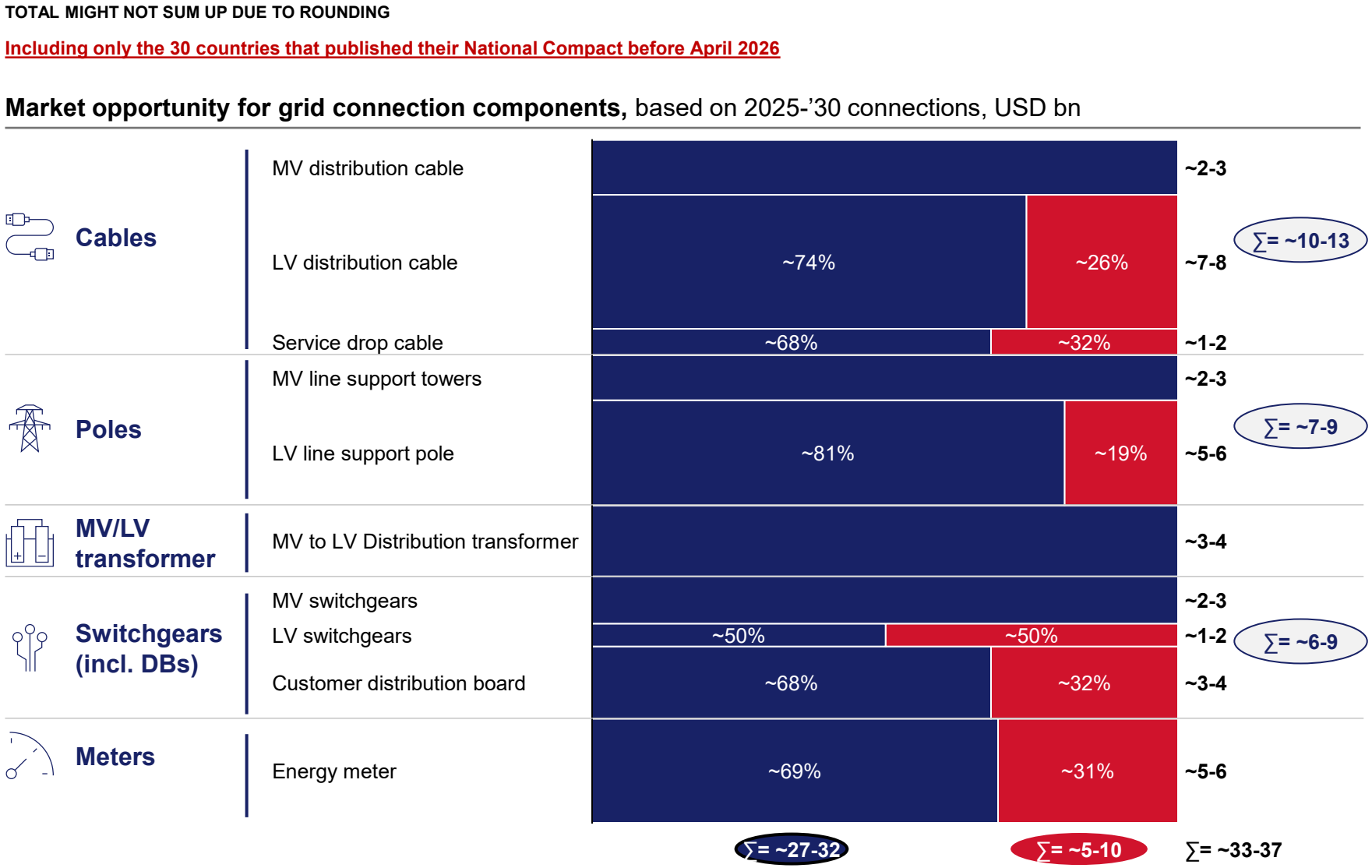
Source: Market opportunity model, Expert interviews

C. ~$33-37bn market opportunity across grid and mini-grid connection components, with cables, meters and transformers driving the value pool

TOTAL MIGHT NOT SUM UP DUE TO ROUNDING

Including only the 30 countries that published their National Compact before April 2026

Market opportunity for grid connection components, based on 2025-'30 connections, USD bn



Key takeaways

- **Grid accounts for the majority of demand (~80%, ~USD 27-32bn)** – reflecting both electrification models and broader component coverage, as grid rollout includes additional upstream equipment beyond last-mile scope
- **A few components drive most of the market** – cables, poles, meters and transformers scale with network expansion and number of connections, creating repeatable demand
- **Value pools concentrate in linear and repeatable components rather than complex equipment:** Cables, poles, meters, and transformers dominate as they scale directly with connections and network length, unlike switchgear which is more episodic and design-dependent

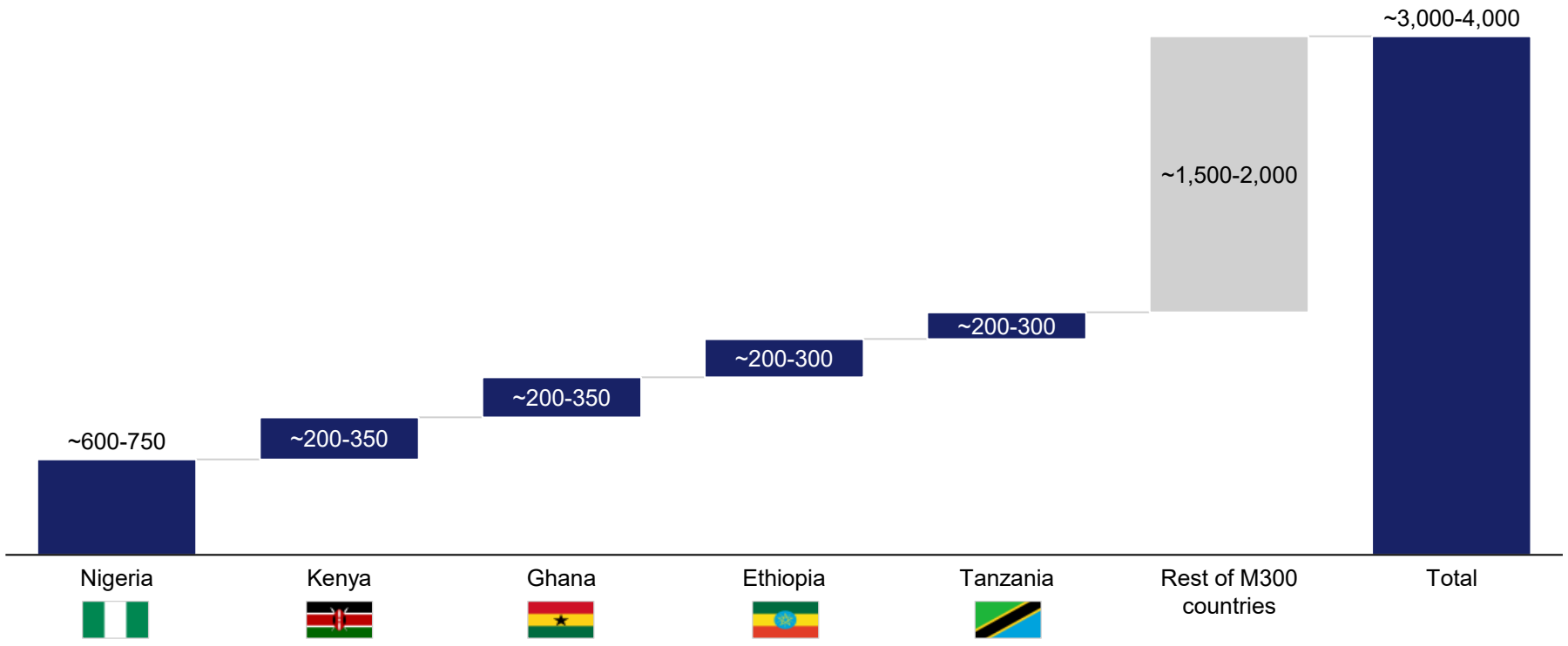
Source: Market opportunity model, Expert interviews

D. As an up-side, replacement components of existing grid and mini-grid base represents USD ~3-4bn additional revenues per year

TOTAL MIGHT NOT SUM UP DUE TO ROUNDING

Including only the 30 countries that published their National Compact before April 2026

Yearly market value for electrical distribution components of M300 installed base[1], 2026, USD mn



1. Excl. South Africa

Key takeaways

- **Unlike connection-driven demand**, replacement of existing components creates stable, predictable volumes anchored in maintenance and renewal cycles
- **Markets with higher past deployment drive current replacement volumes**, while lower-electrified countries will see this pool grow over time.
- **Largest electrification systems drive value concentration** (Nigeria ~$600–750m, Ethiopia ~$200–300m), but >50% of demand remains fragmented across smaller M300 countries

Methodology:

Benchmarked replacement capex using utility reports and national programs, isolating renewal spend and normalizing by installed base (in MVA) to derive replacement capex in USD/MVA/year

Applied benchmark to total M300 installed base to estimate total market

Agenda

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- Context and objectives
- Market sizing

Competitiveness assessment

- Current challenges
- Scaling approach and implementation
- Job creation
- Governance

Component deep dives

Cost analysis methodology structured across four steps to estimate financial viability of local manufacturing vs. importing

Base scenario in Kenya and Nigeria

Developed a bottom-up cost comparison between local manufacturing and Chinese imports to establish a base scenario in Kenya and Nigeria. Structured the analysis to compare total landed costs on a like-for-like basis

Base scenario extrapolation on other M300 countries

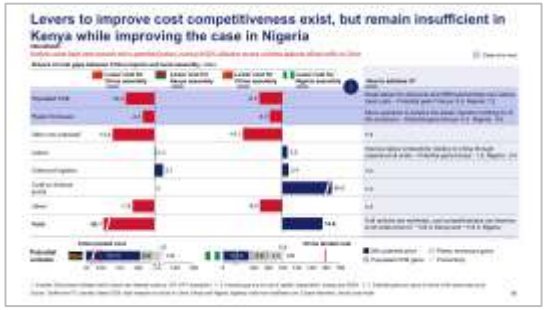
Scaled the base comparison across additional countries by modifying tariffs and logistics costs. Isolated cross-country differences to enable direct benchmarking of competitiveness

Sensitivity on key hypotheses

Varied key parameters one at a time to test the robustness of results and identify tipping points. Assessed how changes in external conditions impact relative competitiveness

Driver costs modeling on base case scenarios

Decomposed total cost differences into individual drivers to understand sources of competitiveness gaps. Linked each driver to actionable levers to quantify improvement potential



Early results show clear differentiation in competitiveness across components

Manufacturing scaling attractiveness High Low

Component	1 Local market: A. M300 market size[1], USDbn	1 Local market: B. Estimated # of facilities needed[2]	1 Local market: C. M300 countries with local players[3]	1 Local market: D. % of demand covered by local players[4]	2 Commercial competitiveness: A. # countries commercially competitive[5]	3 Capability: A. Industrial readiness
Cables	~11-12	~100	15/30	~20-30%	7/7	
MV/LV transformers	~ 3-4	~40	12/30	~10-20%	1/7	
MV switchgears (assembly only)	~2-3	~25	10/30	~5-10%	1/7	
Distribution boards (assembly only)	~3-4	~250	11/30	~10-20%	1/7	
Energy meters (assembly only)	~5-6	~30	6/30	~10-20%	1/7	
Poles (wood only)	~3-5	*~70*	12/30	~50-60%	2/7 *(Wood poles only)*	

A. Industrial readiness

- **High:** strong manufacturing base, skilled workforce, regional export capability
- **High:** large market, established industrial base, high value addition, FX risk
- **Medium:** large market, constrained by FX volatility and capability gaps
- **Medium:** improving infrastructure, limited industrial depth and skills
- **Medium-high:** strong infrastructure & value addition, limited domestic market
- **Low:** limited scale, weak industrial base and skills
- **Low:** weak infrastructure and industrial base, high latent potential

1. Total market does not sum to 33-37 given LV switchgear and concrete poles are not considered // 2. Total number of units estimated in market sizing model necessary for M300 demand divided by the modelled capacity of a mid-size factory over the same period (2025-2030), note this is slightly different capacity to numbers in slide 8, modelling minimum efficient scale // 3. Number of countries with at least 1 manufacturing/assembly site identified // 4. Estimated based off press search and expert calls // 5. Among Kenya, Tanzania, Ethiopia, Nigeria, Ghana, Zambia and DRC under current tariff structures

1c. Local manufacturing base is clustered in priority countries, with varying presence across components

NON-EXHAUSTIVE

Priority countries selected based on established industrial base and regional presence[2]

Number of players manufacturing/ assembling the component:[1] 0-3 4-9 10+

	EAC			ECOWAS						
Components	**Kenya**	**Tanzania**	**Ethiopia**	**Nigeria**	**Ghana**	**Ivory Coast**	**Zambia**	**DR Congo**	**Mozambique**	**Rest of M300 countries**
Cables	11	10	14	24	5	3	5	2	1	6
MV/LV transformer	9[3]	6	12	10	2	2	3	3	1	3
Switchgear	11	4	3	12	2	1	2	1	1	3
Distribution board	15	3	3	19	3	1	2	2	1	4
Meters	3	4	2	19	2	0	2	0	0	0
Poles	15	8	2	5	2	2	2	1	0	7

1. Number of unique players with manufacturing or assembly sites identified (not exhaustive). Numbers are reported on a per component basis, implying overlap between categories as overall large players often produce multiple different types of components // 2. Zambia and DR Congo are included given they have the highest identified industrial presence in Southern Africa // 3. Though identified players focus on refurbishment and repairs rather full manufacturing

Source: S4G Analysis, Press search

1c. Substantial, underutilized local manufacturing capacity in distribution components provides an immediate platform to capture M300 demand

NON-EXHAUSTIVE

Components	Identified M300 manufactuers[1]	Existing capacity[2]	Serviceable M300 demand[3]
Cables	70-80	~400,000 km	~60-80%[4]
MV/LV transformer	40-50	~100,000 units	~40-60%
Switchgear *(assembly)*	30-40	~80,000 units	~40-60%
Distribution board *(assembly)*	40-50	~5 mn units	~40-60%
Electric meters *(assembly)*	30-40	~12 mn units	~70-90%
Poles *(wood only)*	40-50	~4 mn units	~80-100%

200+ local manufacturers identified, currently running at **~20%** utilization, with the capacity to meet **~50-70%** of M300 demand

What we heard

> *We have a lot of capacity and capability, but the actual production is currently at 20%*
>
> ***– CEO of leading Kenyan cable manufacturer***

> *If we run the facility fully on distribution boards, our capacity is above what the local tenders can absorb*
>
> ***– CEO of leading Kenyan switchgear manufacturer***

> *Large electrification tenders are DFI-funded and duty-free, effectively locking local manufacturers out of utility-scale demand*
>
> ***– CEO of leading Kenyan cable manufacturer***

> *The quality is there, and maybe even better than what is being installed, but you need to trust local manufacturers*
>
> ***– CEO of leading Nigerian meter manufacturer***

1. Non-exhaustive mapping, includes local assembly, ranged numbers given some manufacturers' capabilites are hard to assess // 2. Based on assumed average size of factories: Cables – 5000km, Transformer – 2000, Switchgear – 2000, Distribution board – 100,000, Meter – 250,000, Poles – 100,000 // 3. Estimated yearly M300 demand covered by existing local production capacity at 100% utilization // 4. Covering up to 100% of LV demand and ~25% of MV demand

Source: S4G McKinsey, Manufacturer interviews

2. Local manufacturers face structural cost disadvantages vs imports, independent of policy environments

Components	Average price premium of African manufacturing vs Chinese imports (excl. tariffs)[1]
Cables	~5-20%
MV/LV transformer	~20-40%
Switchgear *(assembly)*	~10-30%
Distribution board *(assembly)*	~10-30%
Electric meters *(assembly)*	~20-40%
Poles *(wood only)*	*n.a*[2]

Structural cost drivers hindering competitivity of African manufacturers (excl. policy)

Scale and capacity utilization

Fragmented and inconsistent demand leads to low utilization rates (~20% vs. ~70–80% in China), preventing economies of scale and increasing unit costs

Cost of debt

High financing costs for both CAPEX and working capital (interest rates >15% vs. ~3–5% in China), combined with FX constraints, limit the ability to invest and scale

Unreliable and costly power

Frequent outages and grid instability force reliance on self-generation, driving electricity costs up to ~2-3x China levels and increasing operational inefficiencies

Labor productivity

Productivity gaps (~20–40% of China levels[3]) drive higher labor input per unit, eroding the benefit of lower African wages

Export incentives for Chinese manufacturers

Chinese exporting manufacturers benefit from government-backed incentives (e.g., VAT rebate system of ~13%), effectively lowering export prices and widening the cost gap vs African producers

1. Average cost difference of should cost analysis for Kenya and Nigeria relative to the China landed cost, before any duties are applied on the finished good // 2. Poles operate under a local-for-local manufacturing basis, with main competition coming from South African exports // 3. Based on ILO productivity index

Source: Should cost model, Manufacturer interviews, Press search

2. Under current tariff regimes, favorable local manufacturing conditions are concentrated across select components and priority markets

Base case scenario is a greenfield factory, running at high utilization across countries applying official tariffs vs China

Favorable | Unlockable | Unlikely

Components	M300 market value[1], *USD bn*	Kenya ~2.5-3.5	Tanzania ~3.5-4.5	Ethiopia ~3.5-4.5	Nigeria ~5-6	Ghana ~0.4-0.8	Zambia ~0.8-1.2	DR Congo ~3-4
Cables	~11-12	Favorable	Favorable	Favorable	Favorable	Favorable	Favorable	Favorable
MV/LV transformer	~3-4	Unlockable	Unlockable	Favorable	Unlockable	Unlikely	Unlikely	Unlikely
Switchgear *(assembly)*	~3-4	Unlockable	Unlockable	Favorable	Unlockable	Unlikely	Unlikely	Unlikely
Distribution board *(assembly)*	~3-4	Unlockable	Unlockable	Favorable	Unlockable	Unlikely	Unlikely	Unlikely
Electric meters *(assembly)*	~5-6	Unlockable	Unlockable	Unlikely	Favorable	Unlockable	Unlikely	Unlikely
Poles *(wood only)*[3]	~3.5-4.5[3]	Favorable	Favorable	Unlikely	Unlikely	Unlikely	Unlikely	Unlikely

Methodology

- Benchmarking against imports is conducted using a standardized base case, while capturing local variations in cost structures, demand, and policy to reveal where competitiveness is structurally achievable
- We establish a three-tier classification of country-component viability:
  - **Favorable:** Local manufacturing is cost-competitive in our base case scenario, supported by sufficient scale and enabling conditions
  - **Unlockable:** Viability can be achieved under targeted interventions with precedent[2] (e.g., demand aggregation, local procurement policy, tariff enforcement)
  - **Unlikely**: Key barriers such as lack of demand, constrained industrial base & unsupportive policy make local manufacturing unfavorable

1. Market value of components includes all 30 M300 countries // 2. I.e., in the case of transformers in Kenya, there is precedent for protection tariffs to be put in place once local manufacturing capacity has been demonstrated // 3. Given we only focus on wood poles, stated market size is ~50% of total pole market size

Source: Expert & manufacturer interviews, Market, opportunity model, Should cost model, Press search

2. Granular cost benchmarking provides deeper insight into local vs import competitiveness

Competitive today | Competitive under certain conditions | Not competitive structurally | Deep dive next

Note on index price: 100 = total landed costs from China manufactured component (incl. shipping) before tariffs

Component	China landed cost Kenya[1]	Kenya	Assessment	China landed cost Nigeria	Nigeria	Assessment	Other competitive countries[2]
LV cables	135	105	✓	120	113	✓	
MV/LV transformer	100	124	✗	105	120	✗	
MV switchgear	105	119	✓	105	138	✗	
Distribution board	110	126	✗	105	138	✗	*None*
Meters	100	134	✗	145	130	✓	
Poles	Local production compared vs. South Africa wood poles manufacturers						

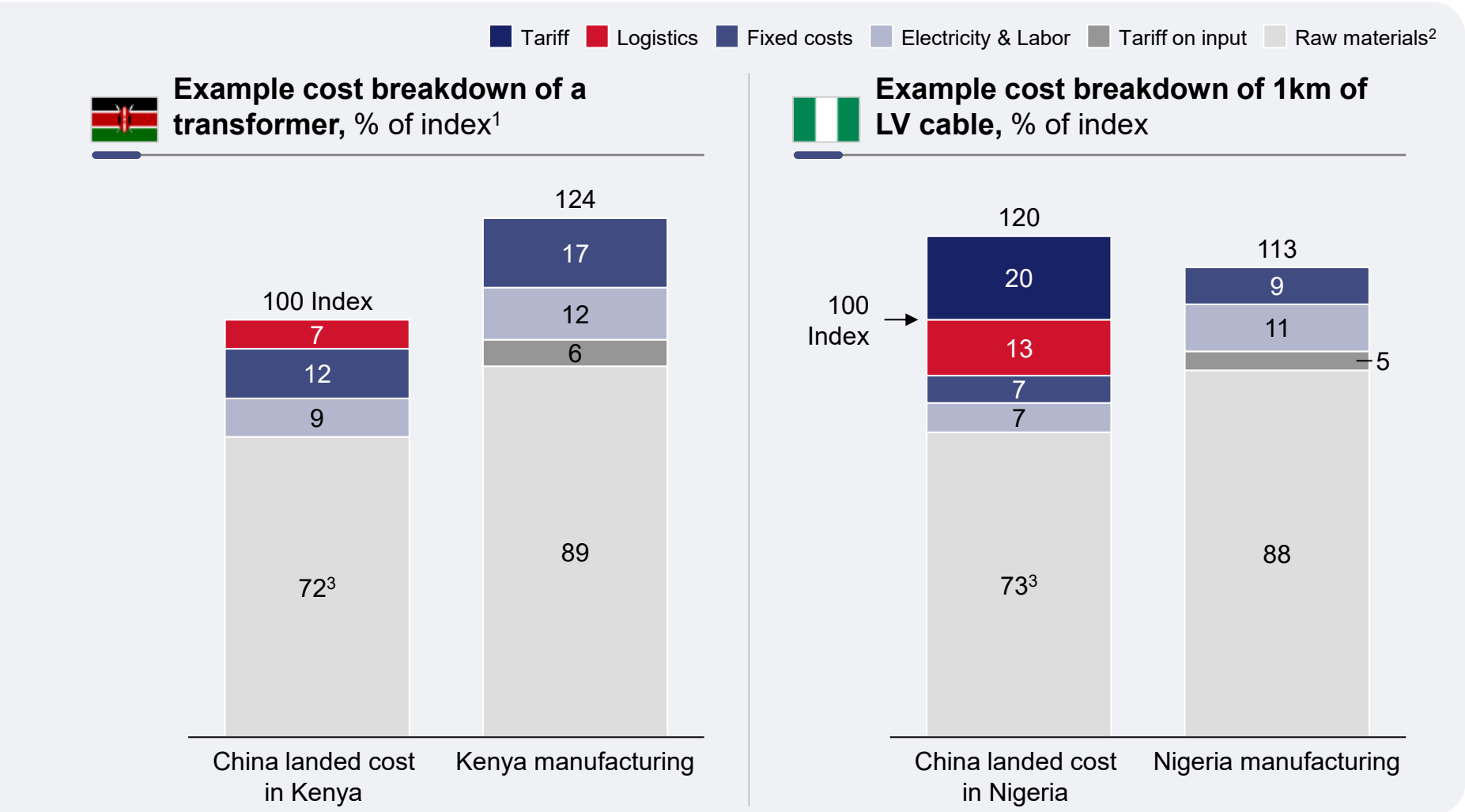
Key insights

- **Tariffs are the primary driver** of manufacturing competitiveness across components
- Sectors with **established manufacturing base already benefit from strong policy support**, (i.e., 35% on cables in Kenya and 45% on meters in Nigeria)
- Competitiveness of some cases is hindered by inverted tariff schedules, **with higher tariffs on imported inputs than on finished goods** (i.e. transformers in Kenya)
- Ethiopia imposes significant **import tariffs on all components**, incentivizing domestic production

1. For the China landed cost, the difference with the base index of 100 reflects the current tariff policy in place on the component (respectively for Kenya and Nigeria)
2. Within the 7 priority countries identified, with only difference between other assessed countries being the input and finished good tariffs, keeping production, labor and raw material assumptions constant

Source: Should cost model, Expert interviews, Press search

2. Component cost breakdowns reveal structural cost disadvantages in local manufacturing before tariff protection



Implications for competitiveness

- Raw materials are **structurally more expensive in Africa**, driven by reliance on imports, shipping costs, and limited local upstream supply
- **Higher electricity costs combined with lower productivity levels**, offset potential gains from lower African wages relative to Chinese manufacturing
- Fixed cost disadvantages, particularly **higher cost of capital**, further widen the competitiveness gap with Chinese imports, even when accounting for advantageous financing through M300 partners

1. Index of 100 set as the China landed cost of the component including logistics but excluding tariffs // 2. Raw material costs incudes the shipping costs of the imported inputs // 3. Raw material costs are initially at an index of 83 (transformer) and 84 (cable), however these drop to 72 (transformer) and 73 (cable) given China's export rebate incentive system which exempts exporting manufacturers from paying 13% VAT on inputs (for simplicity only the VAT associated to raw material costs are considered in the model)

Source: Should cost model, Press search

3. Kenya and Nigeria stand out for their manufacturing capabilities; others show varying constraint levels across infrastructure and skills

Manufacturing scaling attractiveness High → Low

Dimension	Sub-dimension	Kenya	Tanzania	Ethiopia	Nigeria	Ghana	Zambia	DRC
FX	FX volatility, last 3 years, in %	7%	2%	18%	29%	25%	15%	4%
	FX regulatory limitations	Low	Medium	High	Medium	Low	Low	High
Manufacturing	Existing elec. equipment manufacturing base	Medium-High	Low	Medium	Medium-High	Medium	Low	Low
	M300 market size, in USD bn	~2.5-3.5	~3.5-4.5	~3.5-4.5	~5-6	~0.4-0.8	~0.8-1.2	~3-4
	Manufacturing Value Added per capita, in USD	156	92	46	212	244	99	80
	Africa Infrastructure Development Index 100-basis	26	15	20	26	28	22	10
	# graduates in electrical and processing fields	Medium-High	Medium-Low	Medium	Medium-High	Medium	Low	Low
Logistics	Logistics Performance Index, from 1 to 5	2.8	2.6	2.6	2.6	2.5	2.6	2.5
	Export potential within Africa	High	Medium	Medium	High	Medium	Medium	Low
How appealing is the market		**High**	**Medium**	**Medium**	**High**	**Medium-high**	**Low**	**Low**

Takeaways

- **Kenya and Nigeria are** best positioned to anchor regional supply chains, **combining existing manufacturing bases with large domestic markets**
- **Ghana** offers solid fundamentals with **high manufacturing value add and infrastructure**, but lacks sufficient market scale
- **Tanzania and Ethiopia show partial readiness**, with improving infrastructure but gaps in industrial scale and workforce depth
- **Zambia and DRC** exhibit the **highest constraints**, particularly in existing manufacturing base, skills availability, and infrastructure
- **Infrastructure, scale, and workforce** emerge as the most consistent enablers or barriers across markets

Source: IMF International Financial Statistics ; World Bank Logistics Performance Index 2023; African Development Bank Africa Industrialization Index 2022; African Infrastructure Development Index; National higher education statistics

3. Established manufacturing capacity in core markets provides a strong foundation to capture M300 demand, with limited need for new entrants

Potential regionalization markets

Components	Kenya	Tanzania	Ethiopia	Nigeria	Ghana	Zambia	DR Congo
Cables	EAC,[1]			ECOWAS			
MV/LV transformer					n.a	n.a	n.a
Switchgear *(assembly)*					n.a	n.a	n.a
Distribution board *(assembly)*	EAC,[1]				n.a	n.a	n.a
Electric meters *(assembly)*			n.a	ECOWAS		n.a	n.a
Poles *(wood only)*			n.a	n.a	n.a	n.a	n.a

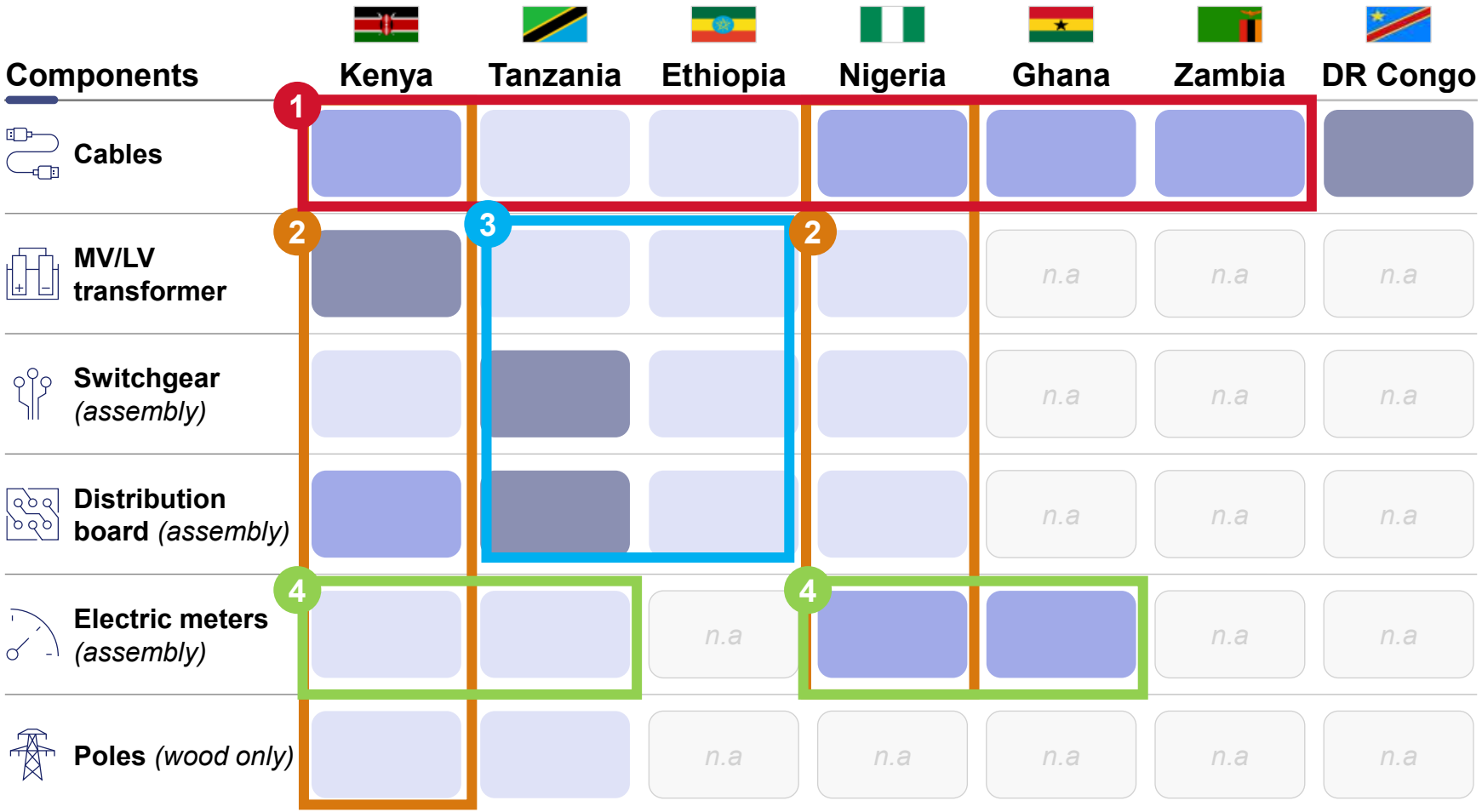
Manufacturing approaches

- **Scale existing champions domestically:** Markets where players already exist with sufficient installed capacity to meet domestic demand
- **Achieve scale through regionalization:** Markets where capacity exceeds domestic demand and hence regionalization unlocks competitiveness
- **Build new champions:** Markets where demand and competitiveness potential exist, but no established players are positioned to capture the opportunity

1. Specifically eastern DRC where inland transport goes through Kenya

Based on the economics of base case, four targeted plays have been identified to capture M300-driven demand through regional scale-up of manufacturing and assembly hubs

Approaches :
- Identified plays
- Scale existing champions domestically
- Achieve scale through regionalization
- Build new champions



Identified plays

~35-50% of total market value can be met by scaling existing players or achieving scale through regionalization across 4 plays:

1. **Unlock domestic cable demand on largest countries to fully utilize existing manufacturing capacity**
   $5-7bn
2. **Make Kenya and Nigeria regional champions within regional economic zones**
   $3-5 bn[2]
3. **Scale locally anchored manufacturing in protected markets[1] to capture domestic demand**
   $2-4 bn
4. **Scaling local meter assembly through procurement policy and OEM partnerships**
   $2-3 bn

∑ = $12-19 bn

1. Ethiopia with strong import constraints (tariffs across components and FX access) create a protected domestic market; Tanzania has strong local presence/partner requirements and procurement practices which limit import penetration
2. Market size estimated based on full market demand for Nigeria and Kenya, plus additional ~33% of other ECOWAS & EAC countries demand. Market potential of other plays (e.g., cables and meters) excluded to avoid double-counting

Source: Expert & manufacturer interviews, Should cost model, Press search

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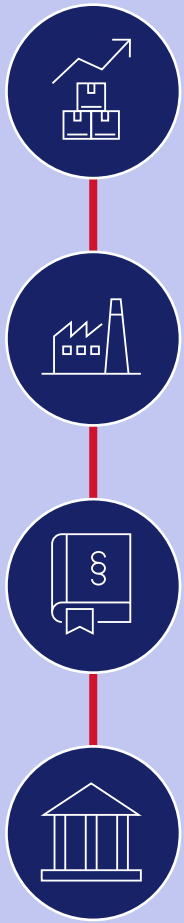
Component deep dives

Local manufacturing is constrained by four structural barriers across components and countries



1 **Insufficient scale and consistency of demand** limit factory utilization and prevent manufacturers from reaching minimum efficient scale, resulting in structurally higher unit costs and weaker competitiveness versus imports

2 **Unreliable logistics and power infrastructure**, combined with gaps in skills and certifications and the inability to localize upstream production, increases costs and constrains the competitiveness and scalability of local manufacturing

3 **High cost of debt, combined with working capital intensity and FX constraints**, increases costs and cash flow pressure whilst limiting the ability to invest and scale

4 **Unfavorable, unpredictable and weakly enforced policy environments** create uncertainty and uneven competition, undermining investment and disadvantaging local manufacturers

Limited demand visibility and structural supply frictions constrain local manufacturing

Dimension	Barrier	Description
1. Demand and market structure 	**A. Scale demand not sufficient to justify local manufacturing**	**Fragmented domestic markets**, combined with **limited intra-African trade**, result in insufficient and inconsistent order volumes, leading to **low factory utilization rates across components**. Given the high fixed cost base of manufacturing sub-scale production significantly increases unit costs and undermines competitiveness
	B. Unpredictable demand	**Volatile procurement cycles and uncertain project timelines**, with utilities concentrating demand into a few large tenders (every 2-3 years) rather than steady pipelines, limit forward visibility. This forces manufacturers to operate reactively, discourages inventory build-up, and increases the risk of idle capacity or delayed production starts
	C. Perceived quality and price gap of local products	**Strong bias toward imported products**, often assumed to be **cheaper and higher quality**, persists despite local compliance with international standards. Limited track record of newer players, tender eligibility requirements (i.e., minimum past units sold), and procurement practices focused on upfront price rather than TCO[1] reinforce this perception.
2. Industrial ecosystem 	**A. Limited logistics and unreliable power infrastructure**	**High inland transport costs, port congestion, and long lead times** increase input and distribution costs, while **unreliable grid power forces manufacturers to rely on costly diesel generators** to ensure continuity. These factors materially raise operating costs and reduce reliability, eroding competitiveness versus imported products
	B. Skills and certification infrastructure gaps	While labor is available, there is a **shortage of experienced and specialized technicians and engineers** required for precision manufacturing. In parallel, limited local testing and certification infrastructure forces manufacturers to **validate products abroad**, increasing costs, delaying market entry, and constraining scaling
	C. Limited upstream localization potential	Absence of local suppliers for key inputs and sub-components (e.g., raw material processing, electronic boards..) forces reliance on imports, limiting value capture and exposing manufacturers to input cost volatility. This also prevents achieving the **cost advantages of vertically integrated supply chains seen in major exporting countries**

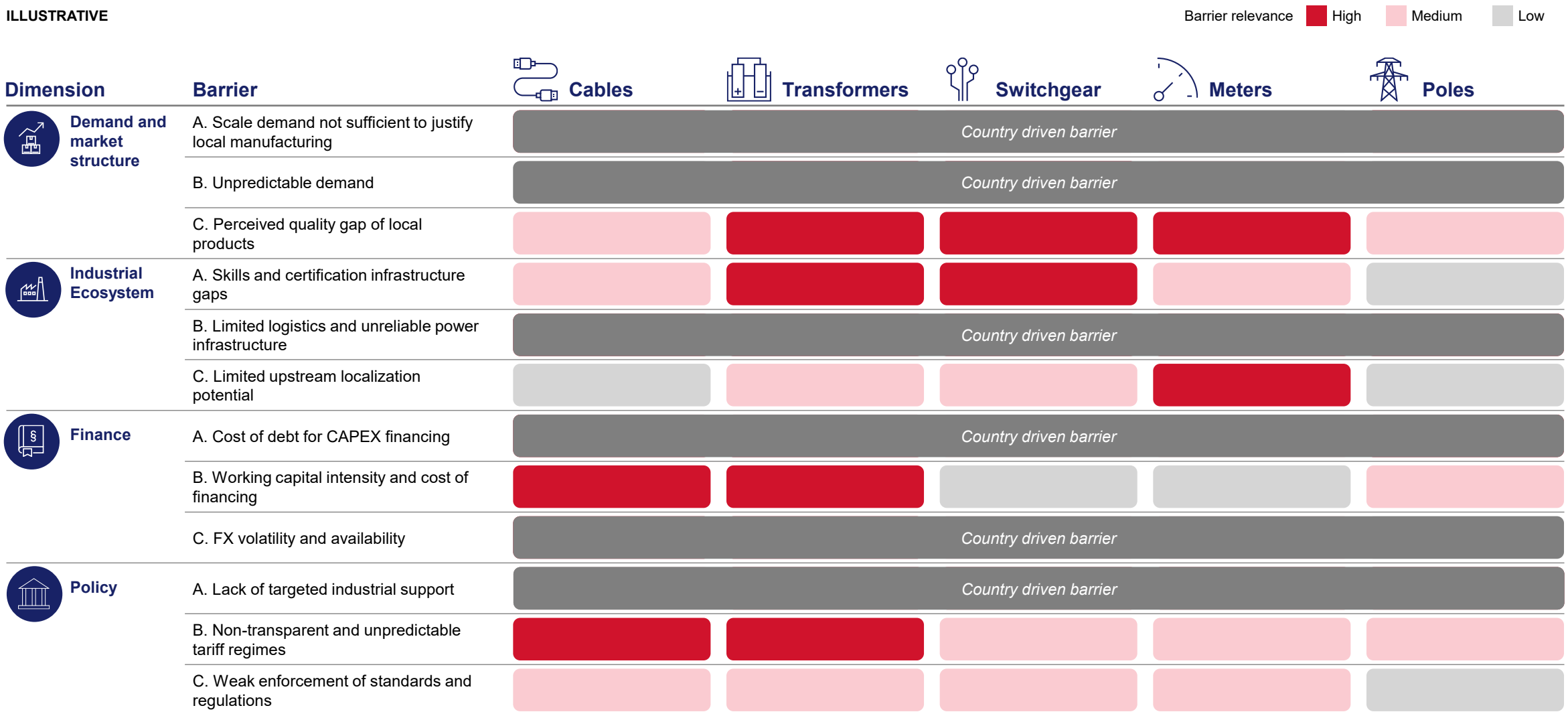
1. Total cost of ownership, where local manufacturers have an advantage when taking into account after-sales maintenance and the possibility of faster intervention times leading to reduced down time

Addressing financing constraints and policy distortions is critical to unlock competitiveness

Dimension	Barrier	Description
3. Finance 	**A. Cost of debt for CAPEX financing**	**High upfront CAPEX requirements combined with expensive debt** (often 10%+) and limited access to long-term local financing constrain investment, forcing manufacturers to delay or downsize capacity expansion and rely on slower, organic growth, with significant debt service burden on cash flows
	B. Working capital intensity and cost of financing	**Long cash conversion cycles**, driven by imported inputs and delayed customer payments, create significant working capital needs which, when financed at **high local interest rates** (e.g., 14–16% in Kenya), add a material cost premium and pressure margins for local manufacturers
	C. FX volatility and availability	**Currency volatility and mismatch between local revenues and USD-denominated inputs create pricing uncertainty and margin risk**, while limited FX availability in certain markets (e.g., Ethiopia, partially Nigeria) constrains access to raw materials, leading in some cases to significantly underutilized capacity
4. Policy 	**A. Lack of targeted industrial support**	**Inverted tariff structures** (with equal or higher duties on inputs vs finished goods) and **strong export incentives in competing countries** (e.g., Chinese export tax rebates, Egyptian subsidies) create structural cost disadvantages, allowing imports to remain artificially competitive relative to local manufacturing
	B. Non-transparent and unpredictable tariff regimes	**Lack of clarity and consistency in tariff application**, particularly in large utility or DFI-funded tenders where exemptions may apply, creates uncertainty on effective protection levels. In addition, **frequent year-on-year changes in tariff policy** (e.g., transformers in Kenya, meters in Nigeria) increase uncertainty, undermining manufacturers' ability to make long-term investment decisions
	C. Weak enforcement of standards and regulations	**Inconsistent enforcement of standards and local content rules allows substandard or under-specified imports to enter the market at lower cost**, while local procurement preferences are not systematically applied, resulting in uneven competition and limited effective protection for compliant local manufacturers

Barriers vary significantly by component, driven by differences in complexity and production economics

ILLUSTRATIVE



Barriers also vary by country, reflecting differences in policy, financing, and operating environments

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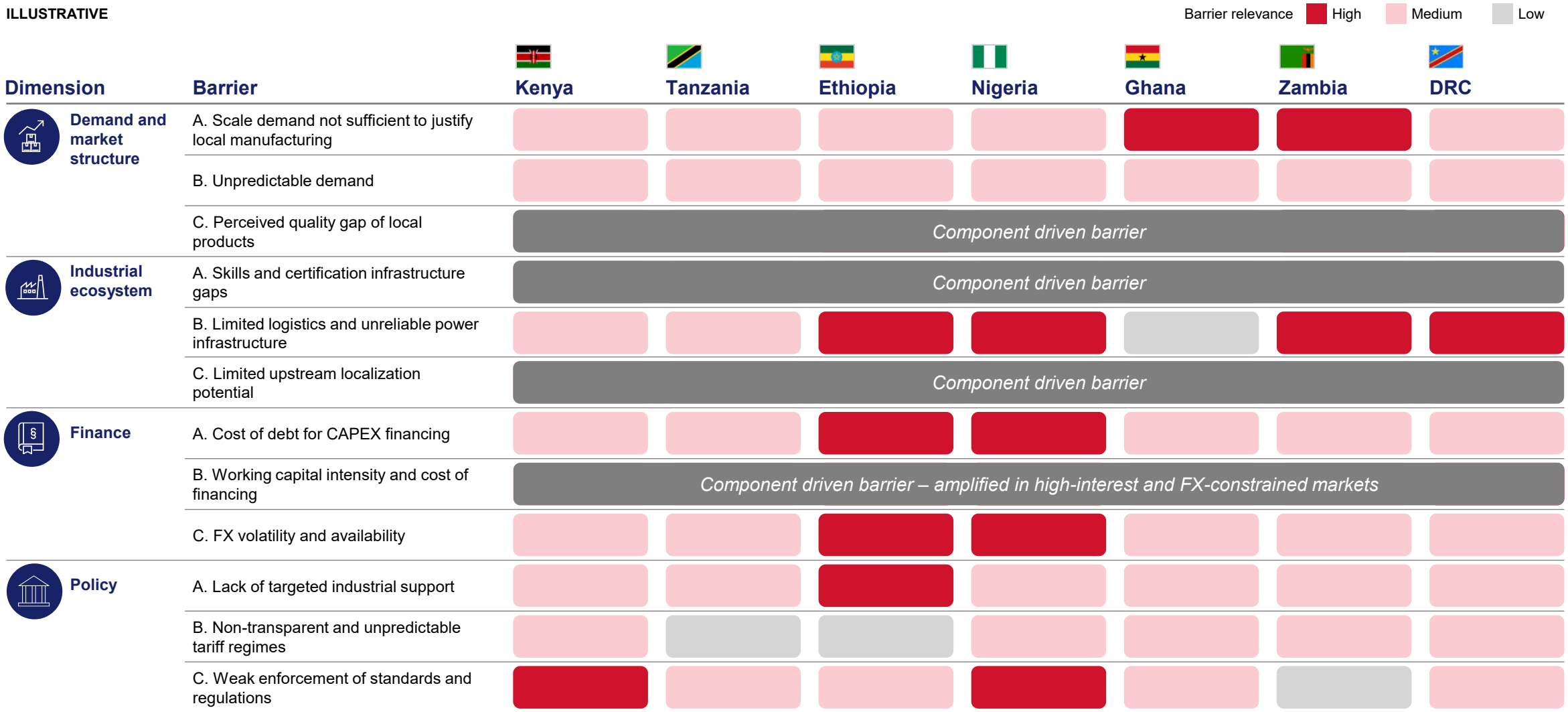


Agenda

Executive summary

Detailed report

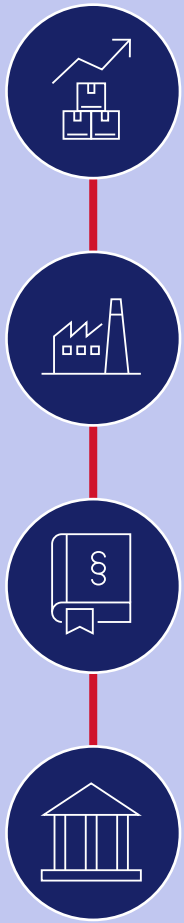
- Context and objectives
- Market sizing
- Competitiveness assessment
- Current challenges

Scaling approach and implementation

- Job creation
- Governance

Component deep dives

Local manufacturing is constrained by four structural barriers across components and countries



1 **Insufficient scale and consistency of demand** limit factory utilization and prevent manufacturers from reaching minimum efficient scale, resulting in structurally higher unit costs and weaker competitiveness versus imports

2 **Unreliable logistics and power infrastructure**, combined with gaps in skills and certifications and the inability to localize upstream production, increases costs and constrains the competitiveness and scalability of local manufacturing

3 **High cost of debt, combined with working capital intensity and FX constraints**, increases costs and cash flow pressure whilst limiting the ability to invest and scale

4 **Unfavorable, unpredictable and weakly enforced policy environments** create uncertainty and uneven competition, undermining investment and disadvantaging local manufacturers

1. Aggregated demand, long-term visibility, and guarantee on products quality are critical enablers of manufacturing scale in Africa

Potential implementation deep-dive to follow

Barrier	Unlock	Key actions by stakeholder	Examples
A. Scale demand not sufficient to justify local manufacturing	Framework contracts to **structure multi-year procurement pipelines** and **smooth demand cycles**	**DFIs** structure multi-year procurement frameworks and provide guarantees **Governments** mandate pooled and programmatic procurement **Utilities** commit to framework agreements with pre-qualified suppliers	EDCL (under ASCENT-Rwanda, World Bank IDA) launched an RFB (request for bid) to conclude a closed framework agreement for supply of transformers, with a stated term of 3 years and call-off contracting
B. Unpredictable demand	**A.** Off-take agreements (**committed volumes**) to **de-risk investment** and provide **minimum demand visibility**	**DFIs** provide payment guarantees and de-risk utility procurement **Governments** commit multi-year electrification budgets **Utilities** include minimum off-take clauses in contracts Banks lend against guaranteed receivables	Eskom / NTCSA secured long-term transformer procurement (10-year pipeline), enabling local manufacturers to invest in capacity
	Regional demand pooling to expand addressable market beyond national scale	**Governments and regional bodies** establish cross-border procurement mechanisms **DFIs** support regional platforms and guarantees **Manufacturers** position as regional hub suppliers	India's UJALA program aggregated demand for ~770M LED bulbs, reducing procurement prices by ~90% through scale effects
C. Perceived quality gap of local products	Total **cost of ownership**-based procurement to **shift evaluation** from **upfront price** to **lifecycle performance**	**Governments and DFIs** mandate TCO criteria in procurement **Utilities** adopt standardized evaluation models **Manufacturers** provide performance and efficiency data	IEC-based TCO methodologies show transformer lifetime energy losses can reach ~4–5x purchase cost, shifting procurement toward lifecycle performance
	B. M300 pre-qualification/certification to **validate product quality**, **manufacturing capability**, and **local content** (**manufactured/assembled in M300 countries**)	**Governments and DFIs** define and enforce M300 standards **DFIs** support certification infrastructure and audits **OEMs** provide technical support and quality systems **Manufacturers** upgrade processes to meet pre-qualification/certification requirements	Nigeria's NERC publishes official metering supplier registries, validating local manufacturing capacity in public tenders South Africa SABS certification system enforces local content thresholds in public procurement

2. Industrial infrastructure, skills development, and upstream integration are key to building competitive local manufacturing capabilities

Potential implementation deep-dive to follow

Barrier	Unlock	Key actions by stakeholder	Examples
A. Limited logistics and unreliable power infrastructure	Integrated **industrial zones** with **reliable infrastructure** and **back-up power** (e.g., captive generation) to **reduce operational risk** and **ensure production continuity**	**Governments** designate industrial zones and enable captive/back-up power solutions **DFIs** co-finance energy and shared infrastructure within zones **Private developers** operate zones with integrated utilities and services **OEMs** anchor demand to ensure utilization	GSEZ Nkok (Gabon) attracted €1.6B+ investment and created 20k+ jobs with integrated infrastructure including dedicated power
	Regional **logistics corridors** and **simplified cross-border processes** to **reduce transport time** and **administrative burden**	**Governments and customs authorities** implement corridor-based reforms **Regional bodies** simplify customs procedures & reduce bureaucracy, especially where tariffs are already low or zero **DFIs** finance logistics infrastructure and corridor upgrades	Kazungula one-stop border post (Zambia corridor) reduced crossing times from ~30h to ~12h, lowering logistics costs and enabling regional supply chains
B. Skills and certification gaps	Industry-**led training systems** aligned with **manufacturing needs** to build a **skilled workforce**	**Governments** fund training infrastructure and enable public-private partnerships **OEMs** provide trainers, curricula and technical expertise **Industry** co-designs programs aligned with factory needs	IFMIA (Morocco) trained 22k+ apprentices with >90% employment, supporting industrial workforce development
	Apprenticeship and **internship schemes** with **formal status** and **fiscal incentives** to **accelerate** on-the-job **capability building**	**Governments** formalize apprenticeship status and provide tax incentives to firms **OEMs and manufacturers** offer structured apprenticeship programs **DFIs** support scaling of dual education models	Morocco's dual training system (public–private partnerships) enables large-scale apprenticeship programs aligned with industry needs
C. Limited upstream lo-calization potential	Development of **regional raw material and component supply hubs** to **reduce input costs** and **improve competitiveness**	**Governments** incentivize local processing of key raw materials **DFIs** finance upstream industrial facilities **Regional trade frameworks** enable intra-African sourcing	merSETA (South Africa) coordinates sector-wide manufacturing skills development through industry-led training programs
	C. OEM **partnerships** and **local assembly models** to **transfer capabilities** and **reduce margin stacking** from imports	**Governments** incentivize joint ventures and local assembly partnerships **OEMs** provide technology transfer, components and quality systems **Manufacturers** develop assembly capabilities before full localization	CHINT established local smart meter manufacturing in Kenya and Uganda, enabling assembly-first industrialization and gradual capability build-up

3. DFI-backed blended finance, supply chain finance, and FX solutions emerge as key unlocks to local manufacturing competitiveness

Barrier	Unlock	Key actions by stakeholder	Examples
A. Cost of debt for CAPEX financing	**Blended finance** (DFIs + local banks) to lower cost of capital and extend tenors for manufacturing investments	**DFIs** structure blended facilities and provide guarantees **Gov** provides first-loss / co-investment **Banks** on-lend to manufacturers	BII uses blended finance to crowd in private capital and provide long-term funding for local industrial investments, supporting manufacturing CAPEX and scale-up in emerging markets (Manufacturing Africa partner) IFC + IDA Private Sector Window (PSW) Blended Finance Facility: IFC utilizes the World Bank's IDA PSW to provide subordinated concessional loans to manufacturing SMEs in fragile African markets
	Partner with global OEMs to benefit from their access to lower-cost international capital and stronger credit profiles	**OEMs** provide guarantees / deferred payments **Banks** lend against OEM credit **Gov/DFI** support JV structures	CHINT's meter assembly operations in Kenya and Uganda were enabled by access to lower-cost financing through its global balance sheet and international banking relationships[1] Elsewedy Electric expansion model leveraging partnerships and strong balance sheet to scale manufacturing across Africa (e.g., Tanzania plant)
B. Working capital intensity and cost of financing	**Supply chain finance anchored on utility receivables** to reduce financing costs via stronger buyer credit profile	**Utilities** act as anchor obligor **Banks** provide receivables discounting / factoring **DFIs** provide guarantees	Afreximbank Working Capital Guarantee Programme (WORKAP) supporting African manufacturers with guaranteed trade finance BII + Citi Africa SCF (Supply Chain Finance) Guarantee facility provides $100M in risk-sharing to scale supply chain finance for African SMEs, specifically targeting underserved manufacturing suppliers
	Improved payment terms in procurement (advance + milestone payments) to reduce cash conversion cycles	**Utilities / Gov** introduce advance payments and enforce timelines **DFIs** embed payment discipline in projects	South Africa's National Treasury 30-Day Payment Directive legally mandates state utilities and government departments to settle SME supplier invoices within 30 days, cutting the cash conversion cycle for local manufacturers *(although not always enforced)*
C. FX volatility and availability	**Local currency financing and hedging solutions** to eliminate FX mismatch between USD inputs/debt and local revenues	**DFIs / TCX** provide hedging and LCY loans **Banks** intermediate **Manufacturers** shift to LCY structures	TCX (Currency Exchange Fund) provides cross-currency swaps that convert USD-denominated DFI loans into local currency, fully insulating manufacturers from FX volatility IFC providing naira-denominated loans (targets $1bn+) to Nigerian SMEs, absorbing the FX risk internally through TCX hedging arrangements

1. Discussed during manufacturing interview with CHINT Kenya

4. SEZs, local content policies, and standards enforcement are central to unlocking local manufacturing

Barrier	Unlock	Key actions by stakeholder	Examples
A. Lack of targeted industrial support	**Special Economic Zones (SEZs)** with duty-free input imports, tax incentives, and streamlined regulation to improve cost competitiveness	**Gov** designate SEZs and provide fiscal incentives **Regulators** simplify procedures **Developers** ensure infrastructure readiness	Kenya SEZs (Athi River, Naivasha) provide duty/VAT exemptions for industrial inputs Morocco industrial zones attracted electrical OEMs (e.g., Nexans, Schneider) Ethiopia industrial parks enabled scaling of export-oriented manufacturing
	Targeted local content and phased protection measures, gradually increasing local content requirements as domestic industry capabilities scale	**Gov / Regulators** set local content thresholds and enforce procurement rules **Utilities** prioritize compliant local suppliers **Industry** scales capacity to meet demand	Nigeria meter sector (MAP policy) drove rapid growth of local meter assembly capacity Kenya meter assembly ecosystem attracted OEM FDI under local procurement tenders Morocco railway sector (ONCF) implemented a phased localization strategy, progressively increasing local content requirements to build a domestic rail manufacturing ecosystem
B. Non-transparent and unpredict-able tariff regimes	Conditional duty exemptions in public/DFI tenders **only where local supply is unavailable or non-compliant with required specifications**	**Gov / Ministries** issue policy circulars, DFIs align procurement rules **Utilities** enforce "local manufacturing inability certificate" before imports	Ethiopia public procurement restricts imports where local supply exists (case-by-case, with local preference margins up to 15% in public tenders)
	Multi-year tariff stability compacts (3–5 years) to provide visibility and reduce policy risk for investors	**Gov / Ministry of Finance** commit to stable tariff schedules, **Industry** associations negotiate compacts, **Regulators** ensure transparency and consultation	Morocco automotive ecosystem anchored in long-term government–OEM agreements ensuring stable tariff and incentive regimes
C. Weak enforcement of standards and regulations	**Mandatory independent conformity assessment at import stage**, enforced through accredited testing bodies	**Gov** accredit inspection bodies and mandate import conformity checks **Standards agencies** enforce certification **Utilities** enforce use of certified products in procurement	Kenya KEBS PVoC system uses accredited third-party inspection firms (e.g., SGS, Bureau Veritas) for pre-export verification of conformity
	Strengthened certification and traceability systems at import stage to prevent substandard products entering the market	**Standards agencies** enforce testing at ports **Gov** implement traceability systems, **Industry** report non-compliant imports	Kenya KEBS enforcement pushed by KAM (SMS verification, whistleblower platform, market surveillance)

A. Effective execution of offtake unlock requires active engagement from key stakeholders

R Responsible A Accountable C Consulted I Informed

Key implementation steps[1]		Ministry of Power	Ministry of Finance	Ministry of Industry	NERC	BPP	NBET / DISCOs	DFIs	Commerc-ial banks	Local manufact-urers
1. Demand pipeline & product strategy	Build unified demand pipeline	A		I	C		R	C		I
	Select priority products & localization pathway	A		R			C	C		C
2. Commercial design	Design off-take commercial structure (frameworks, volume guarantees)		A			R	C	C		I
	Develop and approve standard bidding documents		A			R	C	C		I
3. Financial structuring & risk	Establish payment security mechanism (escrow, guarantees)		R	I	C		R	C		
	Define FX & price adjustment mechanism		R	I			C	C		C
	Structure financing ecosystem	I	A	I			C	R	C	
4. Market	Market engagement & supplier pre-qualification	A			R			C		C
5. Procurement execution & contracting	Launch pilot tender				C	A	R	C		I
	Evaluate bids & select suppliers	A					R	C		I
	Sign framework off-take agreements		A				R	C		
6. Financing	Mobilize financing & start production	I	I	I			C	R	R	C
7. Contract execution	Contract execution & performance monitoring	A			C		R	C		

1. Additional explanations on key steps is available in back up

B. M300 pre-qualification/certification in Kenya needs governance to validate quality and unlock local manufacturing demand

R Responsible A Accountable C Consulted I Informed

Key implementation steps[1]		Government	Regulator	DFIs	Local manufacturers and OEMs	Utilities	Testing labs	Industry asso-ciations
1. Framework design	Define M300 pre-qualification/certification scope (products, standards)	A	R			C		
	Align with IEC / existing KEBS standards	A	R	C				
	Define local content criteria (assembly vs manufacturing thresholds)		A R					
2. Supplier pre-screening	Identify eligible local manufacturers (long list)	A			R			R
	Conduct factory audits (capacity, process, QA systems)		R		R			
	Pre-qualify suppliers for pilot	A				C		
3. Certification setup	Define testing protocols (per component: cables, transformers)		A				R	
	Accredit local labs or partner with international labs	A	R				R	
	Develop “M300 pre-qualification/certification label” (branding + requirements)	A	R					
4. Product pre-qualification/certification	Submit products for testing	R						
	Perform lab testing & compliance checks		A				R	
	Issue pre-qualification/certification (pass/fail + grading if needed)	A	A				R	
5. Procurement integration	Integrate pre-qualification/certification into tender requirements		C			R		
	Create approved supplier registry		A					
	Enforce “certified-only” or preference margins	A	C			R		
6. Pilot phase	Select pilot projects (e.g., KPLC lots)	A	C		C	R		
	Monitor product performance (failure rates, losses, etc.)	A				R		
	Adjust pre-qualification/certification criteria if needed		A		C			
7. Scale-up & enforcement	Roll out nationally across all M300 projects	A						
	Market surveillance & anti-counterfeit checks		A			C		
	Continuous supplier re-certification (every 1–2 years)		A			R		

1. Additional explanations on key steps is available in back up

C. OEM partnerships as a critical unlock, requiring targeted investment attraction, partnership facilitation, and execution support

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Key implementation steps[1]		Government	Investment promotion agency[2]	OEMs	Local manufacturers / partners	DFIs	Regulators	Industry asso-ciations
1. Target and originate OEM investment opportunities	Develop OEM investment cases	A	R	I	C	C		C
	Prioritize target OEMs by component and region	A	R	C				C
	Engage OEMs through bilateral outreach and roadshows	I	A R	R				
	Host OEM investor forums with key stakeholders	A	R	C	C	R	I	C
2. Convert opportunities into bankable OEM partnerships	Assign government deal leads for OEM investments	A R	R			I		
	Pre-qualify local partners for joint ventures	C	A R	I	R			C
	Facilitate OEM–local JV structuring and negotiation	C	A	R	R			
	Mobilize DFI financing and risk-sharing instruments	I	C	C		A R		
3. Enable fast entry and ensure long-term localization	Design incentive packages linked to localization	A R	C	C		I		
	Fast-track licensing and administrative approvals	I	R				A R	
	Tie incentives to technology transfer and local value addition	A	C	R	C		C	

1. Additional explanations on key steps is available in back up
2. For example InvestKenya in Kenya

Local manufacturers are already deploying targeted levers to overcome key competitiveness barriers

Barrier	Example unlocks in place by local manufacturers
Scale and capacity utilization	• **Diversifying into adjacent product lines** (e.g. phone kiosks, metal bed frames) to stabilize volumes and improve utilization of existing machinery
Cost of debt	• **Prioritizing phased, internally funded expansion** and minimizing external debt exposure to reduce financing costs • Leveraging **low-cost financing from local DFIs**
Unreliable and costly power	• Relocating or expanding to dedicated **industrial zones** offering **independent, reliable, and lower-cost power** vs. diesel self-generation
Labor productivity	• Implementing structured **training programs and apprenticeships** to build skills and improve operational efficiency

Other non-price competitiveness barriers

Upfront price premium vs imports

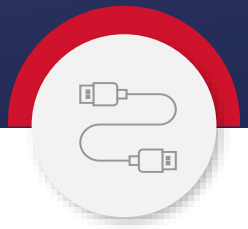
Higher unit costs vs imports limit competitiveness in tenders, leading manufacturers to **reframe their value proposition around total cost of ownership**, including faster delivery and after-sales support

Perception of quality

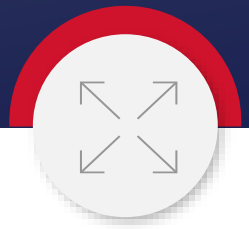
Perceived quality gap of local products vs imports constrain uptake despite meeting/exceeding standards, prompting manufacturers **to invest in international certifications, branding, and targeted awareness campaigns** to shift customer perception and build trust

Source: Manufacturer interviews

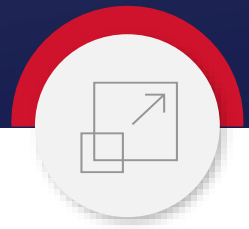
Based on the economics of base case, four targeted plays have been identified to capture M300-driven demand through regional scale-up of manufacturing and assembly hubs



01 Unlock domestic cable demand on largest countries to fully utilize existing manufacturing capacity



02 Scale Kenya and Nigeria as regional manufacturing champions within EAC and ECOWAS

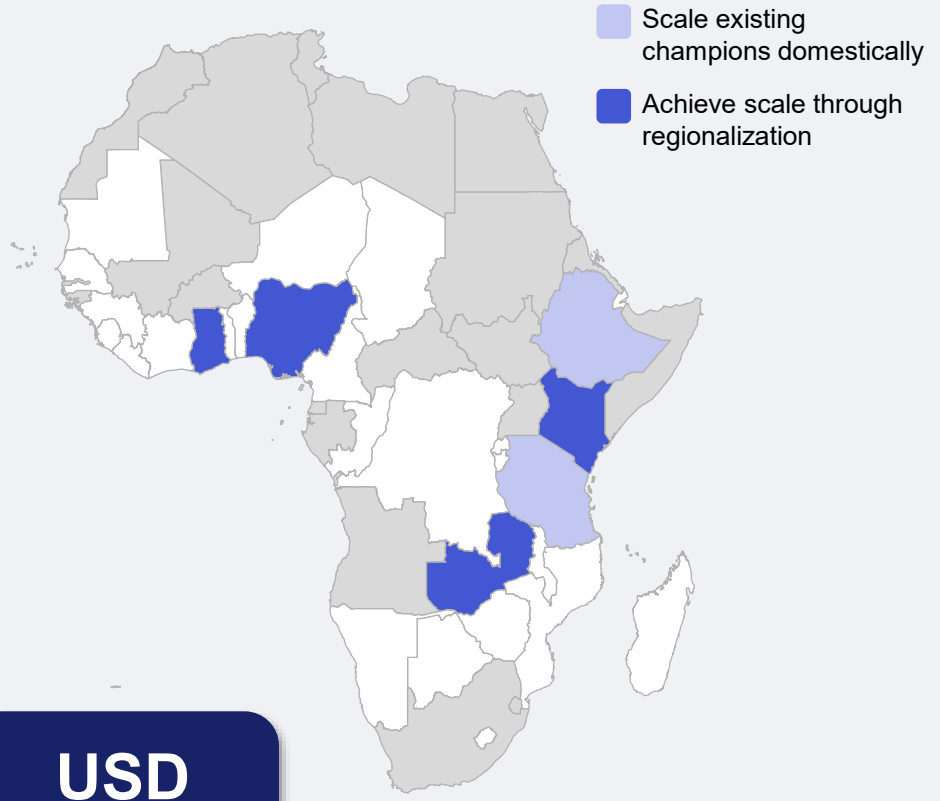


03 Scale locally anchored manufacturing in protected markets to capture domestic demand

04 Scale local meter assembly through procurement policy and OEM partnerships

Play 1: Unlock domestic cable demand on largest countries to fully utilize existing manufacturing capacity

Market overview of the play



USD ~5-7bn[1]

Total market size

Capturable through ~10-15 existing large-scale factories

Opportunity description:

Unlock domestic cable demand in largest markets (e.g., Kenya, Nigeria, Tanzania, Ethiopia) by structuring predictable and aggregated procurement pipelines (~USD 5-7bn), enabling existing manufacturers currently operating at sub-scale (<50% utilization) to reach full capacity, reduce unit costs by ~15-25%, and compete sustainably with imports while leveraging existing ~10-15 large-scale factories

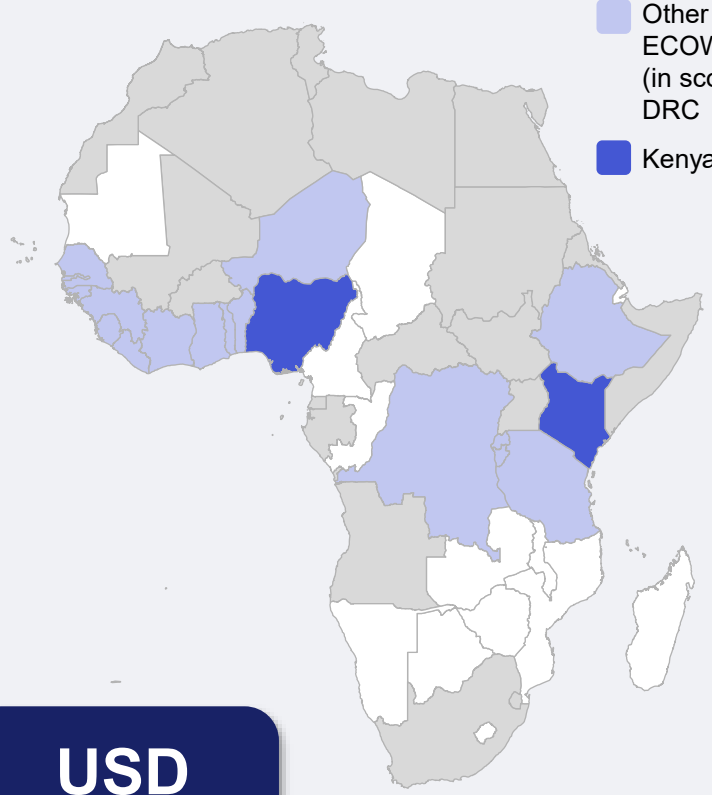
Key unlocks required:

Off-take agreements (committed volumes) to **de-risk investment** and provide **minimum demand visibility**	• **DFIs** provide payment guarantees and de-risk utility procurement • **Governments** commit multi-year electrification budgets • **Utilities** include minimum off-take clauses in contracts Banks lend against guaranteed receivables
M300 pre-qualification/certification to validate product quality, manufacturing capability, and local content (manufactured/assembled in M300 countries)	• **Governments and DFIs** define and enforce M300 standards • **DFIs** support certification infrastructure and audits • **OEMs** provide technical support and quality systems • **Manufacturers** upgrade processes to meet pre-qualification requirements
Targeted local content and phased protection measures, gradually increasing local content requirements as domestic industry capabilities scale	• **Gov / Regulators** set local content thresholds and enforce procurement rules • **Utilities** prioritize compliant local suppliers • **Industry** scales capacity to meet demand

1. Based on M300 cable demand of Kenya, Nigeria, Tanzania, Ghana, Zambia and Ethiopia

Play 2: Scale Kenya and Nigeria as regional manufacturing champions within EAC and ECOWAS

Market overview of the play



USD ~3-5bn[1]

Total market size

Capturable through ~10-15 large-scale factories[1]

Opportunity description:

Leverage and scale existing leading manufacturers in Kenya and Nigeria to serve regional demand within EAC and ECOWAS, aggregating volumes across neighboring markets to reach efficient scale, improve utilization, and compete with imports through regional exports

Key unlocks required:

OEM partnerships and local assembly models to transfer capabilities and reduce margin stacking from imports	• **Governments** incentivize joint ventures and local assembly partnerships • **OEMs** provide technology transfer, components and quality systems • **Manufacturers** develop assembly capabilities before full localization
Off-take agreements (committed volumes) to de-risk investment and provide minimum demand visibility	• **DFIs** provide payment guarantees and de-risk utility procurement • **Governments** commit multi-year electrification budgets • **Utilities** include minimum off-take clauses in contracts Banks lend against guaranteed receivables
Special Economic Zones (SEZs) with duty-free input imports, tax incentives, and streamlined regulation to improve cost competitiveness	• **Gov** designate SEZs and provide fiscal incentives • **Regulators** simplify procedures • **Developers** ensure infrastructure readiness

1. Market size estimated based on full market demand for Nigeria and Kenya, plus additional ~33% of other ECOWAS & EAC countries demand. Market potential of other plays (e.g., cables and meters) excluded to avoid double-counting

Play 3: Scale locally anchored manufacturing in protected markets to capture domestic demand

Market overview of the play

USD ~2-4bn

Total market size

Capturable through ~10-15 large-scale factories

Opportunity description:

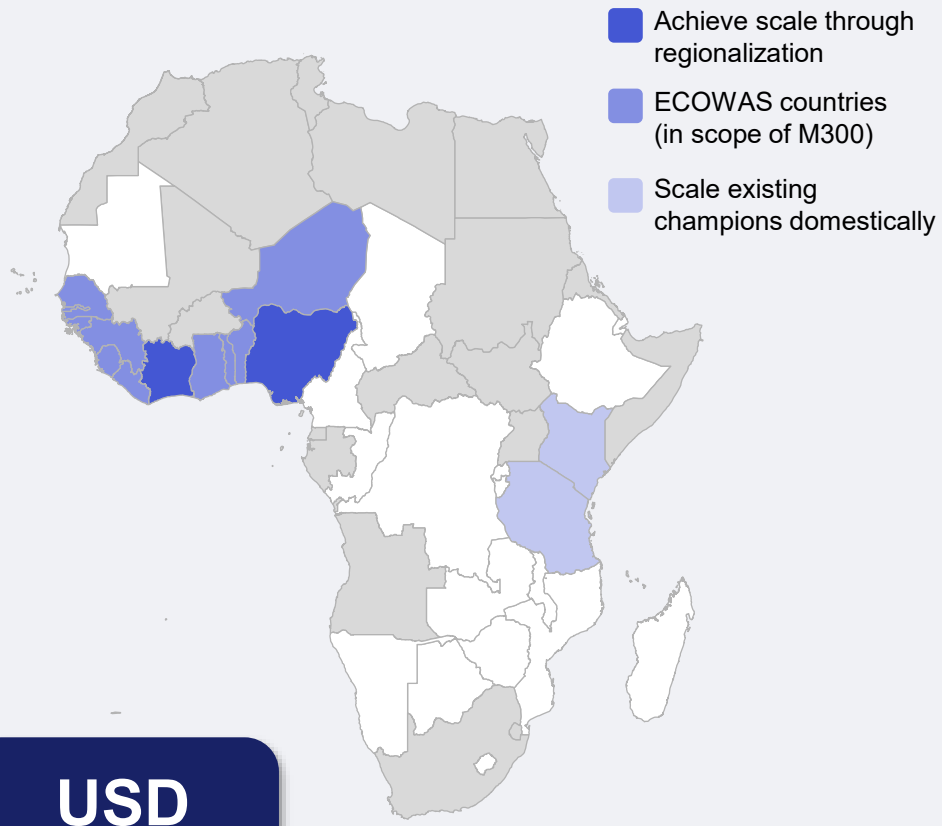
Scale locally anchored manufacturing of switchgear and transformers in Ethiopia and Tanzania to capture large, structurally protected domestic markets, where import constraints (Ethiopia) and local presence requirements (Tanzania) limit external competition

Key unlocks required:

Supply chain finance (SCF) anchored on utility receivables to alleviate working capital constraints and enable production scale-up	• **Utilities** act as anchor obligors through off-take contracts • **Manufacturers** leverage SCF to finance input purchases and production • **DFIs and banks** deploy receivables-based financing and guarantees
Improved FX access and local currency financing to unlock capacity utilization in Ethiopia	• **Government / central bank** prioritize FX allocation for industrial inputs • **DFIs / TCX** provide hedging and local currency financing solutions • **Banks** intermediate access to FX and LCY funding • **Manufacturers** optimize sourcing and financing structure
Total **cost of ownership**-based procurement to **shift evaluation** from **upfront price** to **lifecycle performance**	• **Governments and DFIs** mandate TCO criteria in procurement • **Utilities** adopt standardized evaluation models • **Manufacturers** provide performance and efficiency data

Play 4: Scaling local meter assembly through procurement policy and OEM partnerships

Market overview of the play



USD ~2-3bn[1]

Total market size

Capturable through ~5-10 large-scale factories[2]

Opportunity description:

Leverage existing electric meter assembly capacity in Kenya, Nigeria, Tanzania, and Ghana to capture domestic demand, with Nigeria and Ghana continuing to scale through regional exports within ECOWAS, and sustain enforcement of local procurement frameworks while enabling additional OEM partnerships to further local capability

Key unlocks required:

Off-take agreements (committed volumes) to **de-risk investment** and provide **minimum demand visibility**	• **DFIs** provide payment guarantees and de-risk utility procurement • **Governments** commit multi-year electrification budgets • **Utilities** include minimum off-take clauses in contracts • **Banks** lend against guaranteed receivables
Targeted local content and phased protection measures, gradually increasing local content requirements as domestic industry capabilities scale	• **Gov / Regulators** set local content thresholds and enforce procurement rules • **Utilities** prioritize compliant local suppliers • **Industry** scales capacity to meet demand
OEM **partnerships** and **local assembly models** to **transfer capabilities** and **reduce margin stacking** from imports	• **Governments** incentivize joint ventures and local assembly partnerships • **OEMs** provide technology transfer, components and quality systems • **Manufacturers** develop assembly capabilities before full localization

1. Includes market size for Kenya, Tanzania, Nigeria, Ghana, plus additional ~33% of other ECOWAS countries demand // 2. Factories producing ~1m meters per year

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Component deep dives

M300 market demand from plays has been estimated based on priority markets and regional blocs served

Play	Components	Market demand captured by the play													
		Kenya	Tanzania	Ethiopia	Nigeria	Ghana	Zambia	DR Congo	Benin	Zimbabwe	Côte d'Ivoire	Togo	Mozambique	Other EAC countries	Other ECOWAS countries
1	• **Cables**	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%
		Rationale: Play focuses on capturing local demand, with regional demand to be seen as an up-side (and thus at 0%)													
2	• **MV/LV transformer** • **Switchgear** • **Distribution board** • **Poles** (wood only, Kenya only)	100%	0%	0%	100%	33%	0%	33%	33%	0%	33%	33%	0%	33%	33%
		Rationale: Play focuses on regionalization and capturing ~33% of regional demand in Kenya and Nigeria with regional champions													
3	• **MV/LV transformer** • **Switchgear** • **Distribution board**	0%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
		Rationale: Play focuses on local Tanzanian and Ethiopian demand													
4	• **Electric meters**	100%	100%	0%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%
		Rationale: Play focuses on capturing local demand, with regional demand to be seen as an up-side (and thus at 0%)													

Source: Market opportunity model

Jobs intensity benchmarks and indirect employment multipliers across key electrical components have been used to triangulate job creation

Components	Direct jobs: Metrics used (per year)	Average value	Indirect jobs ratio
Cables	Jobs per $1M revenue	10	Assembly with imported components 1.1 – Manufacturing with local raw materials 1.9
	Jobs per 100 tons	2	
MV/LV transformer	Jobs per $1M revenue	12	Assembly with imported components 1.1 – Manufacturing with local raw materials 1.9
	Jobs per 100 MVA	5	
Switchgear & Distribution board	Jobs per $1M revenue	7	Assembly with imported components 1.1 – 1.27 – Manufacturing with local raw materials 1.9
Electric meters	Jobs per $1M revenue	6	Assembly with imported components 1.1 – 1.4 – Manufacturing with local raw materials 1.9
	Jobs per 100,000 units	10	
Poles *(wood only)*	Jobs per $1M revenue	20	Assembly with imported components 1.1 – Manufacturing with local raw materials 1.9
	Jobs per 1,000 poles	2	

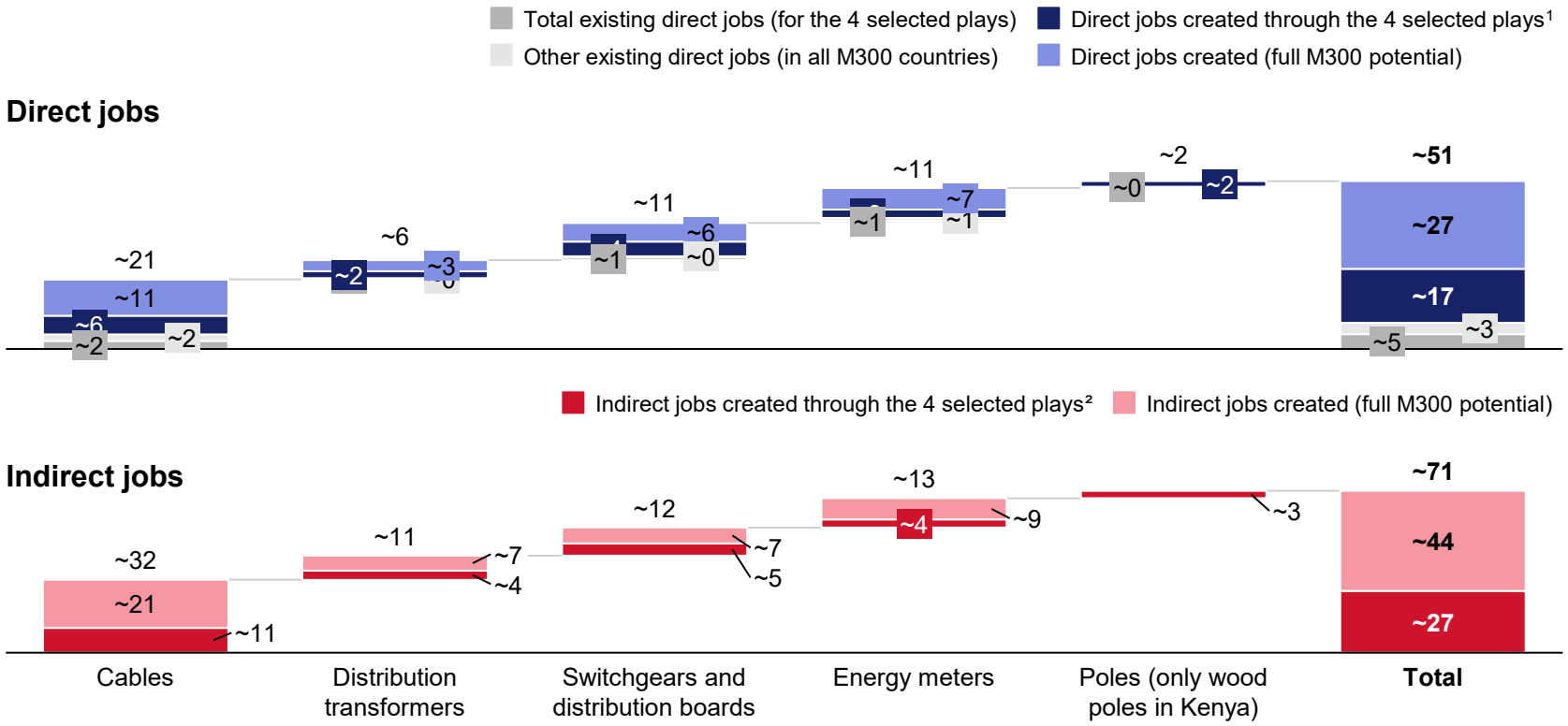
Methodology

- Benchmarks derived using a bottom-up proxy approach based on publicly available data from African manufacturers
- Triangulation with expert interviews across cable, transformer, switchgear and meter manufacturers to validate ranges and ensure operational realism
- Indirect jobs estimated using UNIDO-style multipliers, adjusted to reflect propensity to leverage local industrial footprint
- Final values reflect mid-point estimates across observed ranges, prioritizing conservative assumptions

Source: Expert interviews, press search, UNIDO report on multiplicator

5. Strategic scaling of manufacturing capacity could create ~17k direct employment opportunities on top of ~8k current direct jobs to be maintained

Job creation assessment of M300 project (if all demand is captured by local manufacturers), in '000 jobs, by 2030



1. The direct jobs has been estimated using jobs ratio of African companies for each category
2. Benchmark based (e.g., Indirect jobs could include the jobs related to the production and supply of components such as glass and frames)

Source: Expert interviews, press search, UNIDO report on multiplicator

Note:
- Full M300 potential has been estimated on the full M300 installation market (regardless of capability to serve market with local manufactured items)

Key takeaways

- **Scaling manufacturing is not only about job creation** but also about sustaining and securing the existing industrial workforce
- **Job intensity is structurally higher in upstream components** (e.g., cables, poles) vs assembly-led segments, reflecting higher localization of value chains
- **Each direct job drives significant indirect employment** across suppliers, logistics and services, highlighting strong ecosystem spillovers
- **Poles assessment remains partial (Kenya-focused)**, with potential upside but high country-level variability in materials, standards and supply chains

Agenda

Executive summary

Detailed report

- Context and objectives
- Market sizing
- Competitiveness assessment
- Current challenges
- Scaling approach and implementation
- Job creation

Governance

Component deep dives

Effective regional coordination is essential to realize economies of scale and prevent market fragmentation

	Fragmented national scaling	Coordinated regional aggregation
Industrial impact	• Sub-scale production facilities • Limited fixed cost absorption • Higher unit production costs • Reduced export competitiveness	• Improved cost competitiveness • Efficient production scale • Stronger procurement position
Investment impact	• Sub-scale production facilities • Limited fixed cost absorption • Higher unit production costs • Reduced export competitiveness	• Clear demand visibility • Bankable scale thresholds • Aligned financing instruments
Systemic benefit	• Overcapacity in some markets • Underinvestment in others	• Reduced duplication • Concentrated industrial hubs

Coordination enables economic efficiency while preserving sovereign procurement autonomy

A light coordination mechanism is necessary to synchronize demand, capital and industrial expansion

Focus the scope

- Establishes key components and geographies based on competitiveness and market demand
- Align on the plays to push
- Synchronizes the strategic play roadmap to ensure alignment with identified priorities

Complement and support the unlocks

- Drive stakeholder alignment to resolve cross-country dependencies, fostering cohesive actions and shared objectives
- Prioritize and sequence actions required to unlock scale

Monitor performance and risks

- Track progress against key metrics (demand aggregation, capacity utilization, cost competitiveness)
- Identify fragmentation risks early, such as countries pursuing independent paths and divergence in specifications
- Elevate critical issues promptly to the appropriate institutions to enable swift resolution

Provide targeted support to individual companies

- Assist manufacturers in validating their scale, CAPEX, and expansion strategies
- Establish connections with financing partners and offtakers to support growth
- Resolve company-specific constraints such as working capital, procurement visibility, and operational bottlenecks

Explicit safeguards

- No authority over sovereign procurement decisions
- No local content mandates / conditionality
- No interference with M300 electrification governance or timelines

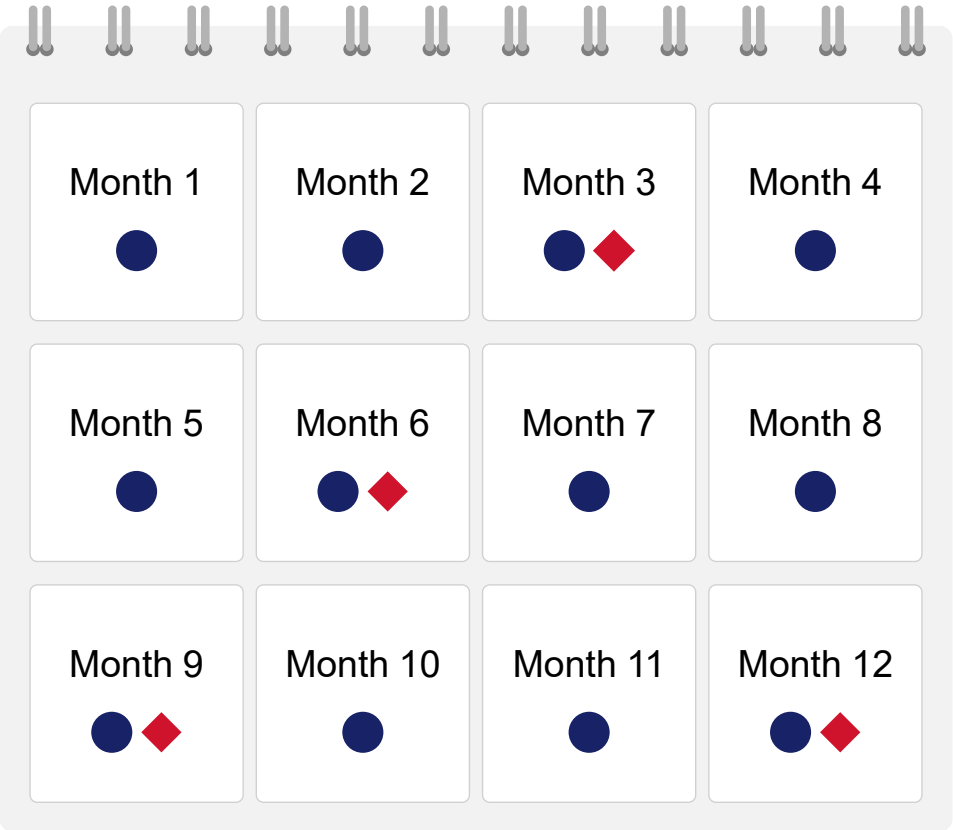
Clear institutional roles and decision rights are required to ensure effective implementation

Function	Lead institution	Role in scaling
Demand visibility	THE WORLD BANK	Provide forward visibility on connection pipelines; align country-level electrification programs with component aggregation opportunities; facilitate dialogue with governments
Capital mobilization	IFC	Assess bankability of priority plays; structure debt/equity solutions; mobilize co-investors; align financing with required competitive production scale
Regional alignment	ENERGY FOR ALL	Facilitate cross-country coordination; promote specification alignment where feasible; reduce fragmentation risks
Transaction support	Foreign, Commonwealth & Development Office	Provide technical and transaction advisory to manufacturers; support feasibility studies and investment preparation
Capacity expansion		Commit capital expenditure; scale production capacity; ensure cost competitiveness and quality standards
Strategic oversight	Foreign, Commonwealth & Development Office	Convene stakeholders; ensure coherence with M300 objectives; monitor progress against agreed KPIs

Decision and accountability model

- **Decision logic:**
  - SteerCo validates strategic direction and priority plays
  - Working groups prepare proposals and track progress
  - Defined quorum required for formal endorsement
  - No authority over sovereign procurement decisions
  - No local content mandates or conditionality
- **Accountability:**
  - Each strategic play assigned a lead institution
  - Progress tracked against agreed KPIs
  - Mandate reviewed periodically

An effective mechanism demands clear focus, strict timelines, and neutrality toward electrification strategies



Decision process

- Working groups prepare proposals (scope, scale requirements, financing needs, risks)
- Pre-read circulated ahead of SteerCo meeting
- SteerCo validates strategic direction and endorses next steps
- Lead institutions assigned with clear responsibilities and timelines
- Progress reviewed against KPIs at subsequent meetings

Outputs

- Decision log (validated components, geographies, scale thresholds)
- Action tracker (institution / action / deadline)
- KPI dashboard (industrial scale and electrification neutrality indicators)

Agenda

Executive summary

Detailed report

Component deep dives

Cables

- Transformers
- Switchgears
- Meters
- Poles
- Detailed list of manufacturers

Executive summary

Market opportunity

Cable demand under Mission 300 is large and sufficiently concentrated to support regional-scale manufacturing. Approximately USD 11-12bn in MV and LV cable demand is expected between 2025 and 2030, with volumes concentrated in a limited number of countries, enabling both local scale and potential regional supply

Competitiveness dynamics

Local cable manufacturing can be competitive under current tariff protection, but remains uncompetitive against duty-free imports. While local producers achieve cost parity in several priority markets under existing tariff regimes, duty exemptions in large utility tenders enable imports to undercut local manufacturers, limiting their ability to capture demand

Industrial landscape

An existing industrial base provides a foundation for scaling, but fragmentation limits efficiency today. Manufacturing capacity is already present in key markets such as Kenya and Nigeria; however, production remains below efficient scale (utilization rates ~20-50%) due to limited market access, inability to access utility tenders (e.g., imports tariff exempt in Kenya) and competing against tolerated sub-standard cables

Strategic implications

Cables represent one of the most viable distribution components for regional manufacturing expansion under Mission 300. Structuring predictable and aggregated procurement pipelines can drive utilization, reduce unit costs, and allow local manufacturers to compete sustainably, while uncoordinated approaches risk continued reliance on imports

Cables are core electricity distribution components in scope for manufacturing scaling in Africa

Cables

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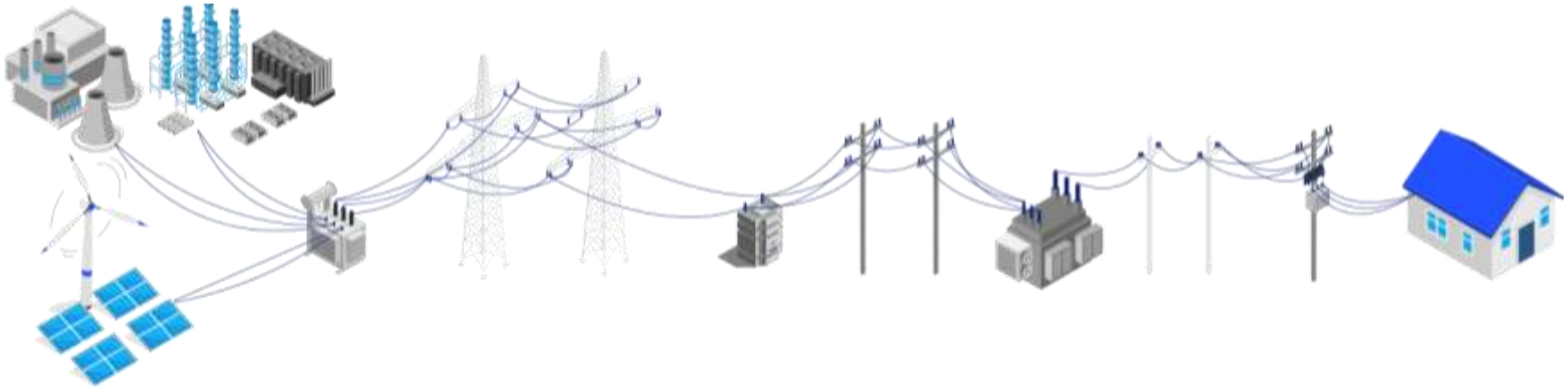
Electricity flow

Generation
Production of electricity through various energy sources

Transmission
Transport of electricity over long distances

Distribution
Delivery of electricity to homes and businesses

Illustration



Grid BOM items

Energy generator	HV transformer	MV transformer	MV to LV trans-former	Switch-gears	LV distribution cable	Service protection device	Grounding system
	HV distribution cable	MV distribution cable			LV line support pole		
	HV line support towers	MV line support towers		Circuit breakers	Service drop cable	Energy meter	Customer distribution board

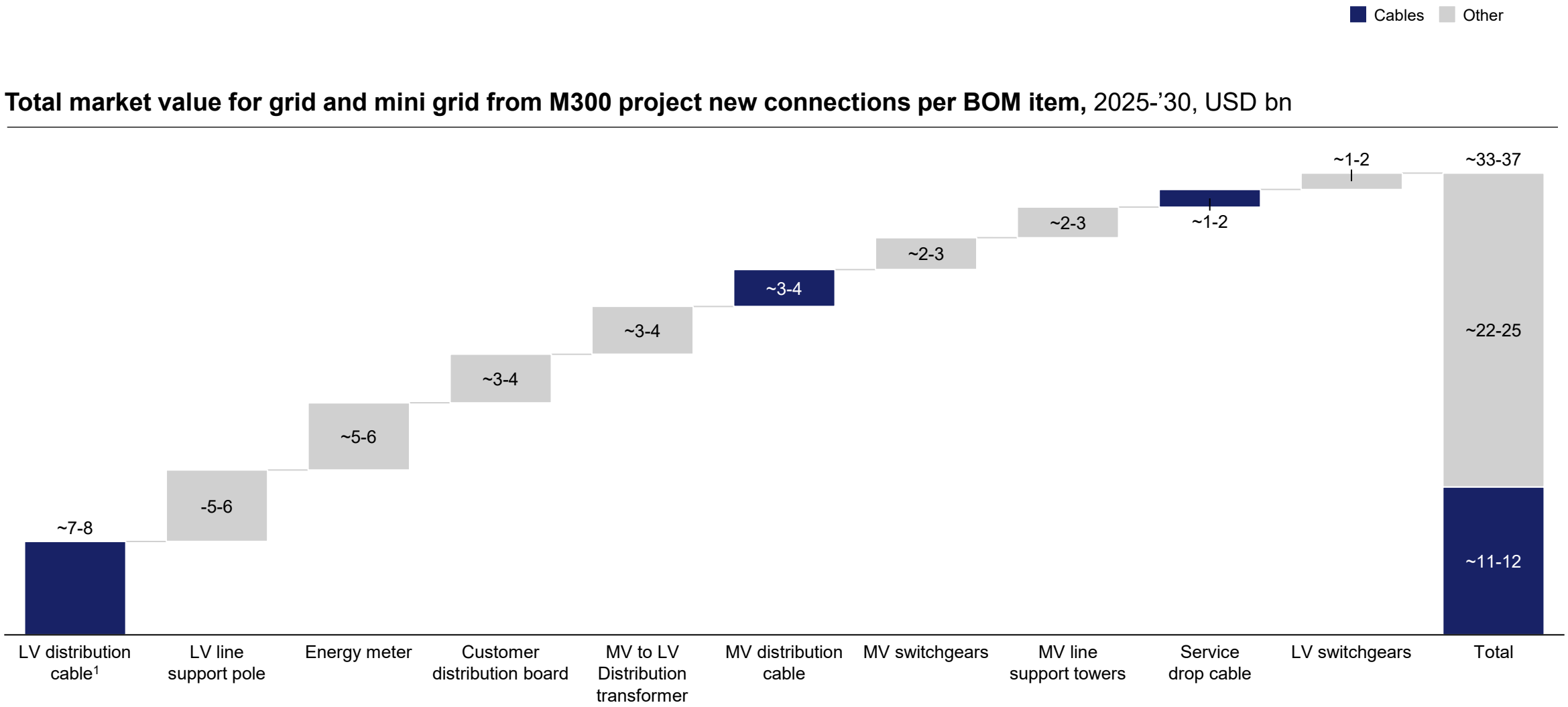
Mini-grid BOM items

Solar PV modules	Inverter / power conversion system	Switchgears	LV distribution cable	Service protection device	Grounding system	
Battery storage system			LV line support pole			
Backup diesel generator		Circuit breakers	Service drop cable	Energy meter	Customer distribution board	

Source: Market opportunity model, Expert interviews

M300 drives ~USD 11-12bn in cable demand across LV distribution and MV networks

Total market value for grid and mini grid from M300 project new connections per BOM item, 2025-'30, USD bn



1. Includes market for solar cables

Power cables have various configurations and use cases; M300 will create opportunities across LV and MV cables

Manufacturing Synergy

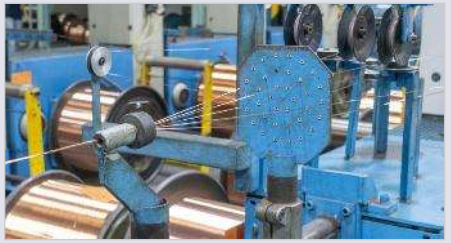
	Category	Voltage configurations	Description
	**LV** Low Voltage Cable	300/500 V 450/750 V 600/1000 V	• Enables **last-mile distribution** from transformers to households, businesses and public facilities, including **service drops**, **mini-grid internal wiring**, and **low-voltage networks** • Leverages **standardized manufacturing processes** (conductor drawing, extrusion, sheathing), where competitiveness is driven by **scale** and **material sourcing** rather than advanced engineering complexity • Captures the largest **volume opportunity** under **M300**, aligned with existing **African manufacturing capabilities**
	**MV** Medium Voltage Cable	3/6 kV, 18/30 kV 3.8/6kV 1.8/3kV 1.9/3.3 kV	• Supports **primary distribution networks** connecting substations to distribution transformers and **mini-grid backbone systems** • Requires **higher-precision extrusion**, tighter **process control**, and more stringent **testing standards** than LV, creating moderate **technical barriers to entry** • Provides a scalable **upgrade path** for established African LV manufacturers into higher-**margin segments** under M300-driven **grid extension**
	**HV** High Voltage Cable	36/66 kV, 72 kV 64/110 kV, 132 kV 76/132 kV, 145 kV 87/150 kV, 170 kV	• Transmits **bulk power** between major substations across long distances as part of **national grid backbone infrastructure** • Demands **advanced insulation systems**, specialized **testing facilities**, and strict **quality control**, increasing **capital intensity** and technical complexity • Limited near-term relevance to **M300**, given the focus on **last-mile electrification**
	**EHV** Extra High Voltage Cable	89/154 kV, 170kV 127/220 kV, 245 kV 200/345 kV, 362 kV, 220/400 kV, 420 kV	• Enables **long-distance, high-capacity transmission** across regions and countries within **utility-scale infrastructure** • Requires highly **capital- and technology-intensive manufacturing**, with sophisticated **insulation systems** and extensive **certification requirements** • Falls outside the immediate **M300 manufacturing priority**, given transmission orientation and lower relative volume

Source: Press search

The value chain involves three key steps covering the extraction of raw materials, pre-fabrication and manufacturing

M300 opportunity

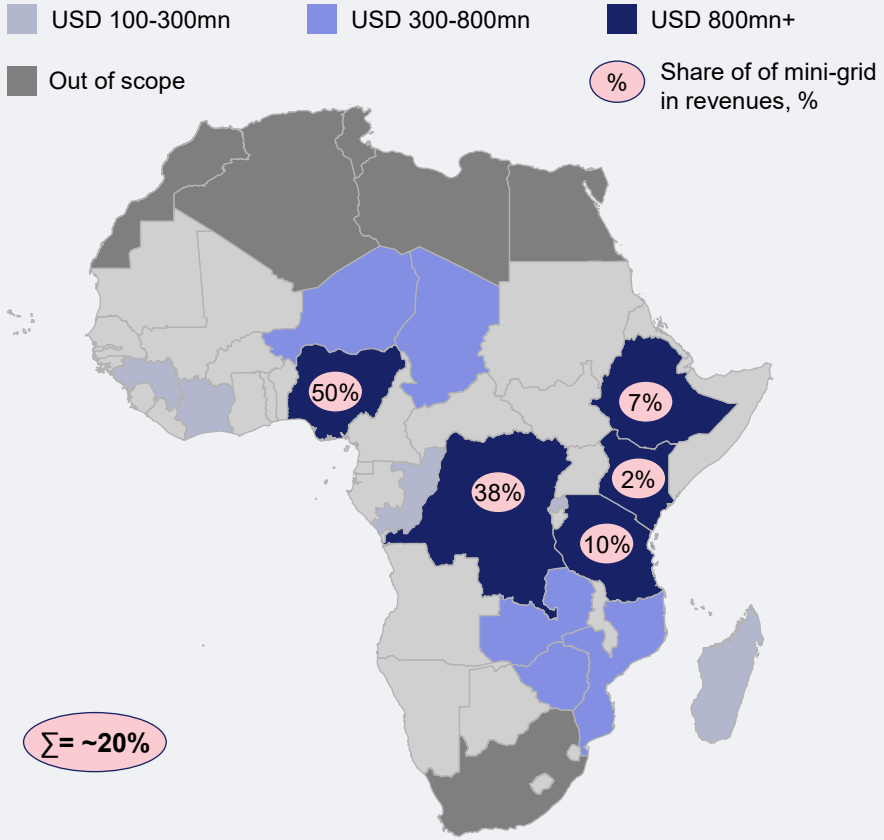
Simplified value chain	Raw material extraction & processing	Pre-fabrication	Manufacturing
Description	• **Copper and Aluminum** are extracted **from ores to reach their purity level** • **Polymers are also sourced** for insulation materials	• **Copper cathode is processed into a copper rod** with the use of casting and rolling machines • Polymers are also blended with additives to produce different types of insulation materials, ultimately depending on the desired cable type	• **The metal rods are drawn and stranded** into smaller sizes to form a conductor (density of wire strands depends on cable type) • In some applications, **the conductor is coated with plastic insulation,** taped with shielding foil and armored with additional steel wires • To ensure optimal performance, **wires are thoroughly tested and certified**
Output	• **Refined copper** • **Refined aluminum** • **Raw polymers**	• **Copper rod** • **Aluminum rod** • **Insulation materials**	• **Low Voltage cables** • **Medium voltage cables**
M300 relevance	• **Medium:** Regional availability of **copper and aluminum** (e.g., DRC, Zambia) provides a partial supply base, but limited local refining and processing capacity constrains full upstream integration	• **Medium: Rod and insulation production** remains limited and often import-reliant, with **high inland logistics costs** eroding competitiveness versus direct imports of semi-finished inputs	• **High: Cable manufacturing is well-established locally**, strongly suited to scale under M300 due to **proximity to demand, tariff protection, and existing industrial capacity**



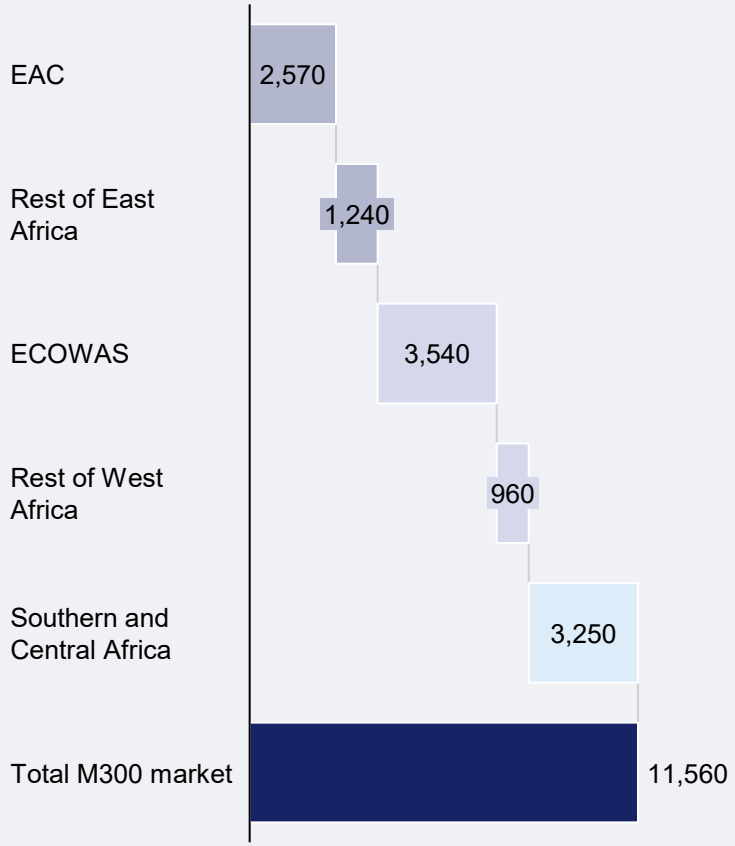
Source: Press search, company websites

M300 demand could lead to a ~USD 11-12bn total market for cables, with demand concentrated around two regional hubs

Potential grid and mini grid additional MV and LV cables market under M300 per country, in USD, 2025-'30



Cables market under M300 by region, in USD millions, 2025-'30



Takeaways

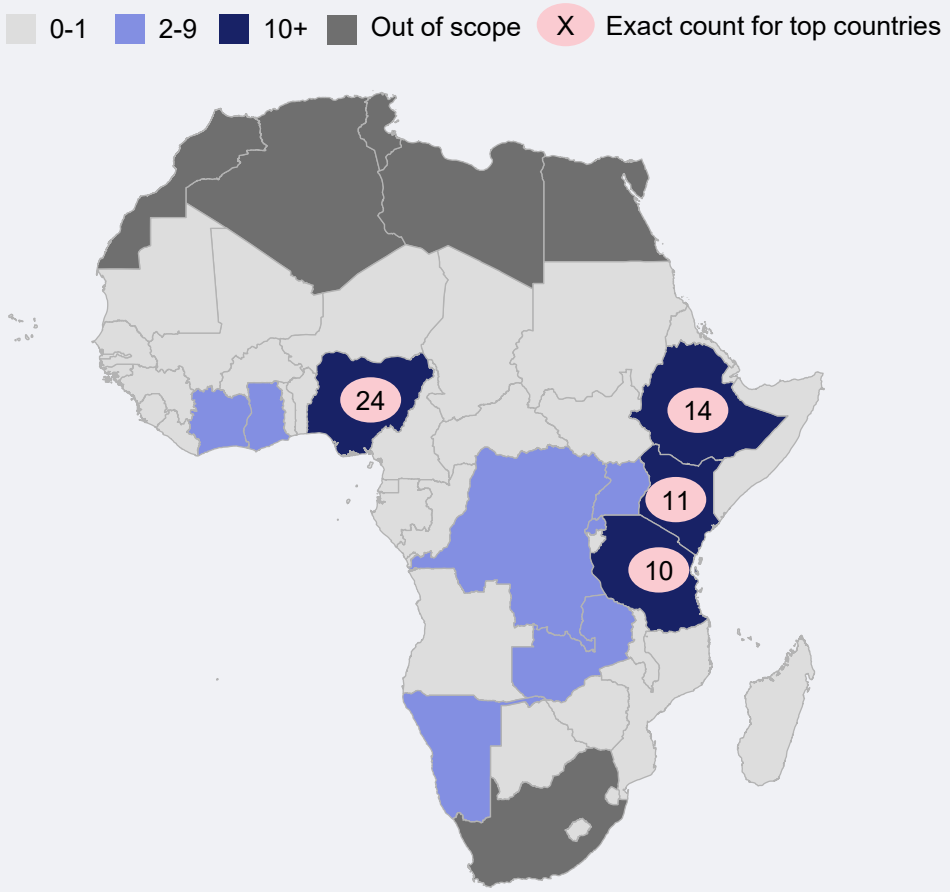
- M300 is expected to generate a **~USD 11.6bn market for distribution cables**, concentrated in a small number of high-demand countries, with Ethiopia, Tanzania, Nigeria, DRC, Kenya **representing >50% of total demand**
- Demand is anchored in key regional trade corridors, with **EAC and ECOWAS representing ~USD 2.6bn and ~USD 3.5bn markets respectively**
- **New grid connections drive the majority of demand**, accounting for ~80% of total cable volumes

Source: Market opportunity model, National Compacts, Expert interviews

Four countries emerge with a well-established cable manufacturing base on the continent

NOT EXHAUSTIVE

Number of identified unique cable manufacturers per country



Main players in top countries

Country	Company Name	Years of experience	Estimated FTEs[1]
	Cutix PLC	40+	260
	Kabelmetal Nigeria (affiliated to Nexans group)	50+	200
	Coleman Wires and Cables	50+	160
	East African Cables	40+	300
	Metsec Cables	20+	200
	Coast Cables	50+	200
	Belayab Cable	10+	250
	BMET Cable	15+	200
	Addis Cable	10+	n.a
	Kilimanjaro Cables Limited (part of AfriCab Group)	40+	450
	Multi Cable Limited	50+	160
	Elsewedy Electric East Africa Limited	5[2]	n.a[2]

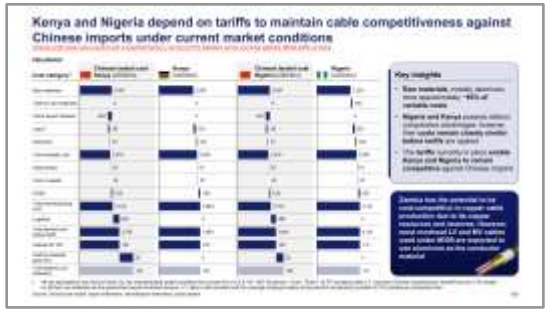
1. Based off manufacturer interviews, D&B estimates or company websites when disclosed
2. Factory is under construction, with an estimate for number of future jobs stated on company website

Source: Press search, S4G McKinsey

Cost analysis methodology structured across four steps to estimate financial viability of local manufacturing vs. importing

1. Base scenario in Kenya and Nigeria

Developed a bottom-up cost comparison between local manufacturing and Chinese imports to establish a base scenario in Kenya and Nigeria. Structured the analysis to compare total landed costs on a like-for-like basis



2. Base scenario extrapolation on other M300 countries

Scaled the base comparison across additional countries by modifying tariffs and logistics costs. Isolated cross-country differences to enable direct benchmarking of competitiveness

3. Sensitivity on key hypotheses

Varied key parameters one at a time to test the robustness of results and identify tipping points. Assessed how changes in external conditions impact relative competitiveness

4. Driver costs modeling on base case scenarios

Decomposed total cost differences into individual drivers to understand sources of competitiveness gaps. Linked each driver to actionable levers to quantify improvement potential

We used a set of assumptions to accurately assess cost competitiveness of cable manufacturing

Category	Assumption
Technical	• Assumed modelling of a LV overhead 0.6/1 kV, 4 core, 70mm^2 aluminum, XLPE insulated cable • Assumed a conductor scrap rate of 2%
Raw materials	• Used the aluminum price on the Shanghai Metal Market (SMM) for China manufacturing (05/03/2026) • Used the aluminum price on the LME for Kenya and Nigeria, given that imports come from UAE (05/03/2026) • Assumed 2% conversion premium from the raw metal into aluminum rods for China[1], whilst the conversion cost for Kenya & Nigeria is 4%[1] • Assumed additional costs linked to consumables and packaging represent 6% of raw material costs • Assumed Chinese manufacturers are eligible for the 13% rebate through the existing China export rebate schemes (modelled only on raw materials for simplicity)
Logistics	• Assumed China sources locally, with no raw material shipping costs and input tariffs • For Kenya & Nigeria, assumed aluminum is shipped from UAE and XLPE from Shanghai
labor	• Assumed labor costs consistently across countries using fDi benchmark data • Assumed productivity per worker using manufacturing interview and scaling across countries using ILO's labor productivity index when missing data
Production capacity	• Assumed production plant of 5,000 tons (~5,500 km) with a 70% utilization rate consistent across countries
Fixed costs	• Assumed a factory CAPEX of $7million • Assumed a useful life of 30 years • Assumed a privileged access to capital in Kenya & Nigeria, leveraging M300 DFI partners, with a debt to equity split of 65/35% for Chinese manufacturing and of 30/70% for Africa based manufacturing • Assumed China borrowed at a ~3% interest rate, while Kenya & Nigeria borrowed at ~10% interest rate • Assumed SG&A as being 5% of total manufacturing costs
Shipping costs	• Estimated shipping costs using Searates.com, for both 20ft and 40ft containers, (end of Feb 2026[2])

1. The China conversion cost is based off the SMM premium available online, the Africa premium is based on local manufacturer interviews // 2. These prices are before the war with Iran started, blocking the strait of Hormuz

1. Kenya and Nigeria depend on tariffs to maintain cable competitiveness against Chinese imports under current market conditions

Analysis under base case scenario with a greenfield factory, running at 70% utilization across countries applying official tariffs vs China

Cost category[1]	Chinese landed cost Kenya (USD/km)	Kenya (USD/km)	Chinese landed cost Nigeria (USD/km)	Nigeria (USD/km)
Raw materials	3,057	3,293	3,057	3,224
Tariff on raw materials	0	0	0	165
China export rebates[2]	-397	0	-397	0
Labor[3]	181	233	181	261
Electricity	75	123	75	150
Total variable cost	2,916	3,649	2,916	3,800
Depreciation	50	61	50	61
Cost of capital	30	55	30	55
SG&A	158	198	158	205
Total manufacturing cost	3,153	3,963	3,153	4,121
Logistics	632	0	488	0
Total landed cost before tariff	3,785	3,963	3,641	4,121
Indexed at 100	100	105	100	113
Tariff on finished good (%)	35	0	20	0
Total landed cost (indexed)	135	105	120	113

Key insights

- **Raw materials,** notably aluminum**,** drive approximately **~85% of variable costs**
- **Nigeria and Kenya** possess distinct comparative advantages; however, their **costs remain closely similar before tariffs** are applied
- The **tariffs** currently in place **enable Kenya and Nigeria to remain competitive** against Chinese imports

Zambia has the potential to be cost-competitive in copper cable production due to its copper resources and reserves. However, most overhead LV and MV cables used under M300 are expected to use aluminum as the conductor material

1. All key assumptions are found in Back Up, the manufacturing model considers the cost per km of a 0.6-1kV, ABC Aluminum, 4 core, 70mm^2, XLPE insulated cable // 2. Assumes Chinese manufacturers benefit from a 13% rebate on raw materials via the government export incentive scheme (raw materials only for simplicity) // 3. labor costs consider both the average employee salary and production productivity (number of FTE needed per production line)

Source: Should cost model, expert interviews, manufacturer interviews, press search

2. Tariff escalation creates a structural 10-25% local price advantage in most priority markets

Analysis under base case scenario with a greenfield factory, running at 70% utilization across countries applying official tariffs vs China

Local index price lower vs. China import index price

Local index price higher by <10% vs. China import index price

Local index price higher by >10% vs China import index price

Note on index price: 100 = total landed costs from China manufactured component (incl. shipping) before tariffs

	EAC			ECOWAS			
Dimension	**Kenya**	**Tanzania**	**Ethiopia**	**Nigeria**	**Ghana**	**Zambia**	**DR Congo**
China import index price *(only difference between countries is tariff on finished goods)*	135	135	135	120	120	125	110
Local index price *(differences between countries are both manufacturing costs and tariffs on inputs)*	105	105	109	113	113	105	109
Tariff applied on manufacturing inputs, in[1] %	0%	0%	5%	7.5%	5%	0%	5%
Tariff on final product, in %	35%	35%	35%	20%	20%	25%	10%

Key takeaways

- In all markets, local index prices are **below China import index, driven by high tariff protection measures currently in place**

Methodology:

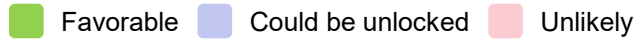
- Local index prices are based on a standardized model anchored on should-cost benchmark (either in Kenya or Nigeria), keeping production, labor and raw material assumptions constant
- Country differences are driven solely by input and final product tariffs, with China index reflecting landed cost including import duties

1. Average of input tariff on aluminum rods (HS Code: 760511) and XLPE insulation (HS Code: 390110) on Chinese imports

Source: IMF International Financial Statistics, Press search, should cost model

3. The competitiveness of local manufacturing fluctuates across scenarios, with the base case providing the most favorable conditions

Base case is a greenfield factory, running at 70% utilization across countries applying official tariffs vs China



Scenario[1]	Kenya	Tanzania	Ethiopia	Nigeria	Ghana	Zambia	DR Congo
Base case	Favorable	Favorable	Favorable	Favorable	Favorable	Favorable	Favorable
Zero tariff on finished goods	Could be unlocked	Could be unlocked	Could be unlocked	Could be unlocked	Could be unlocked	Could be unlocked	Could be unlocked
Low utilization	Favorable	Favorable	Favorable	Could be unlocked	Could be unlocked	Favorable	Unlikely
Depreciated plant	Favorable	Favorable	Favorable	Favorable	Favorable	Favorable	Favorable
Comparability to Egypt	Could be unlocked	Favorable	Favorable	Favorable	Favorable	Could be unlocked	Favorable

Key takeaways

- **Tariff removals** (e.g., donor-funded exemptions or COMESA members sourcing from Egypt) would likely **undercut local competitiveness**, requiring **offsetting incentives and/or base-case improvements** to preserve viability
- **Current high tariff regimes** in **Kenya, Tanzania, Ethiopia, and Zambia** can keep local manufacturing **competitive even at low utilization (~20–25%)**

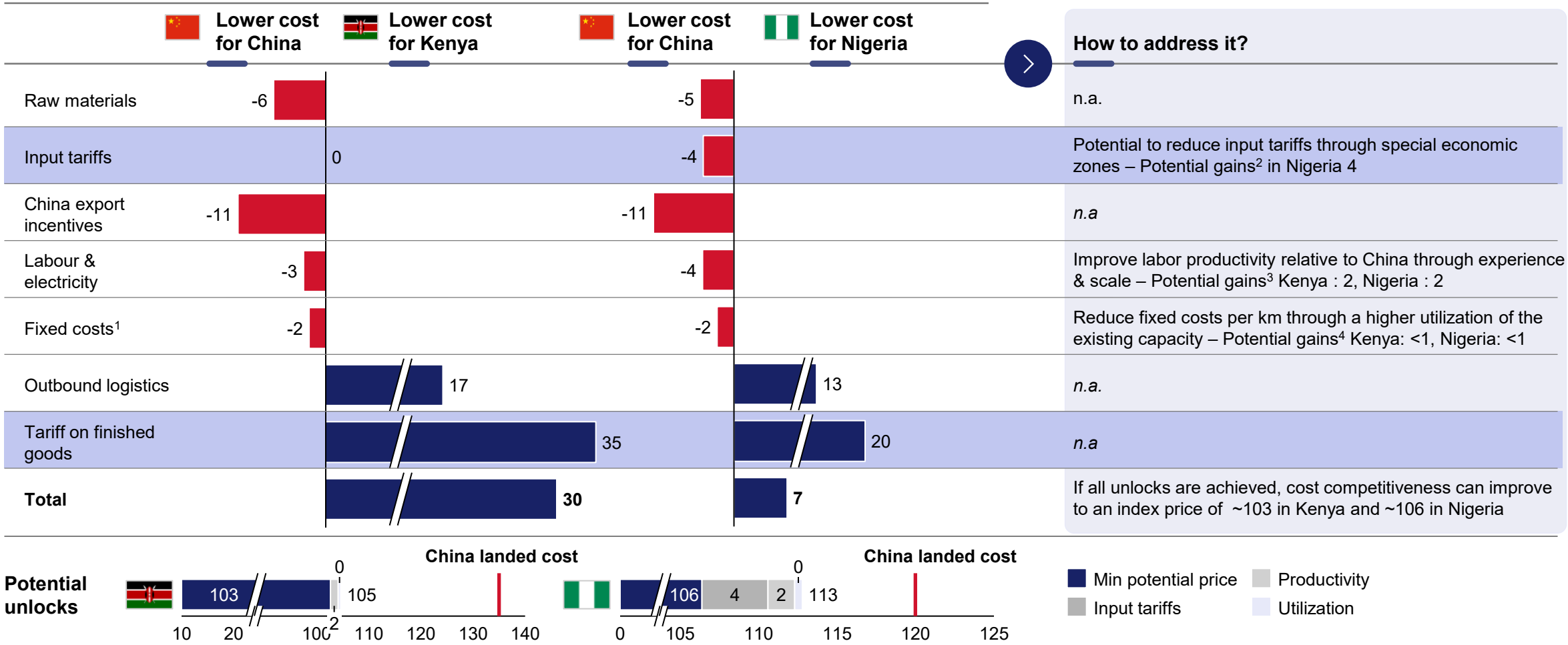
1. Changing one parameter at a time

4. Levers to improve cost competitiveness exist, improving the competitiveness of local manufacturing

Base case is a greenfield factory, running at 70% utilization across countries applying official tariffs vs China

Deep dive next

Drivers of cost gaps between China imports and local assembly[1], index



1. Includes gap due to cost of capital, depreciation, and SG&A // 2. Input tariff gains come from reducing input tariffs on aluminum rods and XLPE to 0% (i.e. if operating in a special economic zone) // 3. Considers a 30% increase in labor productivity // 4. Considers utilization increases from 70% to 90%

Source: Tariffs from ITC website, March 2026, desk research on prices in China, Kenya and Nigeria, logistics costs from SeaRates.com, Expert interviews, should cost model

4. Lower input tariffs strengthens Nigeria's cable manufacturing, with additional non-price advantages supporting local players

% Base case

Tariff sensitivity analysis in Nigeria

China import price index in Nigeria: 120

✓ Local index price lower or equal vs. China import index price

✗ Local index price higher vs. China import index price

Imported input tariff[1]	Price index Nigeria	Finished good tariff rate Nigeria 0%	10%	20%	30%
~7.5%	113	✗	✗	✓	✓
~5%	111	✗	✗	✓	✓
~0%	108	✗	✓	✓	✓

Non-price advantages of local manufacturing[2]

What we heard	Advantage
"China is cheap, but many cables don't meet international standards" — ***CEO of leading Kenyan cable manufacturer***	**Reliable compliance with specifications and quality**, avoiding risks associated with sub-standard imports
"Customers trust us quickly, and local production helps when specs change suddenly" — ***CEO of leading Kenyan cable manufacturer***	**Shorter lead times and easier customization to local specs**, reducing delays and making supply responsive
"Having a factory here means faster support and availability of spare cables, cutting downtime of projects" — ***CEO of leading Kenyan cable manufacturer***	**Faster after-sales support and spare availability**, reducing downtime and TCO

1. Average of input tariff on all imported components // 2. Advantages that are consistent across country (manufacturer interviews in Kenya, Nigeria, Ethiopia)

Source: Should cost model, press search, expert interviews

Kenya and Nigeria stand out for their manufacturing capabilities; others show varying constraint levels across infrastructure and skills

Manufacturing scaling attractiveness High — Low

Dimension	Sub-dimension	Kenya	Tanzania	Ethiopia	Nigeria	Ghana	Zambia	DRC
FX	FX volatility, last 3 years, in %	7%	2%	18%	29%	25%	15%	4%
	FX regulatory limitations	Low	Medium	High	Medium	Low	Low	High
Manufacturing	Existing elec. equipment manufacturing base	Medium-High	Low	Medium	Medium-High	Medium	Low	Low
	M300 market size, in USD bn	~2.5-3.5	~3.5-4.5	~3.5-4.5	~5-6	~0.4-0.8	~0.8-1.2	~3-4
	Manufacturing Value Added per capita, in USD	156	92	46	212	244	99	80
	Africa Infrastructure Development Index 100-basis	26	15	20	26	28	22	10
	# graduates in electrical and processing fields	Medium-High	Medium-Low	Medium	Medium-High	Medium	Low	Low
Logistics	Logistics Performance Index, from 1 to 5	2.8	2.6	2.6	2.6	2.5	2.6	2.5
	Export potential within Africa	High	Medium	Medium	High	Medium	Medium	Low
How appealing is the market		**High**	**Medium**	**Medium**	**High**	**Medium-high**	**Low**	**Low**

Takeaways

- **Kenya and Nigeria** best positioned to anchor regional supply chains, **combining existing manufacturing bases with large domestic markets**
- **Ghana** offers solid fundamentals with **high manufacturing value add and infrastructure**, but lacks sufficient market scale
- **Tanzania and Ethiopia show partial readiness**, with improving infrastructure but gaps in industrial scale and workforce depth
- **Zambia and DRC** exhibit the **highest constraints**, particularly in existing manufacturing base, skills availability, and infrastructure
- **Infrastructure, scale, and workforce** emerge as the most consistent enablers or barriers across markets

Source: IMF International Financial Statistics ; World Bank Logistics Performance Index 2023; African Development Bank Africa Industrialization Index 2022; African Infrastructure Development Index; National higher education statistics

Significant existing manufacturing capacity remains underutilized, constrained by policy distortions and limited demand aggregation

High Medium Low

Country	Demand[1]	Existing manufact-urers[2]	Economic compete-tiveness vs China[3]	Industrial readiness	Assessment
Kenya	High	High	High	Strong	Underutilized capacity
Tanzania	High	High	High	Medium	Underutilized capacity
Ethiopia	High	High	High	Medium	Underutilized capacity
Nigeria	High	High	High	Strong	Underutilized capacity
Ghana	Low	Medium	High	Medium	Scale through regionalization
Zambia	Medium	Medium	High	Limited	Resource-driven opportunity
DR Congo	High	Medium	High	Weak	Resource-driven opportunity

1. Market size under M300. High = USD, 800mn+ , Medium = USD, 800-300mn , Low = USD, 300-0mn
2. Number of identified existing manufacturers, High = 10+, Medium = 2-9, Low = <2
2. Local price index relative to China landed price (including tariffs). High = 10+ points cheaper, Medium = 10-0 points cheaper, Low = more expensive
3. The model focuses on aluminum cables, Zambia and DRC may be competitive in copper cables given it's local resources and reserves

Key insights

- **Significant existing capacity** in Kenya, Nigeria, Tanzania, and Ethiopia **remains underutilized** due to procurement distortions
- **Duty exemptions** in tenders **enable imports to displace local manufacturers** despite existing capacity
- Ghana **requires regional aggregation** to reach efficient scale
- Zambia and DRC offer **resource-driven opportunities in copper cable manufacturing**

Agenda

Executive summary

Detailed report

Component deep dives

- Cables
- **Transformers**
- Switchgears
- Meters
- Poles
- Detailed list of manufacturers

Executive summary

Market opportunity

Distribution transformer demand under Mission 300 is large and presents a significant opportunity for local manufacturing. Approximately USD 3-4 bn in distribution transformer demand is expected between 2025 and 2030, with volumes concentrated in a limited number of countries, enabling aggregation beyond fragmented national markets

Competitiveness dynamics

Local transformer manufacturing is rarely price competitive with Chinese imports under current cost structures. Local competitiveness is often constrained by structural barriers, including tariff regimes that impose higher duties on key inputs than on finished imports, fragmented regional markets and limited scale utilization. However, local manufacturers continue to capture demand by leveraging non-price advantages including shorter lead times, after-sales support (reducing total cost of ownership), and strong alignment with local utility and environment requirements

Industrial landscape

Existing transformer manufacturing capacity is concentrated in a limited number of priority markets, notably Nigeria, Tanzania, and Ethiopia, providing a foundation for local supply. In contrast, other priority countries have a limited established manufacturing base, constraining their ability to capture demand without new capacity build-out

Strategic implications

Despite current cost disadvantages, transformer manufacturing remains an attractive play under M300 in select markets, supported by non-price advantages and large domestic demand. Leveraging after-sales proximity, alignment with utilities, and targeted policy support can enable local players to capture demand over time

MV to LV transformers are a key distribution component necessary to new grid connections under M300

Transformers

NOT EXHAUSTIVE

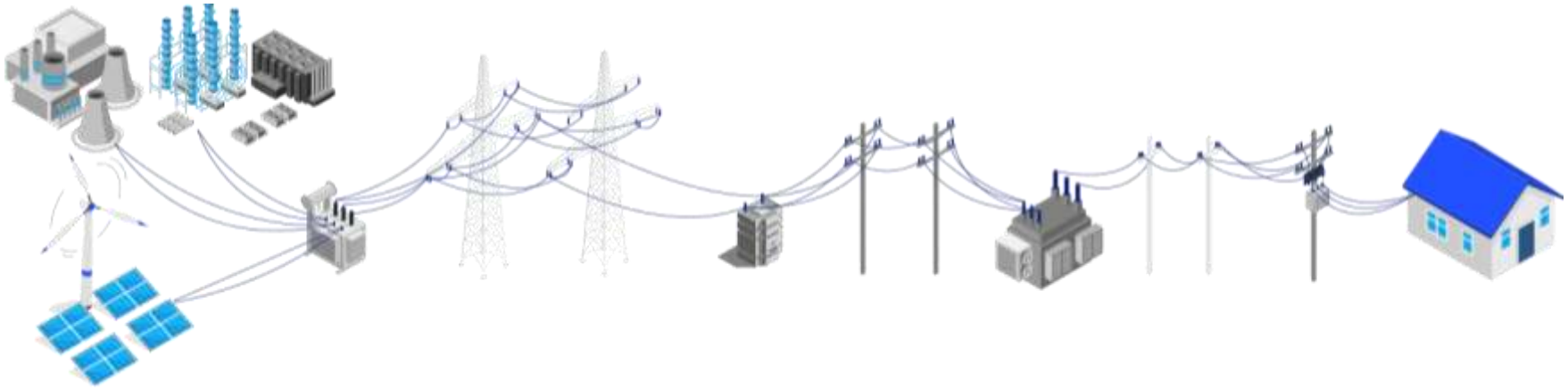
Electricity flow

Generation
Production of electricity through various energy sources

Transmission
Transport of electricity over long distances

Distribution
Delivery of electricity to homes and businesses

Illustration



Grid BOM items

Energy generator	HV transformer	MV transformer	MV to LV trans-former	Switch-gears	LV distribution cable	Service protection device	Grounding system
	HV distribution cable	MV distribution cable			LV line support pole		
	HV line support towers	MV line support towers		Circuit breakers	Service drop cable	Energy meter	Customer distribution board

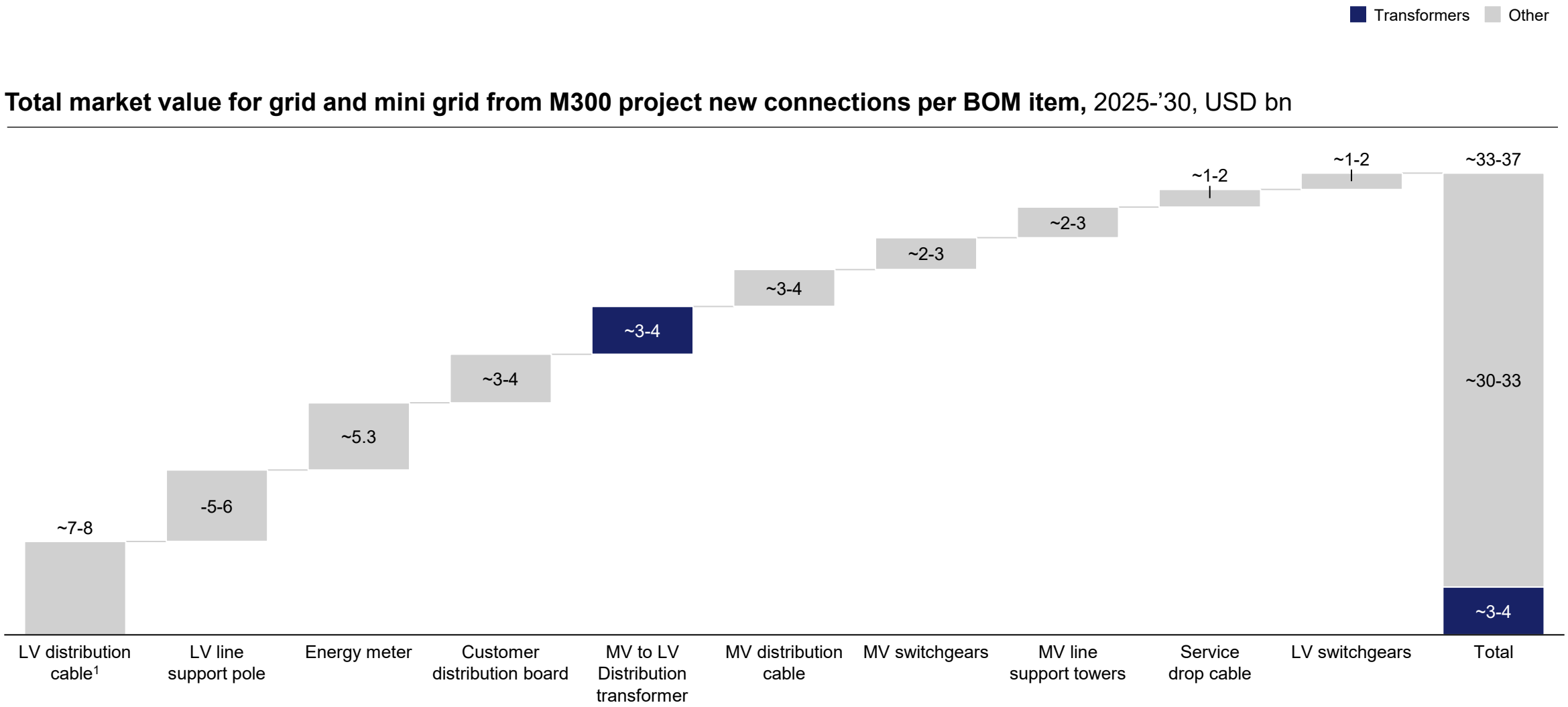
Mini-grid BOM items

Solar PV modules	Inverter / power conversion system	Switchgears	LV distribution cable	Service protection device	Grounding system
Battery storage system			LV line support pole		
Backup diesel generator		Circuit breakers	Service drop cable	Energy meter	Customer distribution board

Source: Market opportunity model, Expert interviews

M300 drives an additional ~USD 3-4bn demand in distribution transformers

Total market value for grid and mini grid from M300 project new connections per BOM item, 2025-'30, USD bn



1. Includes market for solar cables

The oil-immersed distribution transformer is the primary manufacturing opportunity under M300

Local manufacturing priority

Category	Transformer Type	Description
Power transformers	 **Generator step-up** *(11–33 kV to 132–400 kV)*	• Enables voltage **step up at power plants** to connect generation assets to the transmission grid • Requires **highly complex core design**, advanced insulation systems, heavy fabrication, and specialized testing facilities • Limited relevance to M300 last mile electrification, given **focus on generation and bulk transmission**
	 **Transmission (HV to MV)** *(132–220 kV to 33–66 kV)*	• Steps down **high voltage transmission to medium voltage** networks at primary substations • Involves **high engineering complexity**, stringent grid standards, and significant capital intensity • Secondary priority under M300, mainly linked to **grid reinforcement rather than new connections**
Distribution transformers[1]	 **Oil-immersed** (*11 or 33 kV to 400 V)*	• Step down **medium voltage to low voltage for outdoor, utility led distribution networks**, including pole mounted and ground mounted installations in urban and rural areas • Use **mineral insulating oil for cooling and insulation**, with standardized designs and moderate manufacturing complexity • Core focus under M300, driven **by large scale rollout of grid extension and mini grid connections**
	 **Dry type** *(11 or 33 kV to 400 V)*	• Step down **medium voltage to low voltage in indoor, space constrained or fire sensitive environments**, such as commercial buildings, hospitals, and industrial facilities • Use **cast resin or solid** insulation systems without oil, requiring tighter process control and specialized coil casting • Limited role in M300 last mile electrification, with demand concentrated in **commercial and industrial applications** rather than mass household connections

1. Can have single or three phase configurations

Source: Press search

Scalable distribution transformer manufacturing can be built on imported core inputs with local fabrication and assembly

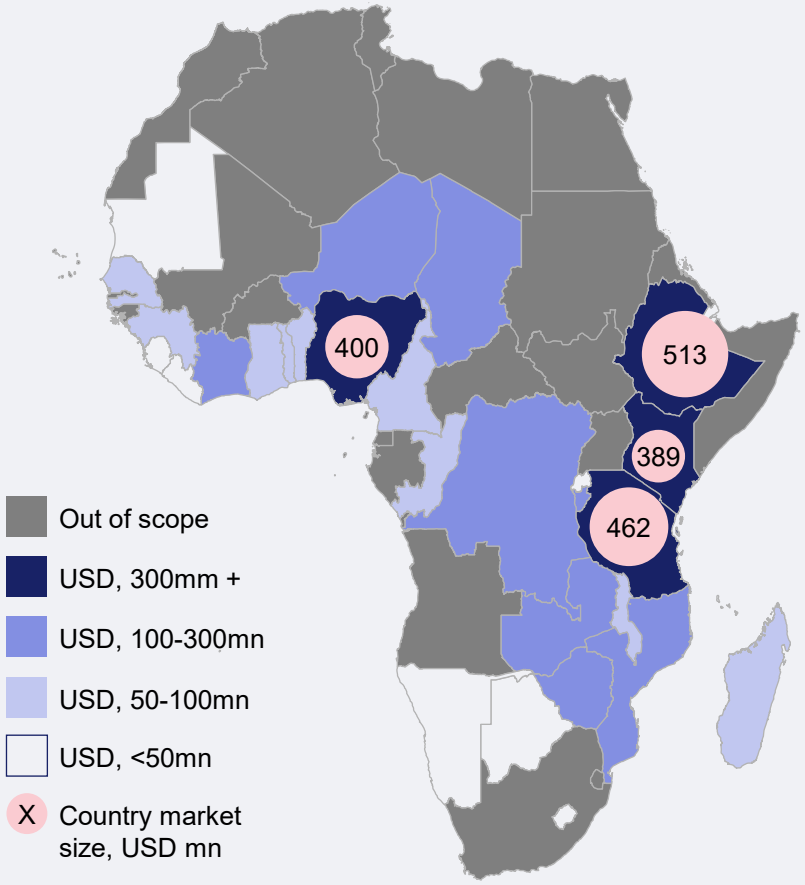
M300 opportunity

Simplified value chain	Component sourcing	Core & Coil Fabrication	Tank fabrication & Assembly
Description	• **Electrical steel**, **copper or aluminum conductors**, and structural **steel plates** are procured as primary inputs • **Insulation materials**, **bushings**, and **transformer oil** are secured to meet voltage and safety requirements • Grain-oriented **silicon steel laminations** are processed to achieve required magnetic performance	• **Silicon steel laminations** are cut and stacked to assemble the magnetic **core structure** • **Copper or aluminum windings** are wound into **LV and HV coils** according to design specifications • The **insulation system** is applied between windings to ensure dielectric strength and thermal stability	• Structural **steel plates** are formed and welded to manufacture the sealed **transformer tank** and cooling elements • The integrated **core and coil assembly** is installed within the tank with appropriate internal connections • The unit undergoes **vacuum drying**, followed by filling with insulating **mineral oil** to ensure electrical integrity
Output	• Processed **electrical steel laminations** • Conductor-grade **copper or aluminum material** • Qualified **insulation systems** and **transformer oil**	• **Assembled magnetic core** • **Completed LV and HV windings**	• **Fully assembled MV/LV oil-filled distribution transformer**
M300 relevance	• **Low:** Limited upstream integration, high dependence on access to raw materials and large-scale processing facilities	• **Medium–high:** Selective localization of core and windings achievable at scale, requiring high precision manufacturing and rigorous quality assurance	• **High:** Assembly, tank fabrication, and testing strongly suited to local manufacturing, driven by lower complexity, proximity to demand and logistics advantages
			

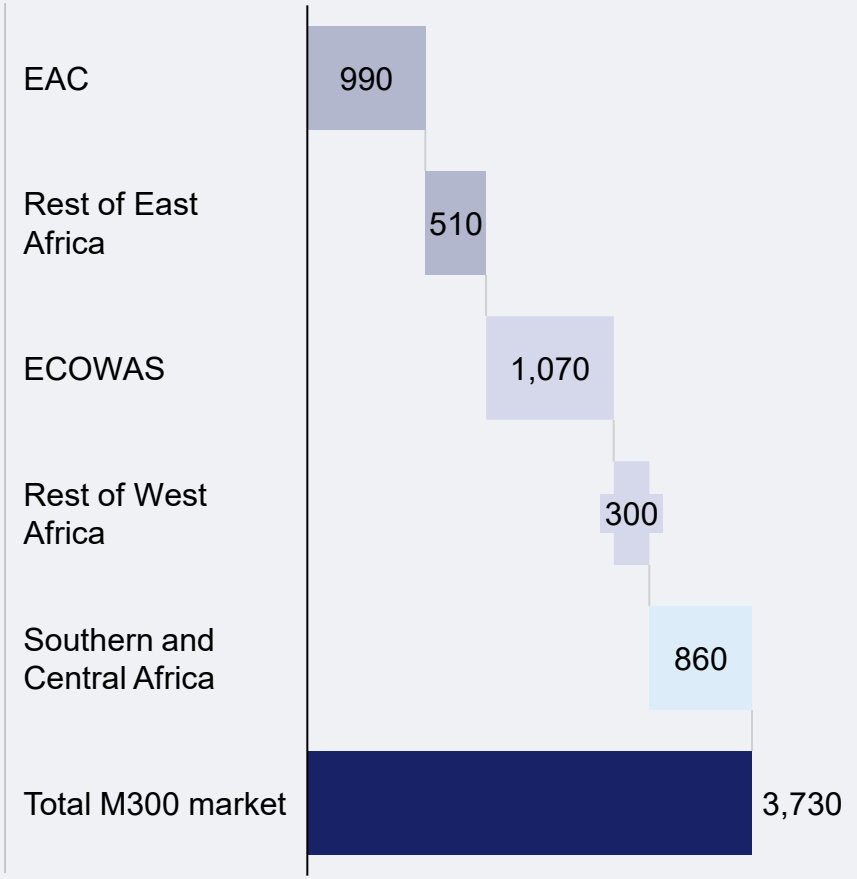
Source: Press search

M300 creates a market opportunity of ~USD 3-4bn for distribution transformers across Africa

Distribution transformers market from M300 project per country, in USD million, 2025-'30



Distribution transformer market under M300 by region, in USD millions, 2025-'30



Takeaways

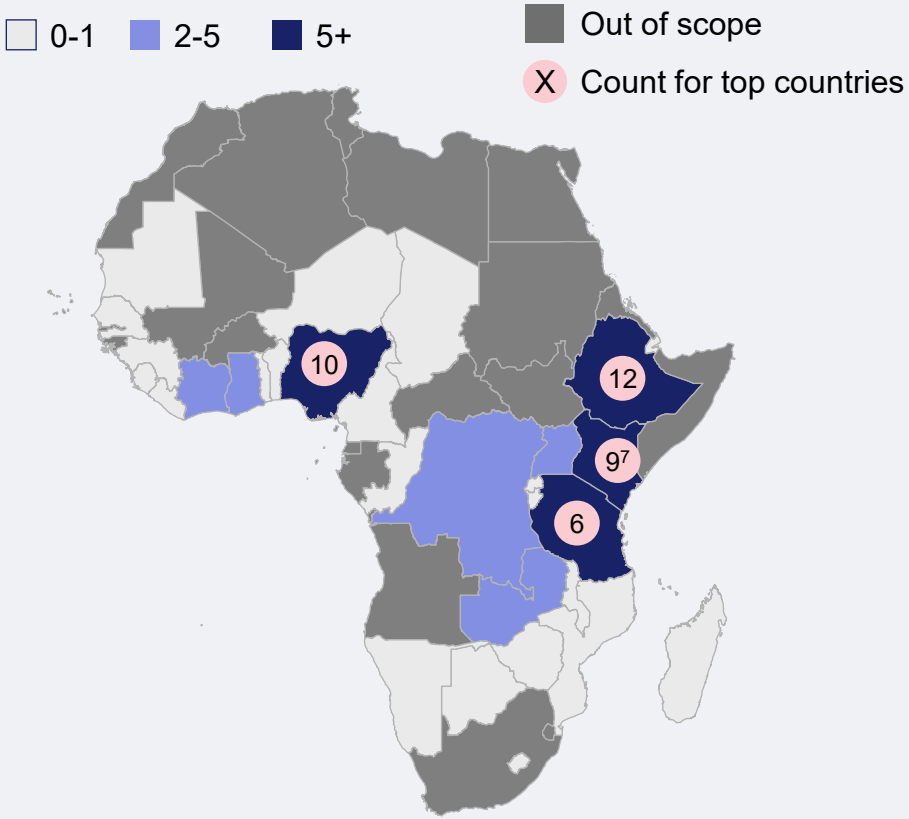
- **M300 can create a ~USD3.7bn incremental market opportunity** for distribution transformers over 2025-30, driven by ~46mn new grid connections
- **Demand concentrates** in key regional trade corridors, with **EAC and ECOWAS representing ~USD 1bn and ~USD 1.1bn markets respectively**
- Scale and geographic concentration are sufficient to **aggregate transformer demand in regional hubs**

Source: Market opportunity model, National Compacts, Expert interviews

Four countries emerge with established transformer manufacturers on the continent

NON-EXHAUSTIVE

Number of identified unique transformer manufacturers per country



Identified suppliers in top countries

Country	Company Name	Years of experience	Estimated FTEs[1]
	Skipper Nigeria Limited	20+	100
	Elsewedy Electric Nigeria[2]	10+	100
	Nova Transformer	10+	n.a
	PCTL Automation[3]	20+	200
	Yocean Group	10	100
	Alphapower Electrical Technology	n.a	200
	Abay Transformers PLC	15+	70
	Ethio Engineering Group – (Power Equipment Manufacturing Industry PLC)	10+	n.a[4]
	Tanelec[5]	40+	125
	Elsewedy Electric East Africa Limited[6]	5	n.a
	Macroplast Transformers	40+	n.a

1. Based off D&B estimates or company websites when disclosed
2. Note that there is uncertainty on current production of Elsewedy Electric Nigeria with limited online information
3. Main focus is on MV & LV switchgear manufacturing
4. Government backed factory, n.a for subsidiary focused on transformers (PEMI), overall group lists 3000+ FTEs
5. Largest player in the EAC region, with a capacity of more than 14,000 distribution transformers per year and a presence in Kenya
6. Tanzania factory launched in 2021, producing both cables and transformer, no FTE number specific to transformers
7. All Kenya identified player focus on transformer assembly or refurbishment, no full manufacturing actors have been identified

Source: Press search, S4G McKinsey

Cost analysis methodology structured across four steps to estimate financial viability of local manufacturing vs. importing

1. Base scenario in Kenya and Nigeria

Developed a bottom-up cost comparison between local manufacturing and Chinese imports to establish a base scenario in Kenya and Nigeria. Structured the analysis to compare total landed costs on a like-for-like basis

2. Base scenario extrapolation on other M300 countries

Scaled the base comparison across additional countries by modifying tariffs and logistics costs. Isolated cross-country differences to enable direct benchmarking of competitiveness

3. Sensitivity on key hypotheses

Varied key parameters one at a time to test the robustness of results and identify tipping points. Assessed how changes in external conditions impact relative competitiveness

4. Driver costs modeling on base case scenarios

Decomposed total cost differences into individual drivers to understand sources of competitiveness gaps. Linked each driver to actionable levers to quantify improvement potential

We used a set of assumptions to accurately assess cost competitiveness of transformer manufacturing

Category	Assumption
Technical	• We assume we are manufacturing an oil-immersed, single phase, 11kV to 0.4kV, 50kVA, pole mounted distribution transformer with copper windings • Assume a copper winding scrap rate of 3%, a grain oriented electric steel scrap rate of 5% and a mild steel for the tank scrap rate of 2%
Raw materials	• Assumed copper windings, core steel, dielectric oil and mild steel are all imported and shipped from China • Assumed insulation, bushings and other accessories costs represent 15% of total raw material costs and are locally sourced • Assumed Chinese manufacturers are eligible for the 13% rebate through the existing China export rebate schemes (modelled only on raw materials for simplicity)
Labor costs	• Assumed labor productivity from manufacturer interviews and used ILO's labor productivity index to scale units produced per FTE across countries with missing data
Production capacity	• Assumed production plant with a capacity of 5,000 transformers • Assumed base case of 70% utilization rate across countries
Fixed costs	• Assumed a factory CAPEX of $10million • Assumed a useful life of 30 years • Assumed a privileged access to capital in Kenya & Nigeria, leveraging M300 DFI partners, with a debt to equity split of 65/35% for Chinese manufacturing and of 30/70% for Africa based manufacturing • Assumed China borrowed at a ~3% interest rate, while Kenya & Nigeria borrowed at ~10% interest rate • Assumed SG&A as being 5% of total manufacturing costs
Shipping costs	• Estimated shipping costs for Shanghai to Nairobi/Lagos using Searates.com (as of Feb 2026)

1. Kenya and Nigeria are not price competitive against imported Chinese transformers under current market conditions

Analysis under base case scenario with a greenfield factory, running at 70% utilization across countries applying official tariffs vs China

Cost category[1]	Chinese landed cost Kenya (USD/transformer)	Kenya (USD/transformer)	Chinese landed cost Nigeria (USD/transformer)	Nigeria (USD/transformer)
Raw materials	1,436	1,543	1,436	1,521
Tariff on raw materials	0	110	0	0
China export rebates[2]	-187	0	-187	0
Labor[3]	150	200	150	222
Electricity	10	16	10	20
Total variable cost	1,409	1,869	1,409	1,763
Depreciation	79	95	79	95
Cost of capital	46	86	46	86
SG&A	81	108	81	102
Total manufacturing cost	1,616	2,158	1,616	2,047
Logistics	120	0	96	0
Total landed cost before tariff	1,736	2,158	1,712	2,047
Indexed at 100	100	124	100	120
Tariff on finished good (%)	0	0	5	0
Total landed cost (indexed)	100	124	105	120

Key insights

- **Raw materials,** notably the electrical steel core and copper windings**,** drive approximately **80% of variable costs**
- **Nigeria and Kenya** demonstrate similar manufacturing costs, however Kenyan manufacturers face **tariffs and higher logistics costs on inputs**, hindering competitiveness

Note that total cost of ownership (TCO) advantages, particularly critical for transformers, are not captured in the should-cost analysis, with local manufacturers able to offset higher upfront prices through rapid after-sales support

1. The manufacturing model considers the cost per transformer of a 11kV-0.4kV, single phase, 50kVA, oil-immersed distribution transformer with copper windings // 2. Assumes Chinese manufacturers benefit from a 13% rebate on raw materials via the government export incentive scheme (raw materials only for simplicity) // 3. labor costs consider both the average salary & production productivity (# of FTE needed per production line)

2. Inverted tariff schemes create structural manufacturing disadvantages in most priority markets

Analysis under base case scenario with a greenfield factory, running at 70% utilization across countries applying official tariffs vs China

Input tariff >= Final good tariff | Local index price lower vs. China import index price | Local index price higher by <10% vs. China import index price | Local index price higher by >10% vs China import index price

Note on index price: 100 = total landed costs from China manufactured component (incl. shipping) before tariffs

	EAC			ECOWAS			
Dimension	**Kenya**	**Tanzania**	**Ethiopia**	**Nigeria**	**Ghana**	**Zambia**	**DRC**
China import index price *(only difference between countries is tariff on finished goods)*	100	100	135	105	105	110	105
Local index price *(differences between countries are both manufacturing costs and tariffs on inputs)*	124	118	128	120	123	125	124
Tariff applied on manufacturing inputs, in %[1]	10%	0%[1]	15%	0%[2]	5%	7.5%	7.5%
Tariff on final product, in %	0%	0%	35%	5%	5%	10%	5%

Takeaways

- In 6 of 7 markets, local index prices are higher than the China import index, highlighting the **competitivity gap faced by local manufacturing**
- **Ethiopia is the only country with strong protection** for local transformer manufacturing, enabling local prices to be competitive

Methodology:

- Local index prices are based on a standardized model anchored on should-cost benchmark (either in Kenya or Nigeria), keeping production, labor and raw material assumptions constant
- Country differences are driven solely by input and final product tariffs

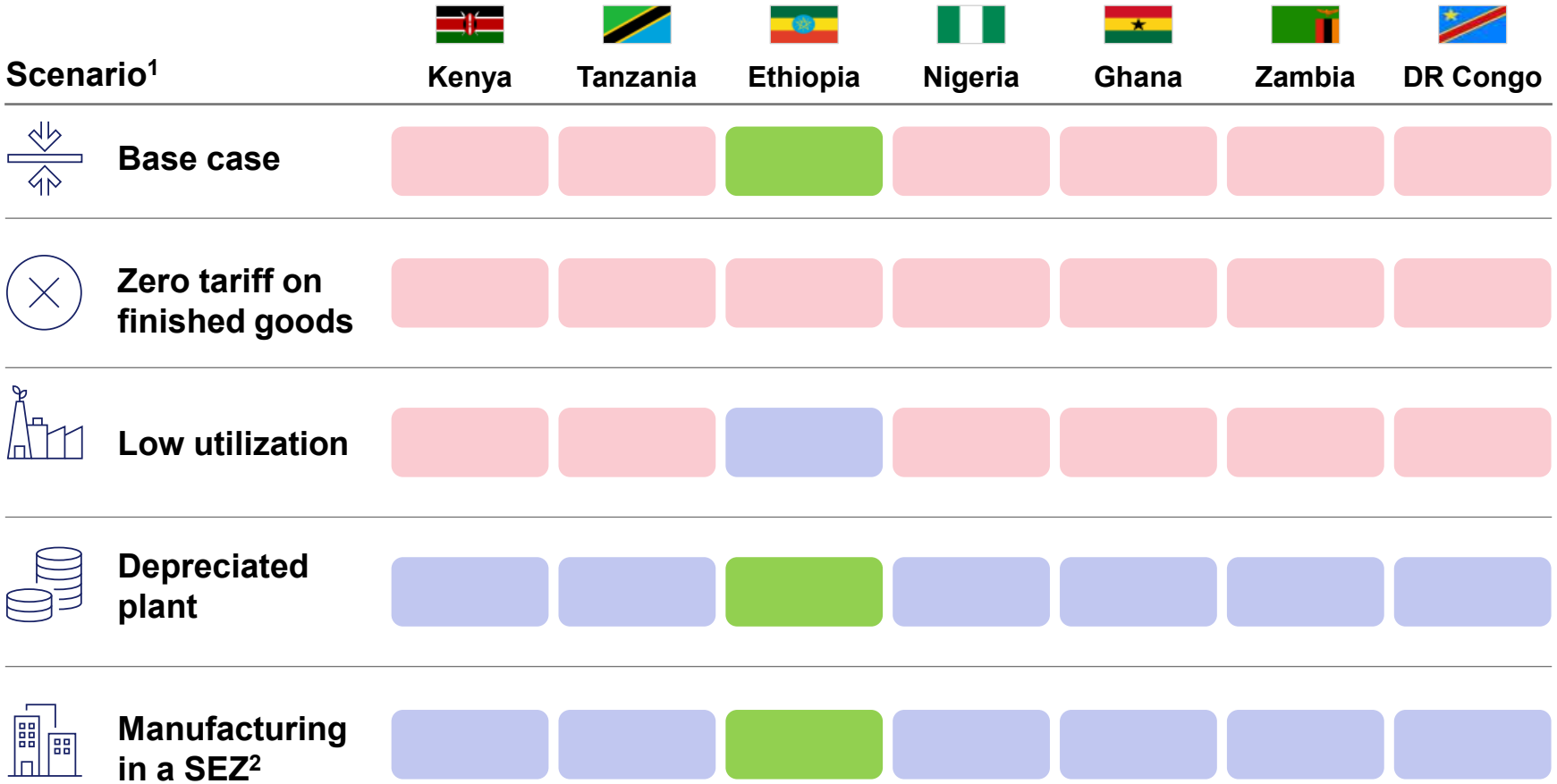
1. Average tariff on top 2 most important components, grain-oriented electrical steel (HS Code: 722511) and copper windings (HS Code: 740819)
2. Assuming the transformer manufacturer operates under gazette special tariff remission scheme (i.e. Tanelec). Normal import tariff rate is 10%
3. Nigeria operates a Pioneer Industry Status, under which transformer manufacturers fall, which leads to a full remission of import duties on inputs necessary to manufacturing. The normal scheme average tariff on inputs is of 12.5%

Source: IMF International Financial Statistics ; should cost model

3. Depreciated plants that succeeded in meeting demand for non-financial reasons can achieve economic viability at scale

Base case is a greenfield factory, running at 70% utilization across countries applying official tariffs vs China

Favorable | Could be unlocked | Unlikely



Key takeaways

- The **presence of manufacturers** in the selected countries indicates that customer behavior is influenced by **factors beyond commercial viability**
- These players can **enhance their financial competitiveness** if their **assets are already depreciated**, reducing capital expenditure costs
- **Establishing manufacturing facilities in SEZs**, where available, can further boost competitiveness by leveraging tax, duty, and electricity incentives offered by these zones

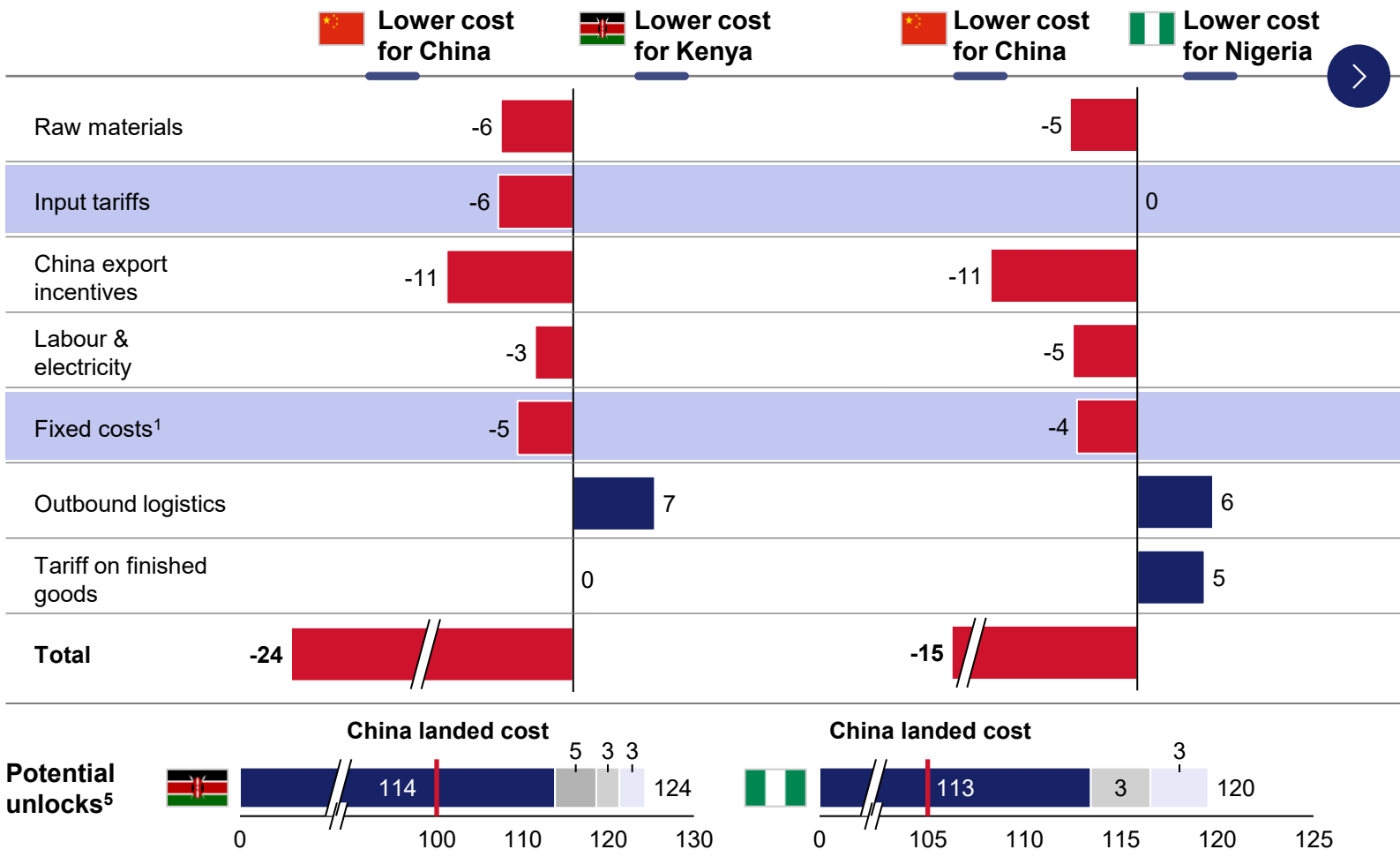
1. Changing one parameter at a time relative to the base case
2. Special economic zone

4. Levers to improve cost competitiveness exist, however they are insufficient to bridge the gap to Chinese imports

Analysis under base case scenario with a greenfield factory, running at 70% utilization across countries applying official tariffs vs China

Deep dive next

Drivers of cost gaps between China imports and local manufacturing[1], index



How to address it?
n.a
Potential gains by upstream integration (copper rod sourcing) or special economic zones – Potential gains[2] in Kenya : 5
n.a
Improve labor productivity relative to China through experience & scale – Potential gains[3] Kenya: 3, Nigeria: 3
Reduce fixed costs through a higher utilization of the existing capacity – Potential gains[4]: Kenya: 3, Nigeria: 3
n.a.
n.a
If all unlocks are achieved, cost competitiveness can improve to an index price of ~114 in Kenya and Nigeria

1. Includes gap due to cost of capital, depreciation, and SG&A // 2. Input tariff gains come from lower sourcing copper rods with a 0% input tariff instead of copper windings // 3. Considers a 30% increase in labor productivity // 4. Considers utilization increases from 70% to 90% // 5. Does not sum perfectly given rounding to nearest integer

Source: Tariffs from ITC website, March 2026, desk research on prices in China, Kenya and Nigeria, logistics costs from SeaRates.com, Expert interviews, should cost model

4. Kenya and Nigeria narrow cost gaps through utilization and integration, with non-price advantages sustaining the case for local manufacturing

Analysis under base case scenario with a greenfield factory, running at 70% utilization across countries applying official tariffs vs China

Under what conditions does local manufacturing improve competitivity

China import price index:	Kenya	Nigeria
	100	105

Local index price lower or equal vs. China import index price

Local index price higher vs. China import index price

Sourcing[1]	Utilization rate[2] 60%	70%	80%	90%	100%
Copper winding is sourced from China	126	**124 *(base case)***	123	122	121
Copper rod sourced and converted into windings locally	121	119	118	116	115
Copper winding is sourced from China	121	**120 *(base case)***	118	117	116

1. Changing to upstream copper sourcing leads to lower logistics costs (UAE sourced instead of China) and lower tariffs on inputs for Kenya. Assumed additional $1m in CAPEX investment to cover rod to winding costs and additional 30% in energy costs (energy intensive step)
2. Assuming Chinese manufacturers consistently operates at 70% utilization rate
3. Quote not from our own interviews but quoted online – source
4. A leading switchgear manufacturer that is looking to expand into transformer manufacturing, with extensive market research already conducted

Source: Should cost model, press search, expert interviews

Advantages of local manufacturing justifying a price premium

What we heard	Advantage
Yet for about six months, most of our projects have stalled as we waited for delivery of imported transformers — ***Kenyan ministry of energy cabinet secretary[3]***	**Shorter lead times** reduce delivery risk and inventory requirements versus imports
When a transformer fails, support is needed immediately. With imports it can take weeks — ***CEO of leading Kenyan switchgear manufacturer[4]***	Local proximity enables **faster commissioning, maintenance and fault resolution**
We have seen issues with the quality of certain imported transformers, price isn't the only factor — ***CEO of leading Kenyan switchgear manufacturer[4]***	Local context understanding to match **client expectations** and **quality standards of harsh African environments**

Kenya and Nigeria stand out for their manufacturing capabilities; others show varying constraint levels across infrastructure and skills

Manufacturing scaling attractiveness High — Low

Dimension	Sub-dimension	Kenya	Tanzania	Ethiopia	Nigeria	Ghana	Zambia	DRC
FX	FX volatility, last 3 years, in %	7%	2%	18%	29%	25%	15%	4%
	FX regulatory limitations	Low	Medium	High	Medium	Low	Low	High
Manufacturing	Existing elec. equipment manufacturing base	Medium-High	Low	Medium	Medium-High	Medium	Low	Low
	M300 market size, in USD bn	~2.5-3.5	~3.5-4.5	~3.5-4.5	~5-6	~0.4-0.8	~0.8-1.2	~3-4
	Manufacturing Value Added per capita, in USD	156	92	46	212	244	99	80
	Africa Infrastructure Development Index 100-basis	26	15	20	26	28	22	10
	# graduates in electrical and processing fields	Medium-High	Medium-Low	Medium	Medium-High	Medium	Low	Low
Logistics	Logistics Performance Index, from 1 to 5	2.8	2.6	2.6	2.6	2.5	2.6	2.5
	Export potential within Africa	High	Medium	Medium	High	Medium	Medium	Low
How appealing is the market		**High**	**Medium**	**Medium**	**High**	**Medium-high**	**Low**	**Low**

Takeaways

- **Kenya and Nigeria** best positioned to anchor regional supply chains, **combining existing manufacturing bases with large domestic markets**
- **Ghana** offers solid fundamentals with **high manufacturing value add and infrastructure**, but lacks sufficient market scale
- **Tanzania and Ethiopia show partial readiness**, with improving infrastructure but gaps in industrial scale and workforce depth
- **Zambia and DRC** exhibit the **highest constraints**, particularly in existing manufacturing base, skills availability, and infrastructure
- **Infrastructure, scale, and workforce** emerge as the most consistent enablers or barriers across markets

Source: IMF International Financial Statistics ; World Bank Logistics Performance Index 2023; African Development Bank Africa Industrialization Index 2022; African Infrastructure Development Index; National higher education statistics

Policy support and large domestic demand drive the potential for local manufacturing of transformers

High Medium Low

Country	Demand[1]	Existing presence[2]	Economic compete-tiveness vs China[3]	Industrial readiness	Assessment
Kenya				Strong	Manufacturing opportunity given policy support
Tanzania				Medium	Regional hub candidate with existing champion already exporting to EAC
Ethiopia				Medium	Domestic market opportunity, with low export potential
Nigeria				Strong	Domestic market opportunity, with existing policy support
Ghana				Medium	Limited manufacturing opportunity
Zambia				Limited	Limited manufacturing opportunity
DR Congo				Weak	Limited manufacturing opportunity

1. Market size under M300. High = USD, 300mn+ , Medium = USD, 300-100mn , Low = USD, 100-0mn
2. Number of identified existing players manufacturing / assembling transformers. High = 10+, Medium = 2-9, Low = <2, With Tanzania set as high given high production capacity of local champion Tanelec (14,000 transformers)
3. Policy support assessed based on existing tariff structures, including protection on finished goods and availability of input tariff exemptions for local manufacturing
4. Local price index relative to China landed price (including tariffs). High = 10+ points cheaper, Medium = 10-0 points cheaper, Low = more expensive

Key insights

- **Nigeria and Tanzania are best positioned to scale transformer manufacturing**, supported by established local players, strong domestic demand and policy environments that incentivize local production
- **Kenya has industrial capability but remains uncompetitive without policy support**, requiring inverted tariff correction and targeted incentives to enable local production
- **Ethiopia is competitive due to high tariff protection,** however with limited export potential given high duties into neighboring countries
- **Ghana, Zambia and DRC are primarily domestic opportunities,** constrained by scale and a low manufacturing base

Agenda

Executive summary

Detailed report

Component deep dives

- Cables
- Transformers
- **Switchgears**
  - MV switchgear
  - Distribution board
- Meters
- Poles
- Detailed list of manufacturers

Executive summary – Switchgears

Market opportunity	**Medium- and low-voltage switchgear represent a ~USD 7–8 bn equipment opportunity under Mission 300, driven primarily by grid deployment (~USD 6.1 bn across MV ~USD 3.3 bn, LV ~USD 0.7 bn, and distribution boards ~USD 2.2 bn)** Value capture is primarily concentrated in assembly and panel fabrication, as high-value components (e.g., vacuum circuit breakers, protection relays, CT/VTs) are not manufactured locally at scale and are sourced from global OEMs
Competitiveness dynamics	**Local switchgear assembly currently faces structural cost disadvantages versus Chinese imports** Cost modeling indicates that assembling MV switchgear locally in Kenya and Nigeria is 15-35% more expensive than importing from China, primarily due to local components price gap and productivity gap vs. China, although tariffs partially narrow the competitiveness gap
Industrial landscape	**Africa already has partial capabilities in fabrication and assembly, but key electrical components remain import-dependent, with a base existing switchgear assemblers** These players combine local fabrication (enclosures and wiring) with imported critical components through OEM partnerships, allowing them to meet required standards and compete in the market despite relatively low scale
Priority regional platforms	**Kenya and Nigeria emerge as the most credible anchors for regional switchgear manufacturing platforms** Both countries combine relatively large domestic markets, existing electrical equipment manufacturing bases, and stronger logistics networks, positioning them to serve broader regional demand if scale and policy support materialize. Compared to Tanzania, Kenya benefits from a more developed manufacturing ecosystem and existing player base, while Tanzania does not present a structural cost advantage despite a similar tariff regime
Strategic implications	**Switchgear manufacturing in Africa is feasible at the assembly level but requires policy alignment and scale to become competitive** Assembly is viable but requires scale and productivity, with higher output per FTE needed to close the competitiveness gap. Policy support is critical – tariff alignment, affordable financing, and demand aggregation. Local players can differentiate through faster delivery, customization, and after-sales support

Market opportunity model focuses primarily on electricity distribution components in scope for manufacturing scaling in Africa

Switchgears

NOT EXHAUSTIVE

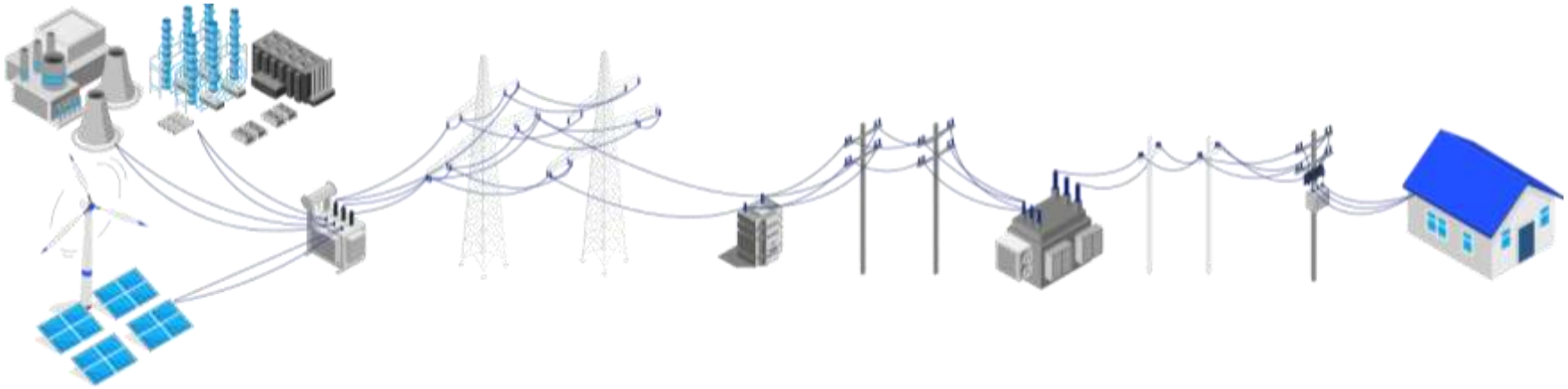
Electricity flow

Generation
Production of electricity through various energy sources

Transmission
Transport of electricity over long distances

Distribution
Delivery of electricity to homes and businesses

Illustration



Grid BOM items

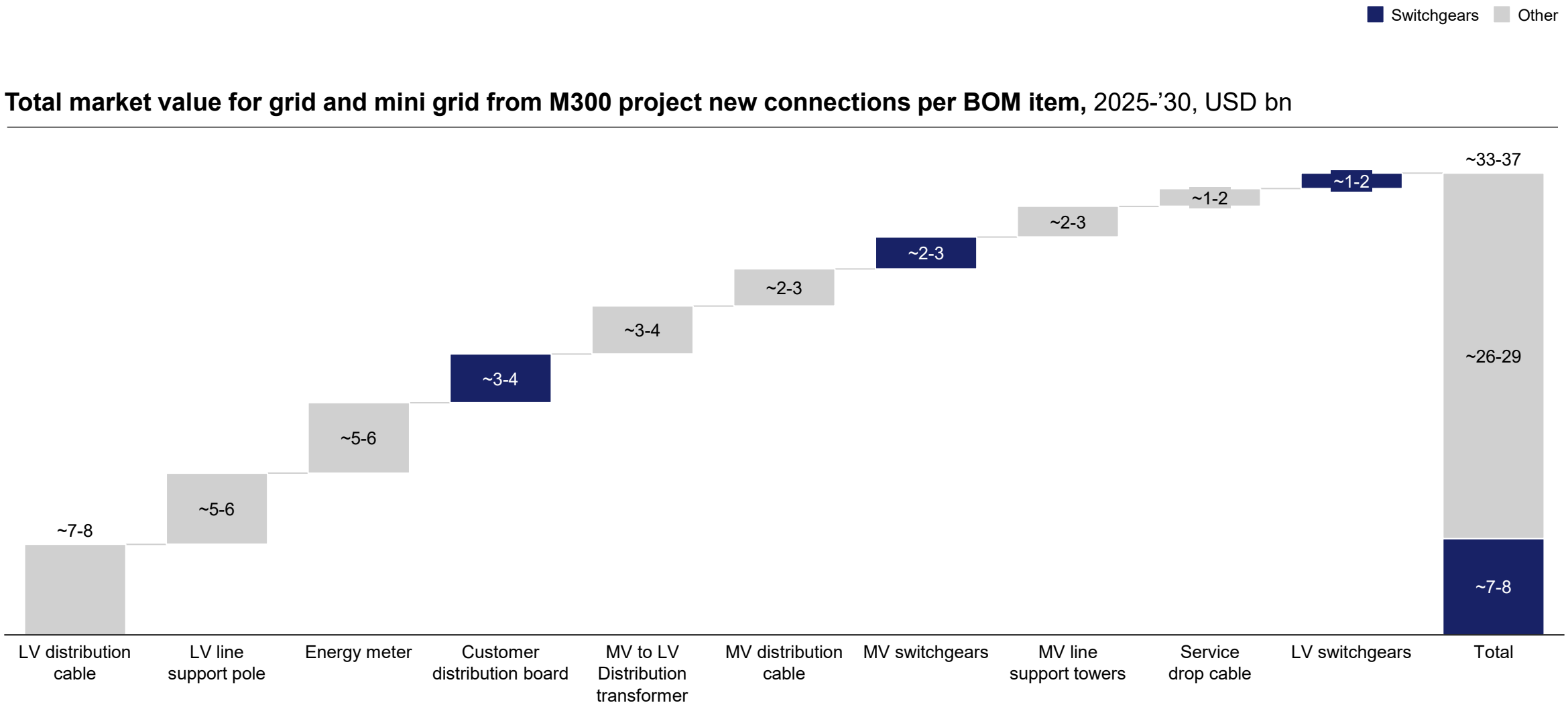
Energy generator	HV transformer	MV transformer	MV switchgear	LV distribution cable	Service drop cable	Customer distribution board
	HV distribution cable	MV distribution cable	MV to LV transformer			
	HV line support towers	MV line support towers	LV switchgear	LV line support pole	Energy meter	

Mini-grid BOM items

Solar PV modules	Inverter / power conversion system	LV switchgear	LV distribution cable	Service drop cable	Customer distribution board
Battery storage system					
Backup diesel generator			LV line support pole	Energy meter	

Source: Market opportunity model, Expert interviews

M300 drives ~USD 7-8bn in switchgear and distribution boards demand in Africa



Medium- and low-voltage switchgear represent the key priority under M300

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Priority under M300

Category	Switchgear type	Description
High-voltage switchgears	**Gas-insulated switchgear (GIS)** *(72.5–1200 kV)*	• SF6 gas-insulated, metal-enclosed design enabling compact footprint in space-constrained environments • Limited relevance for M300 last-mile electrification, primarily used in transmission and large urban primary substations
	Air-insulated switchgear (AIS) *(up to ~800 kV)*	• Air-insulated design with larger footprint and higher civil works requirements, typically lower equipment cost than GIS • Limited relevance under M300, mainly linked to grid reinforcement and reliability upgrades rather than new connections
Distribution switchgears	**Medium-voltage switchgear (metal-enclosed / RMU)** *(11–33 kV)*	• Controls, protects and isolates MV feeders at primary and secondary substations and at mini-grid interconnection points • Typically vacuum-interruption based, modular and standardized for safe and reliable fault clearing • Core priority under M300, driven by feeder extensions, ring networks and mini-grid interconnections
	Low-voltage switchgear (switchboards & distribution panels) *(230/400 V)*	• Distributes power and provides protection at commercial, public facility and distribution-node level • Panel-based assemblies integrating breakers or fuses, busbars, metering and control components • Core priority under M300, reflecting high deployment volumes across grid extension and mini-grid distribution
Residential switchgears	**Customer distribution boards (DBs / consumer units)** *(230 V)*	• Installed at household or small commercial level to distribute electricity from the service connection to final circuits • Typically composed of miniature circuit breakers (MCBs), residual current devices (RCDs), main isolator, busbars and enclosure, assembled into standardized panels • High-volume, lower-complexity product directly linked to every new grid and mini-grid connection under M300, making it a core last-mile component

Switchgear manufacturing combines high-value engineering and protection systems with scalable panel fabrication and assembly

NOT EXHAUSTIVE

Simplified value chain	Component sourcing	Fabrication	Assembly	Testing & quality assurance
Description	• Sourcing of **critical switching and protection devices** – circuit breakers (**vacuum / SF6 / air**), disconnectors, relays, CTs/VTs • Procurement of **control and measurement instruments**, protection relays and auxiliary devices • Purchase of **raw materials** including sheet steel for enclosures and copper/aluminum for busbars	• Cutting, **bending and welding** of sheet steel to **manufacture switchgear cubicles and enclosures** • Surface treatment, **coating and painting** • Fabrication and **preparation of busbar systems**	• Mounting of **breakers, CTs/VTs, busbars** and **protection relays** within the enclosure • Mechanical **integration of switching modules** • Precision wiring of control circuits **according to engineering diagrams**	• Functional verification of **protection and control logic** • **Insulation resistance** and **dielectric tests** • Mechanical and electrical **operation tests** of circuit breakers • Factory Acceptance Tests (**FAT**) to ensure **IEC compliance**
Output	• Secured supply of qualified breakers, relays, CTs/VTs and control devices • Raw material inventory (steel sheets, copper/aluminum bars) available for production	• Fabricated and coated switchgear enclosures and cubicles • Manufactured and prepared busbar systems • Finished metal structures ready for integration	• Fully assembled and wired switchgear panel or cubicle • Integrated protection, switching and control system ready for testing	• Tested and certified switchgear units • FAT reports and IEC compliance documentation • Panels approved for delivery and deployment
				

Most of the value comes from assembling and testing the panels, as critical components are not manufactured locally, shifting value capture toward integration, wiring and quality assurance

Source: Press search, company websites

Switchgear systems are modular assemblies combining standardized functional components

NOT EXHAUSTIVE

Potential for local manufacturing

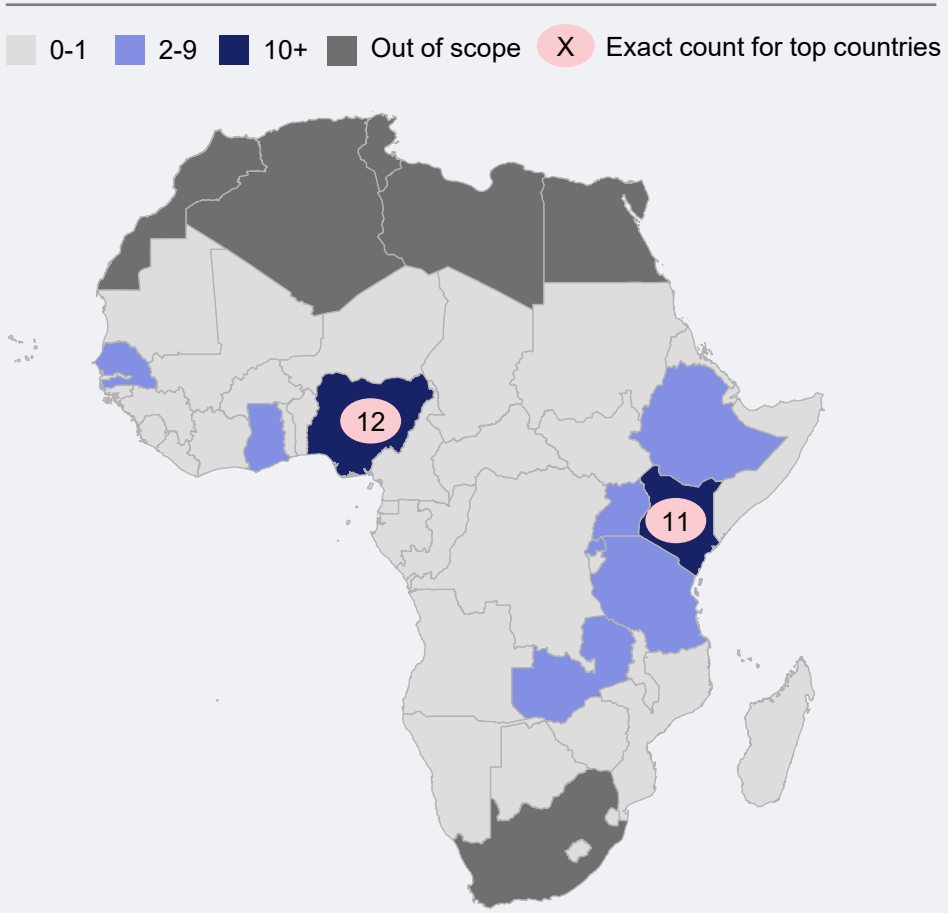
Components	Description	MV	LV	DB[1]
Vacuum circuit breaker (VCB)	• Primary switching device used in 11-33 kV metal-clad panels and RMUs • Interrupts load and fault currents using vacuum interruption technology • Protects feeders and distribution transformers in grid and mini-grid networks	✓		
Protection relay	• Microprocessor-based device detecting overcurrent, earth fault and short circuit conditions • Sends trip signal to breaker to isolate faulty section • Standardized and programmable in modern MV distribution panels	✓		
Current transformer (CT) / Voltage transformer (VT)	• Instrument transformers that step down current and voltage for measurement and protection • Provide input signals to relays and metering devices • Essential for safe monitoring of MV feeders	✓		
Busbar system (Cu or Al)	• Conductive bars distributing current within the panel • Sized based on rated current and short-circuit level • Typically copper in MV, copper or aluminum in LV panels	✓	✓	
Molded case circuit breaker (MCCB)	• Main protection device in LV switchboards and distribution panels • Protects against overload and short circuit • Used in mini-grids, commercial buildings and secondary distribution		✓	
Miniature circuit breaker (MCB)	• Protection device installed in customer distribution boards • Trips automatically in case of overload or short circuit • Present in every new household grid or mini-grid connection		✓	✓
Internal wiring & terminals	• Copper control and power wiring connecting breakers, relays, CTs/VTs and meters inside the panel • Includes crimped lugs, terminal blocks and cable ducts ensuring reliable electrical connections	✓	✓	✓
Metal enclosure / cubicle	• Sheet-steel fabricated housing for breakers, relays, busbars and wiring • Provides mechanical protection and internal segregation • Surface-treated and coated for corrosion resistance	✓	✓	✓

1. Distribution board

Two countries emerge with a established switchgear assembly base on the continent

NOT EXHAUSTIVE

Number of identified unique cable manufacturers per country



Main players in top countries

Country	Company Name	Years of experience	Estimated FTEs[1]
	Tranos	18	165
	GIL Automation	19	100
	Bolamark Engineering Ltd.	34	45
	PCTL Automation	23	200
	ABCOS Industrial Ltd	18	35
	Imexolutions (IMEX Engineering LV Systems & Solutions)	16	30
	Ethioengineering Group PLC	6	20
	Alphapower Electrical Technology	n.a.	n.a.
	JS Electromec Limited	17	30

1.Based off manufacturer interviews, D&B estimates or company websites when disclosed
2.Factory is under construction, with an estimate for number of future jobs stated on company website

Source: Press search, S4G McKinsey

Agenda

Executive summary

Detailed report

Component deep dives

- Cables
- Transformers
- **Switchgears**
  - **MV switchgear**
  - Distribution board
- Meters
- Poles
- Detailed list of manufacturers

MV Switchgear – We used a set of assumptions to accurately assess cost competitiveness of MV switchgear manufacturing

Category	Assumption
Technical	• Assumed manufacturing of a metal-enclosed MV switchgear panel (11kV class) used for distribution transformer protection • Assumed one panel includes 1 vacuum circuit breaker (VCB), 6 CT/VTs, protection relays, meters and insulators • Assumed a steel enclosure with dimensions 0.80 m × 2.10 m × 1.30 m, representing ~400 kg of structural steel
Components	• Assumed busbars (ETP copper), internal cabling and steel enclosure are locally manufactured in the assembly country • Copper priced using SMM copper benchmark (~$13,096/t) with 10% ETP copper premium • Assumed imported components include VCBs, relays, CT/VTs, meters and insulators, sourced from China • Assumed Chinese manufacturers are eligible for the 13% rebate on raw materials through the existing China export rebate schemes
Conversion costs	• Assumed labor productivity with case examples and using ILO's labor productivity index as ratios across countries
Fixed costs	• Assume factory CAPEX investment of ~$500k for switchgear assembly • Assume useful asset life of 30 years • Assumed a cost of debt of 10% in Kenya given privileged access to capital by leveraging M300 DFI partners. Assumed debt to equity split of 65%-35% for China and of 30%-70% for Kenya • Assume SG&A and overhead represent ~5% of manufacturing costs
Production capacity	• Assume baseline utilization rate of 80% across countries
Shipping costs	• Estimated shipping costs for Shanghai to Nairobi/Lagos using Searates.com

Note: All prices and logistics costs as of January 2026

Cost analysis methodology structured across four steps to estimate financial viability of local manufacturing vs. importing

1. Base scenario in Kenya and Nigeria

Developed a bottom-up cost comparison between local manufacturing and Chinese imports to establish a base scenario in Kenya and Nigeria. Structured the analysis to compare total landed costs on a like-for-like basis

2. Base scenario extrapolation on other M300 countries

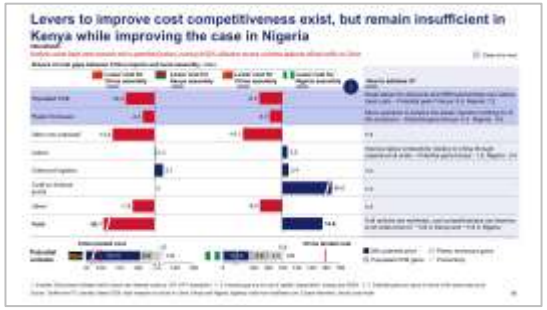
Scaled the base comparison across additional countries by modifying tariffs and logistics costs. Isolated cross-country differences to enable direct benchmarking of competitiveness

3. Sensitivity on key hypotheses

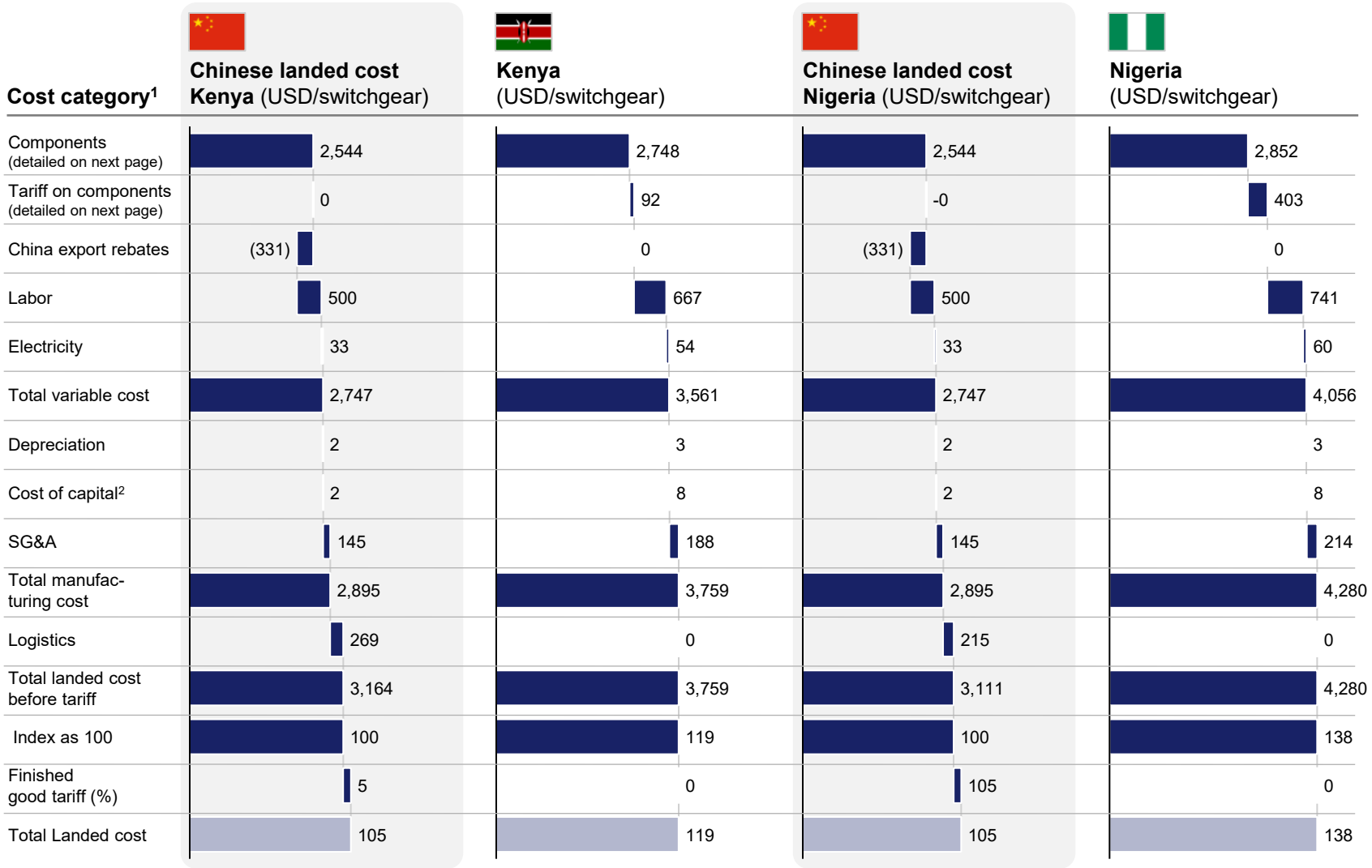
Varied key parameters one at a time to test the robustness of results and identify tipping points. Assessed how changes in external conditions impact relative competitiveness

4. Driver costs modeling on base case scenarios

Decomposed total cost differences into individual drivers to understand sources of competitiveness gaps. Linked each driver to actionable levers to quantify improvement potential



1. MV Switchgear – Kenya and Nigeria depend on tariffs and productivity to maintain competitiveness against imports under current market conditions



Key takeaways

- Before tariffs**, local assembly in Kenya and Nigeria is ~15-35% more expensive than importing from China**, driven by higher component, financing, and SG&A costs
- **Labor is a critical factor.** Although currently higher than in China, future productivity improvements in Kenya and Nigeria could significantly reduce costs, creating a strong business case for local assembly. Costs have been estimated using a flat productivity (i.e., 60% output per employee per year vs. China)
- **While tariffs of 5-10% on imported goods reduce the price disparity**, local assembly in Kenya and Nigeria remains at a cost disadvantage of 5 and 24 index points, respectively
- The viability of local assembly (esp. in Nigeria) is heavily dependent on achieving **economies of scale** to compete with structurally cheaper Chinese imports
- **Chinese export rebates (~13%) materially distort competitiveness** – removing ~$331 per unit from Chinese costs, they significantly widen the gap vs. local manufacturers and act as an implicit subsidy to exports
- **Component tariffs in Kenya (~5%) increase local production costs** – imported subcomponents face duties, raising input costs for assemblers and structurally disadvantaging local manufacturing vs. fully imported systems

1. Manufacturing model considering the cost for a 11kV RMU switchgear, used for a 500kVA MV to LV transformer
2. Assuming loans at advantageous conditions from international donors (10%)

1. MV Switchgear – Detailed BoM shows economics with strong exposure to import tariffs for components

Component	Sourcing	Estimated price Exwork, USD			+ Logistic costs[1], USD			+ Tariffs, USD			= Landed component costs, USD		
		China	Kenya	Nigeria	China	Kenya	Nigeria	China	Kenya	Nigeria	China	Kenya	Nigeria
Steel Enclosure	Local	500	600	700	-	-	-	-	-	-	500	600	700
Busbars	Local	168	174	178	-	-	-	-	-	-	168	174	178
Internal Wiring & Terminals	Local	22	26	26	-	-	-	-	-	-	22	26	26
Main Protective Device (VCB)	China	1,000	1,000	1,000	-	50	50	-	53	210	1,000	1,103	1,260
Measurement & Protection (Relays)	China	600	600	600	-	30	30	-	32	126	600	662	756
Measurement & Protection (CTs & VTs)	China	75	75	75	-	4	4	-	-	4	75	79	83
Meters & Indicators	China	100	100	100	-	5	5	-	-	47	100	105	152
Insulators	China	80	80	80	-	4	4	-	8	8	80	92	92
Total		**2,544**	**2,655**	**2,759**	**-**	**93**	**93**	**-**	**92**	**396**	**2,544**	**2,840**	**3,247**

1. Estimated ~5% shipping costs from China to Kenya/Nigeria

Source: Tariffs from ITC website, March 2026, desk research on prices in China, Kenya and Nigeria (Accio.com), logistics costs from SeaRates.com

2. MV Switchgear – Inverted tariff schemes create structural manufacturing disadvantages in most priority markets

Analysis under base case scenario with a greenfield factory, running at 80% utilization across countries applying official tariffs vs China

Local index price lower vs. China import index price

Local index price higher by <10% vs. China import index price

Local index price higher by >10% vs China import index price

Note on index price: 100 = total landed costs from China manufactured component (incl. shipping) before tariffs

	EAC			ECOWAS			
Dimension	**Kenya**	**Tanzania**	**Ethiopia**	**Nigeria**	**Ghana**	**Zambia**	**DR Congo**
China import index price (only difference between countries is tariff on finished goods)	105	110	125	105	105	115	110
Local index price (differences between countries are both manufacturing costs and tariffs on inputs)	119	119	121	138	136	134	119
Tariff applied on manufacturing inputs, in %[1]	5%	9%	21%	18%	13%	16%	10%
Tariff on final product, in %	5%	10%	25%	5%	5%	15%	10%

Takeaways

- **In 6 of 7 markets, local index prices are higher than the China import index**, highlighting the competitivity gap faced by local assembly
- **Ethiopia is the only country with strong protection** for local assembly, enabling local prices to be competitive

Methodology:

- Local index prices are based on a standardized model anchored on should-cost benchmark (either in Kenya or Nigeria), keeping production, labor and raw material assumptions constant
- Country differences are driven solely by input and final product tariffs, with China index reflecting landed cost including import duties

1. Average of input tariff on all imported components

Source: IMF International Financial Statistics, Press search, should cost model

3. Local assembly partnerships with top OEMs strengthen premium MV switchgear competitiveness vs. imports

Favorable | Could be unlocked | Unlikely

Analysis under base case scenario with a greenfield factory, running at 80% utilization across countries applying official tariffs vs China

Scenario[1]	Kenya	Tanzania	Ethiopia	Nigeria	Ghana	Zambia	DR Congo
Base case	Could be unlocked	Could be unlocked	Favorable	Unlikely	Unlikely	Unlikely	Could be unlocked
Zero tariff on finished goods	Unlikely	Unlikely	Unlikely	Unlikely	Unlikely	Unlikely	Unlikely
Low utilization	Could be unlocked	Could be unlocked	Favorable	Unlikely	Unlikely	Unlikely	Could be unlocked
Depreciated plant	Could be unlocked	Could be unlocked	Favorable	Unlikely	Unlikely	Unlikely	Could be unlocked
Assembly for premium players	Favorable	Favorable	Favorable	Could be unlocked	Could be unlocked	Could be unlocked	Favorable

Key takeaways

- **Limited capex intensity reduces sensitivity to utilization and depreciation**, preserving unit economics even at lower volumes
- **Establishing local assembly partnerships with top OEMs** strengthens the premium market position by combining brand recognition with cost efficiencies, **surpassing fully imported MV switchgear**

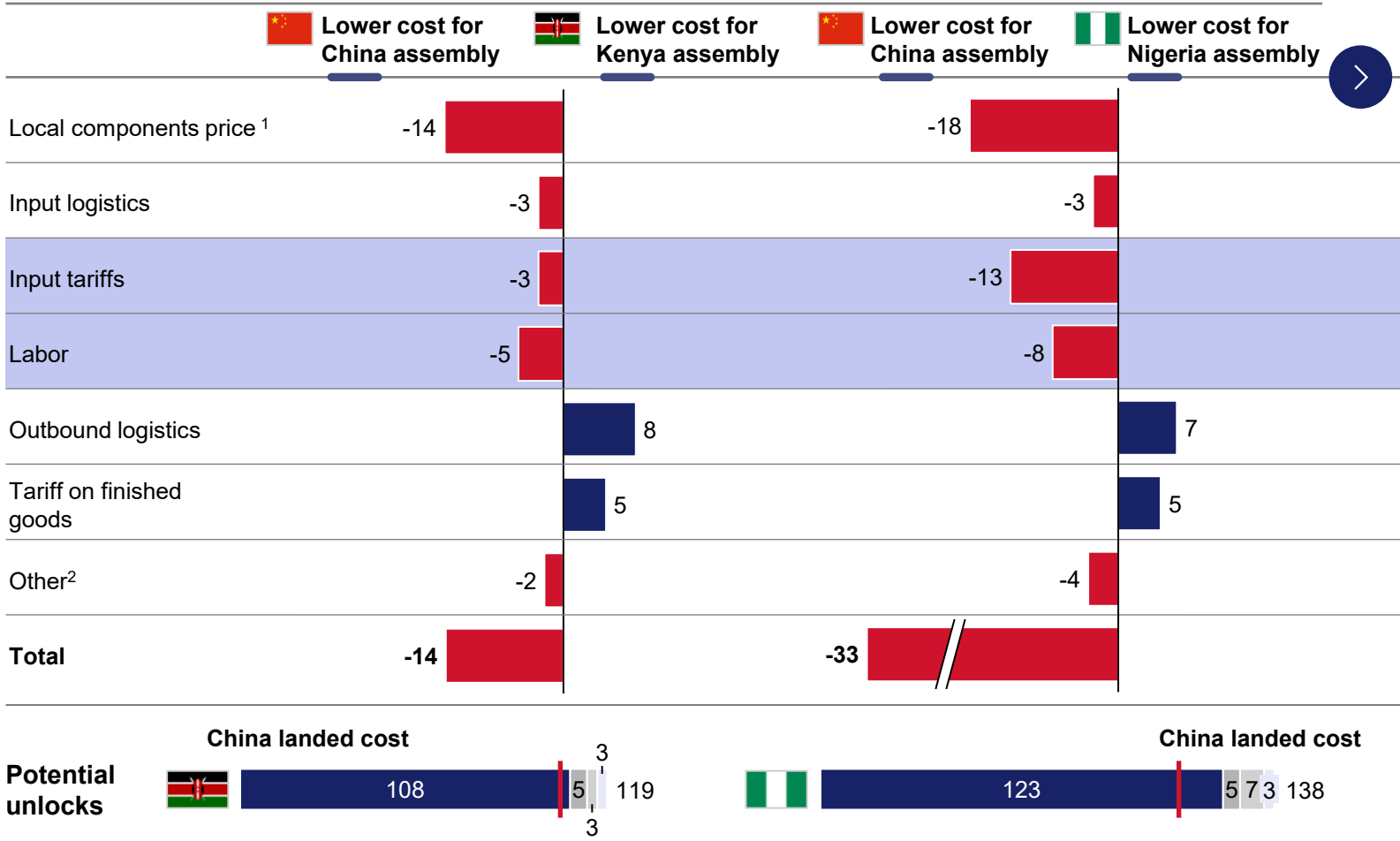
1. Changing one parameter at a time

4. MV Switchgear – Achieving cost parity requires scale in procurement, increased labor productivity and cheaper financing

Analysis under base case scenario with a greenfield factory, running at 80% utilization across countries applying official tariffs vs China

Deep dive next

Drivers of cost gaps between China imports and local assembly, index



How to address it?
Aggregate demand at regional level and work with local suppliers to reduce costs – Potential gain[3] : 5
Consolidate imports and develop regional hubs to reduce fragmentation and logistics costs
Only import duty-free (or low duty) inputs and maintain a clear tariff advantage for local assembly vs finished imports – Potential gains[4] in Kenya: 3 ; in Nigeria: 7
Increase cost advantage vs China by improving productivity through scale and learning effects – Potential gains[5]: 3
n.a.
n.a.
Reduce cost of capital through concessional financing and shared industrial infrastructure
If all unlocks are achieved, cost competitiveness can improve to an index price of ~108 in Kenya and ~123 in Nigeria

Min potential price
Components price gains
Input tariffs reduction
Labor productivity

1. Includes China export rebates which reduce raw material costs by 13% (VAT exemption) // 2. Includes gap due to cost of capital, depreciation, energy and SG&A // 3. ~20% local component costs reduction // 4. Input tariff to 0% // 5. Considers a 30% increase in labor productivity

Source: Tariffs from ITC website, March 2026, desk research on prices in China, Kenya and Nigeria, logistics costs from SeaRates.com, Expert interviews, should cost model

4. Kenya narrow the cost gap in MV switchgear assembly with productivity increase, with additional upside from local integration

Analysis under base case scenario with a greenfield factory, running at 80% utilization across countries applying official tariffs vs China

% Base case assumptions

Under what conditions does local assembly of MV switchgears in Kenya become competitive

China import price index in Kenya: 105

Local index price lower or equal vs. China import index price

Local index price higher vs. China import index price

Imported good tariff[1]	Output productivity ratio vs. China					
	35%[2]	40%	50%	60%	70%	80%
~5%	119	116	112	110	108	107
~2.5%	118	115	111	108	107	105
~0%	116	113	109	106	105	103

Advantages of local manufacturing justifying a price premium

What we heard	Advantage
Customers can easily pay 20% premium for proximity and shorter lead times **- CEO of global OEM**	**Shorter lead times** reduce project delays and working capital tied in inventory, especially for standardized LV/MV panels
Customization is crucial for our customers, and it's enabled through local assembly **- CEO of global OEM**	**Customization to local standards and use cases** (e.g., specs) is easier with local assembly
If you take a TCO approach, having local manufacturers for spare parts is better due to lower downtime **- CEO of global OEM**	**Improved spare parts availability** and lifecycle support, reducing downtime and maintenance costs

1. Average of input tariff on all imported components // 2. Based on ILO's labor productivity index

Source: Should cost model, press search, expert interviews

Agenda

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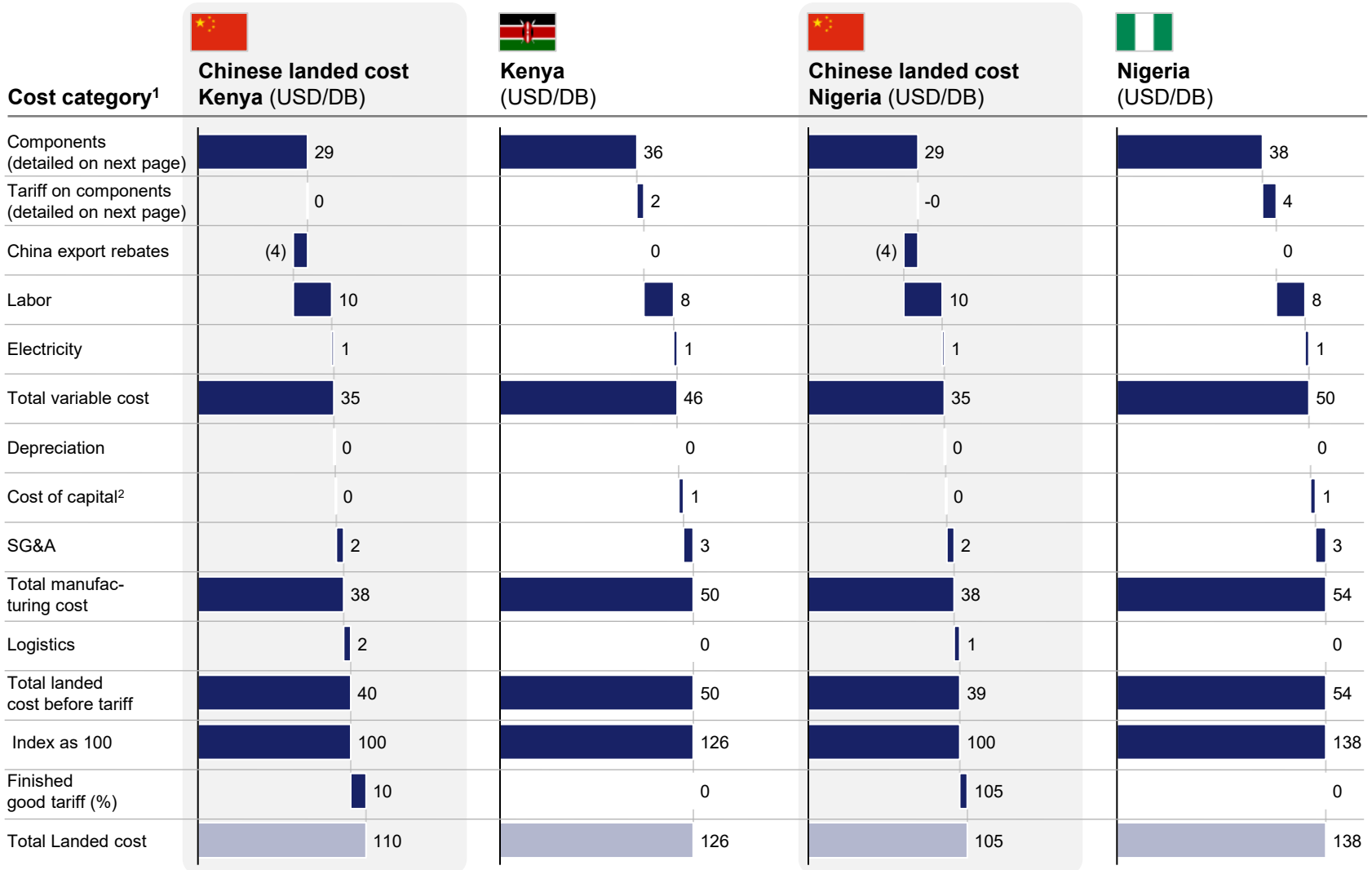
- Transformers
- **Switchgears**
  - MV switchgear
  - **Distribution board**
- Meters
- Poles
- Detailed list of manufacturers

Distribution board – We used a set of assumptions to accurately assess cost competitiveness of distribution board manufacturing

Category	Assumption
Technical	• Assumed manufacturing of a low-voltage distribution board (LV, residential/small commercial) used for end-user electricity distribution • Assumed one DB includes ~6 MCBs, internal wiring, terminals, and optional residual current device (RCD) • Assumed average internal wiring length of ~1 m and standardized configuration across markets
Components	• Assumed plastic enclosure, internal wiring, and basic assembly components are locally sourced in assembly country where possible • Assumed imported components include MCBs, RCDs, and switch, sourced from China • Plastic enclosure priced at ~$10 (China), ~$17 (Kenya), ~$20 (Nigeria) reflecting local market premiums • Assumed Chinese manufacturers are eligible for the 13% rebate through the existing China export rebate schemes (modelled only on raw materials for simplicity)
Conversion costs	• Assumed labor productivity with case examples and using ILO's labor productivity index as ratios across countries
Fixed costs	• Assume factory CAPEX investment of ~$50k for distribution board assembly • Assume useful asset life of 30 years • Assumed a cost of debt of 10% in Kenya given privileged access to capital by leveraging M300 DFI partners. Assumed debt to equity split of 65%-35% for China and of 30%-70% for Kenya • Assume SG&A and overhead represent ~5% of manufacturing costs
Production capacity	• Assume baseline utilization rate of 80% across countries
Shipping costs	• Estimated shipping costs for Shanghai to Nairobi/Lagos using Searates.com

Note: All prices and logistics costs as of January 2026

1. Distribution board – Local countries depend on tariffs and productivity to maintain competitiveness against imports under current mkt. conditions



Key takeaways

- **Before tariffs, local assembly in Kenya and Nigeria is ~15-30% more expensive than imports** – driven primarily by higher component costs (MCBs/RCDs), lower labor productivity, and financing costs
- **Cost structure is heavily component-driven (~65-70% of total cost)** – limiting the value capture from local assembly and reducing sensitivity to labor arbitrage
- **labor productivity remains the main operational lever** – closing ~30-40% productivity gap vs China could reduce total cost by ~5-8 index points. Costs have been estimated using a flat productivity (i.e., 60% output per employee per year vs. China)
- **Tariffs on finished goods (5-10%) partially close the gap, but are insufficient on a standalone basis** – local assembly remains at a ~15–30 index disadvantage
- **Chinese export rebates (~13%) materially distort competitiveness** – they significantly widen the gap vs. local manufacturers and act as an implicit subsidy to exports

1. Manufacturing model based on a low-voltage distribution board (6–8 ways) used for residential
2. Assuming loans at advantageous conditions from international donors (10%)

Distribution board – Detailed BoM shows economics with strong exposure to import tariffs for components

Component	Sourcing	Estimated price Exwork, USD			+	Logistic costs[1], USD			+	Tariffs, USD			=	Landed component costs, USD		
Plastic Enclosure	Local	10	15	17						-	-	-		10	15	17
Internal Wiring & Terminals	Local	1.5	2.8	3.0						-	-	-		2	3	3
Main Protective Device (Main Switch)	China	3	3	3			0.2	0.2		-	0.3	0.6		3	3	4
Residual current device	China	9	9	9		-	0.5	0.5		-	0.9	1.9		9	10	11
Miniature circuit breakers	China	5	5	5		-	0.3	0.3		-	0.5	1.1		5	6	6
Total		**29**	**35**	**37**		**-**	**0.9**	**0.9**		**-**	**1.8**	**3.6**		**29**	**37**	**41**

1. Estimated ~5% shipping costs from China to Kenya/Nigeria

Source: Tariffs from ITC website, March 2026, desk research on prices in China, Kenya and Nigeria (Accio.com), logistics costs from SeaRates.com

3. Distribution board – Inverted tariff schemes create structural manufacturing disadvantages in most priority markets

Local index price lower vs. China import index price

Local index price higher by <10% vs. China import index price

Local index price higher by >10% vs China import index price

Note on index price: 100 = total landed costs from China manufactured component (incl. shipping) before tariffs

	EAC			ECOWAS			
Dimension	**Kenya**	**Tanzania**	**Ethiopia**	**Nigeria**	**Ghana**	**Zambia**	**DR Congo**
China import index price (only difference between countries is tariff on finished goods)	110	110	125	105	105	115	110
Local index price (differences between countries are both manufacturing costs and tariffs on inputs)	**126**	**126**	**125**	**138**	**138**	**136**	**126**
Tariff applied on manufacturing inputs, in %[1]	10%	10%	15%	20%	20%	15%	10%
Tariff on final product, in %	10%	10%	25%	5%	5%	15%	10%

Takeaways

- **In 6 of 7 markets, local index prices are higher than the China import index**, highlighting the competitivity gap faced by local assembly
- **Ethiopia is the only country with strong protection** for local assembly, enabling local prices to be competitive

Methodology:

- Local index prices are based on a standardized model anchored on should-cost benchmark (either in Kenya or Nigeria), keeping production, labor and raw material assumptions constant
- Country differences are driven solely by input and final product tariffs, with China index reflecting landed cost including import duties

1. Average of input tariff on all imported components

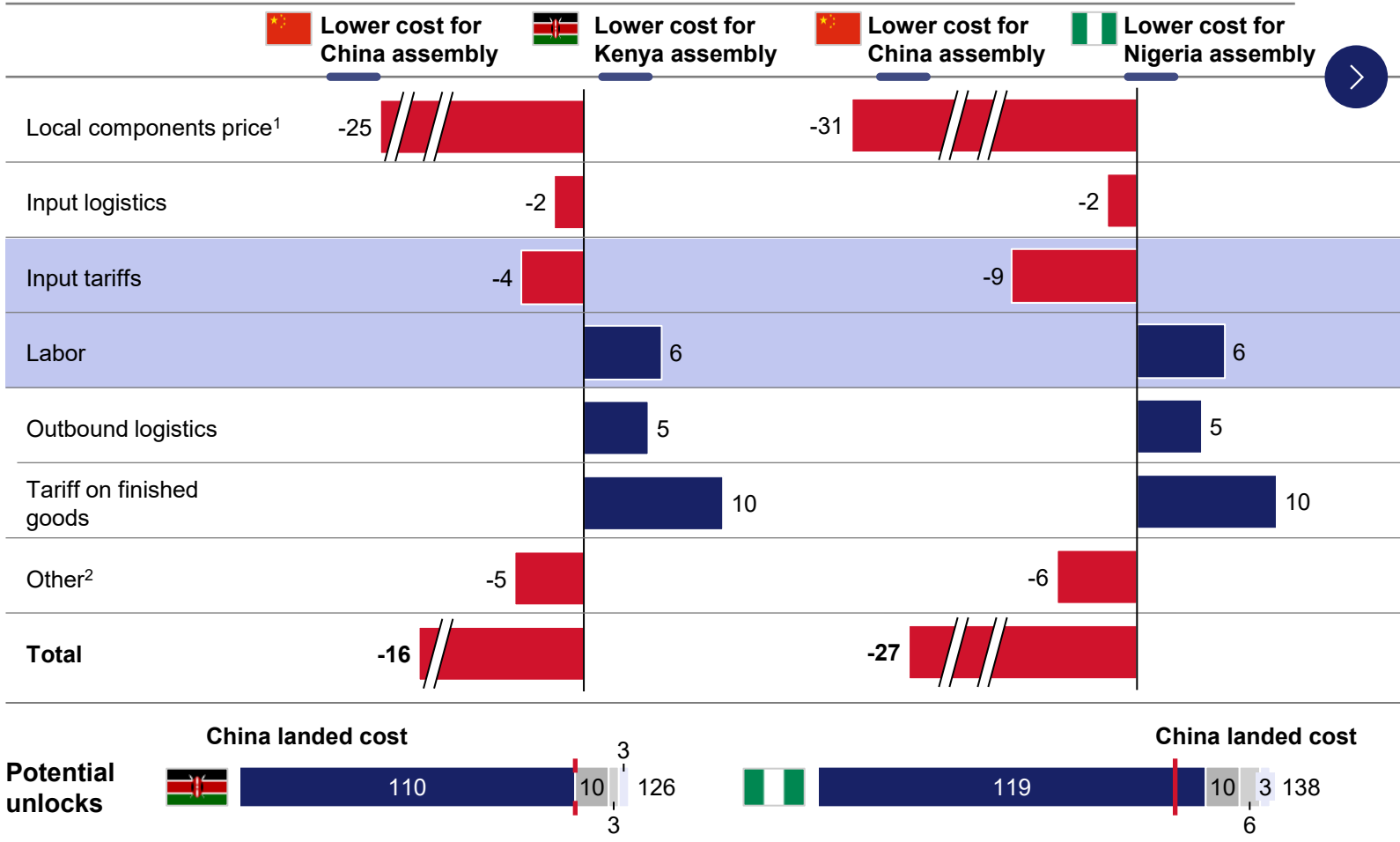
Source: IMF International Financial Statistics, Press search, should cost model

4. Distribution board – Achieving cost parity requires scale in procurement, supportive tariff structures, and cheaper financing

Analysis under base case scenario with a greenfield factory, running at 80% utilization across countries applying official tariffs vs China

Deep dive next

Drivers of cost gaps between China imports and local assembly, index



How to address it?
Aggregate demand at regional level and work with local suppliers to reduce costs – Potential gain[3] : 10
Only import duty-free (or low duty) inputs and maintain a clear tariff advantage for local assembly vs finished imports
Consolidate imports and develop regional hubs to reduce fragmentation and logistics costs – Potential gains[4] in Kenya: 3 ; in Nigeria: 6
Increase cost advantage vs China by improving productivity through scale and learning effects – Potential gain[5] : 3
n.a.
n.a.
Reduce cost of capital through concessional financing and shared industrial infrastructure
If all unlocks are achieved, cost competitiveness can improve to an index price of ~110 in Kenya and ~119 in Nigeria

1. Includes China export rebates which reduce raw material costs by 13% (VAT exemption) // 2. Includes gap due to cost of capital, depreciation, energy and SG& A // 3. ~20% local component costs reduction // 4. Input tariff to 0% // 5. Considers a 30% increase in labor productivity

Source: Tariffs from ITC website, March 2026, desk research on prices in China, Kenya and Nigeria, logistics costs from SeaRates.com, Expert interviews, should cost model

Distribution board – Kenya narrow the cost gap in assembly with productivity increase, with additional upside from local integration

% Base case assumptions

Under what conditions does local assembly of distribution board in Kenya become competitive

China import price index in Kenya: 110

Local index price lower or equal vs. China import index price

Local index price higher vs. China import index price

Imported input tariff[1]	Output productivity ratio vs. China					
	60%[2]	65%	70%	80%	90%	100%
~10%	126	125	123	121	120	118
~5%	124	122	121	119	117	116
~0%	122	120	119	117	115	113

Advantages of local manufacturing justifying a price premium

What we heard	Advantage
Customers can easily pay 20% premium for proximity and shorter lead times - **CEO of global OEM**	**Shorter lead times** reduce project delays and working capital tied in inventory, especially for standardized LV/MV panels
Distribution boards are largely standardized across projects, especially residential ones - **COO of mini grid operator**	**Standardization enables scale efficiencies**, with M300 volumes driving lower unit costs through repeatable designs and batch assembly

1.Average of input tariff on all imported components // 2. Output productivity estimated higher for distribution than MV Switchgear due to lower complexity in assembly and potential for automation

Source: Should cost model, press search, expert interviews

Kenya and Nigeria stand out for their manufacturing capabilities; others show varying constraint levels across infrastructure and skills

Manufacturing scaling attractiveness High — Low

Dimension	Sub-dimension	Kenya	Tanzania	Ethiopia	Nigeria	Ghana	Zambia	DRC
FX	FX volatility, last 3 years, in %	7%	2%	18%	29%	25%	15%	4%
	FX regulatory limitations	Low	Medium	High	Medium	Low	Low	High
Manufacturing	Existing elec. equipment manufacturing base	Medium-High	Low	Medium	Medium-High	Medium	Low	Low
	M300 market size, in USD bn	~2.5-3.5	~3.5-4.5	~3.5-4.5	~5-6	~0.4-0.8	~0.8-1.2	~3-4
	Manufacturing Value Added per capita, in USD	156	92	46	212	244	99	80
	Africa Infrastructure Development Index 100-basis	26	15	20	26	28	22	10
	# graduates in electrical and processing fields	Medium-High	Medium-Low	Medium	Medium-High	Medium	Low	Low
Logistics	Logistics Performance Index, from 1 to 5	2.8	2.6	2.6	2.6	2.5	2.6	2.5
	Export potential within Africa	High	Medium	Medium	High	Medium	Medium	Low
How appealing is the market		**High**	**Medium**	**Medium**	**High**	**Medium-high**	**Low**	**Low**

Takeaways

- **Kenya and Nigeria** best positioned to anchor regional supply chains, **combining existing manufacturing bases with large domestic markets**
- **Ghana** offers solid fundamentals with **high manufacturing value add and infrastructure**, but lacks sufficient market scale
- **Tanzania and Ethiopia show partial readiness**, with improving infrastructure but gaps in industrial scale and workforce depth
- **Zambia and DRC** exhibit the **highest constraints**, particularly in existing manufacturing base, skills availability, and infrastructure
- **Infrastructure, scale, and workforce** emerge as the most consistent enablers or barriers across markets

Source: IMF International Financial Statistics ; World Bank Logistics Performance Index 2023; African Development Bank Africa Industrialization Index 2022; African Infrastructure Development Index; National higher education statistics

Switchgear assembly is widely accessible, with hub potential driven by scale and demand concentration

High Medium Low

Country	Demand[1]	Existing presence[2]	Economic compete-tiveness vs China[3]	Industrial readiness	Assessment
Kenya	High	High	Low	Strong	Strong assembly base with existing players, but cost gap vs China requires productivity gains and policy support
Tanzania	High	Medium	Low	Strong	Emerging assembly hub with regional export potential, with existing electrical components suppliers
Ethiopia	High	Medium	High	Medium	Competitive on cost due to tariff protection, but constrained by export barriers
Nigeria	High	High	Low	Strong	Large domestic demand supports scale, with strong assembly potential if productivity and financing constraints are addressed
Ghana	Low	Low	Low	Medium	Moderate manufacturing opportunity, mainly import-based with small-scale assembly potential
Zambia	Medium	Low	Low	Limited	Small market with limited industrial base, not suited for large-scale assembly
DR Congo	Medium	Low	Low	Limited	Demand exists but with a limited manufacturing opportunity

1. Market size under M300. High = USD, 300mn+ , Medium = USD, 300-100mn , Low = USD, 100-0mn
2. Number of identified existing players manufacturing / assembling electric meters. High = 10+, Medium = 2-9, Low = <2
3. Local price index relative to China landed price (including tariffs). High = 10+ points cheaper, Medium = 10-0 points cheaper, Low = more expensive

Key insights

- **Nigeria and Kenya are best positioned to scale switchgear assembly**, driven by large demand and existing industrial capabilities, but require productivity improvements to close the cost gap
- **Switchgear assembly is not a capability constraint** – can be deployed across most countries with limited technical barriers, and competitiveness is driven by scale and utilization, not by technology or IP
- **Tanzania and Ethiopia can play secondary roles**, leveraging regional demand and tariff structures, but remain constrained by scale and supplier ecosystems

Agenda

Executive summary

Detailed report

Component deep dives

- Cables
- Transformers
- Switchgears
- **Meters**
- Poles
- Detailed list of manufacturers

Executive summary

Market opportunity

Electric meter demand under Mission 300 represents a ~$5-6bn market opportunity, creating significant demand for local assembly. Demand is concentrated in a limited number of large markets within key regional corridors (EAC, ECOWAS), enabling opportunities for scale through demand aggregation

Competitiveness dynamics

Local meter assembly is generally not price competitive with Chinese imports under current cost structures. Chinese manufacturers benefit from scale, deep upstream integration, and low-cost inputs, particularly in electronics. Local cost structures are heavily driven by imported components (~70–80% of costs), limiting differentiation. Competitiveness is therefore largely policy-driven, with tariff protection in Nigeria enabling local viability while other markets remain uncompetitive

Industrial landscape

An emerging assembly hub is concentrated in Nigeria, supported by local champions and significant existing production capacity. Across other markets, particularly in East Africa and Ghana, a limited number of OEM partnerships are emerging in answer to local procurement frameworks being put in place, though these remain sub-scale relative to domestic demand and are not cost competitive with Chinese imports. Although significant production capacity exists, players are operating at low utilization rates (<30%) as they struggle to access utility demand

Strategic implications

Meter manufacturing opportunities are primarily concentrated in assembly, with differentiated pathways across regions. In Nigeria, the large domestic market and existing capabilities position local champions to progressively move into upstream integration to improve cost competitiveness and serve the broader ECOWAS region. In East Africa, the priority is to scale existing OEM partnerships to capture a larger share of local demand. However, in all countries outside of Nigeria, without significant productivity gains and targeted policy support, locally assembled meters will remain reliant on non-price advantages (environment and consumer behavior understanding, lead time, after-sales services)

Energy meters are critical components across grid and mini-grid distribution under M300

Electric meters

NOT EXHAUSTIVE

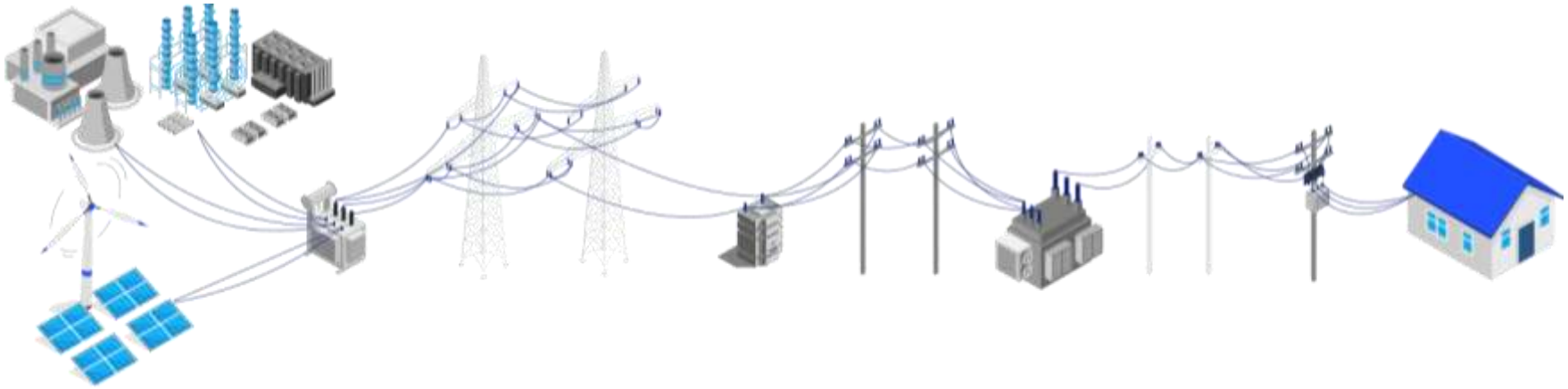
Electricity flow

Generation
Production of electricity through various energy sources

Transmission
Transport of electricity over long distances

Distribution
Delivery of electricity to homes and businesses

Illustration



Grid BOM items

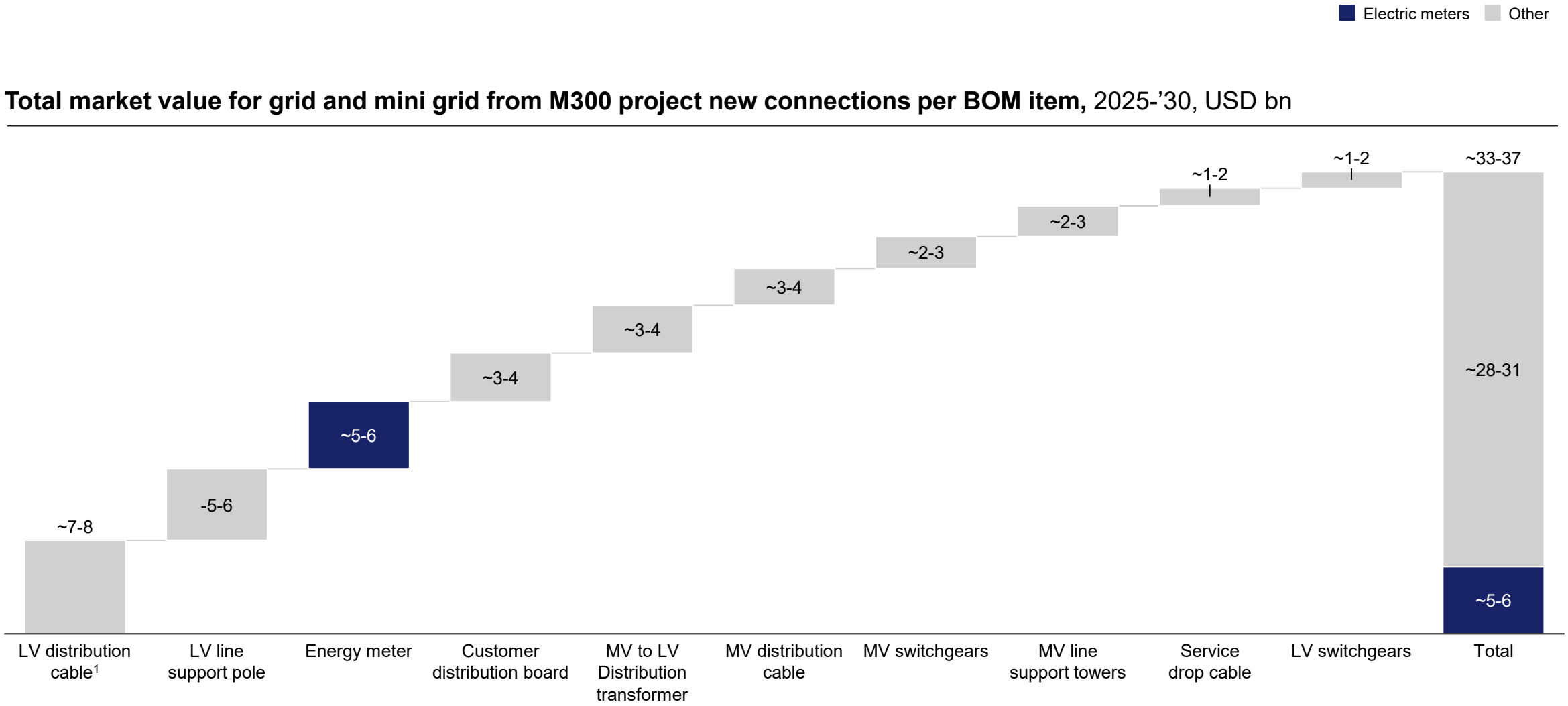
Energy generator	HV transformer	MV transformer	MV to LV trans-former	Switch-gears	LV distribution cable	Service protection device	Grounding system
	HV distribution cable	MV distribution cable			LV line support pole		
	HV line support towers	MV line support towers		Circuit breakers	Service drop cable	Energy meter	Customer distribution board

Mini-grid BOM items

Solar PV modules	Inverter / power conversion system	Switchgears	LV distribution cable	Service protection device	Grounding system
Battery storage system			LV line support pole		
Backup diesel generator		Circuit breakers	Service drop cable	Energy meter	Customer distribution board

Source: Market opportunity model, Expert interviews

M300 drives an additional ~USD 5-6bn demand in electric meters



1. Includes market for solar cables

Single-phase prepaid meters will drive the bulk of M300 scale, with smart variants as the strategic extension

M300 priority

Application	Meter categories[1]		Description
Residential meters		**Single-Phase Electromechanical (Postpaid, Legacy)**	Legacy mechanical disk meter, largely phased out in new electrification programs and replaced by digital alternatives. Limited relevance under M300, as most new connections prioritize prepaid or electronic billing models.
		**Single-Phase Electronic Postpaid**	Digital meter billed after consumption, used in traditional utility models and select urban networks. Deployment under M300 is limited, as utilities increasingly prioritize prepaid systems to improve revenue security and reduce losses.
		**Single-Phase Electronic Prepaid (STS)**	Token-based meter with internal disconnect relay; the default solution for mass residential electrification across Sub-Saharan Africa. Dominates grid-extension programs (e.g., Kenya Last Mile, Nigeria NEP[2]) due to strong revenue protection and lower infrastructure requirements.
		**Single-Phase Smart Prepaid (AMI[3] / GSM-enabled[4])**	Prepaid meter with remote monitoring and/or remote disconnect capability, enabling utility digitization and mini-grid integration. Deployed in “smart-forward” markets and virtually standard in mini-grids, but still secondary to basic STS in overall grid rollout given the requirement of AMI.
Commercial meters		**Three-Phase Electronic (Whole Current)**	Direct-connected meter for SMEs and moderate commercial loads, with prepaid versions deployed to strengthen revenue protection in higher-consumption segments. Strategically important for commercial electrification, but materially smaller in volume than residential single-phase meters under M300.
		**Three-Phase Electronic Prepaid**	
		**Three-Phase CT-Operated Meter**	High-current commercial or industrial meter using external current transformers; may be postpaid or smart-enabled. Critical for large-load customers and bulk supply points, but represents a niche share of total M300-driven connections.

1. Includes split and DIN-rail configurations within the meter categories 2. Nigeria Electrification Programme 3. Advanced Metering Infrastructure 4. Global System for Mobile communications

Source: Press Search

The complexity of upstream processes concentrates meter opportunities in assembly in Africa

Local opportunity

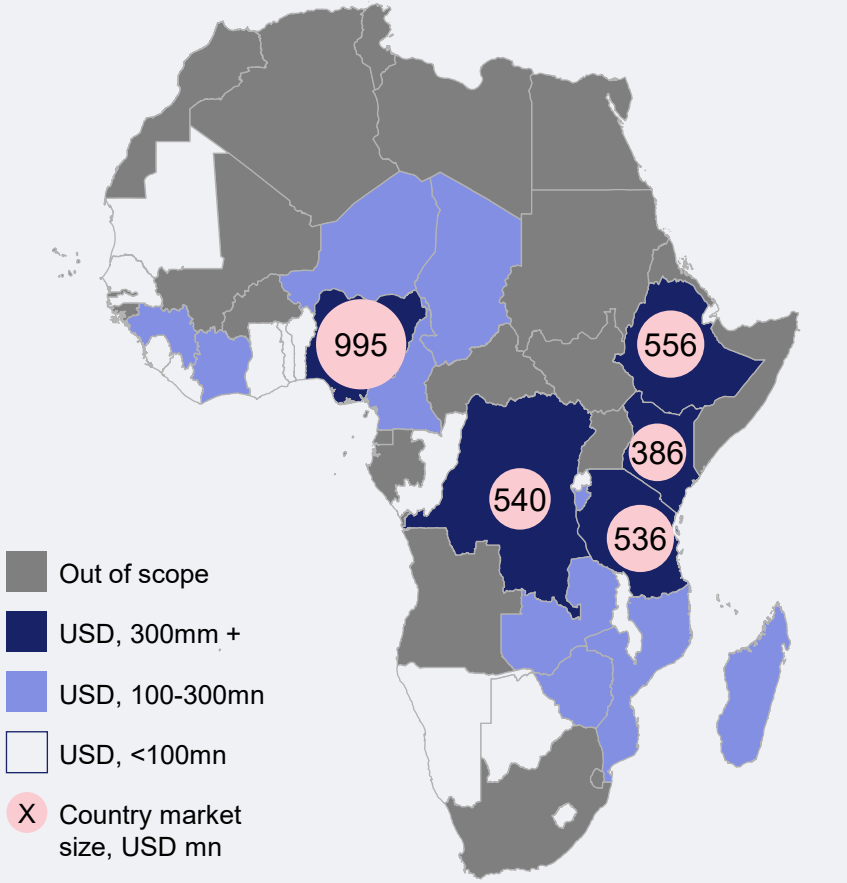
Simplified value chain	Component sourcing	Manufacturing	Assembly Assembly
Description	• Semiconductor chips, metering ICs, communication modules and other **key electronic components** are sourced • **Engineering plastics and metal terminals** are also sourced	• **SMT[1] lines assemble and solder** components onto printed circuit boards • **Firmware is programmed** and the PCB[1] functionally tested • Plastic granules are processed through **injection molding** to produce meter housing	• The PCB, terminals and communication modules are **assembled and integrated into the enclosure** • Security and **tamper features** are installed • **Meter is calibrated** to required accuracy class • Final packaging and shipment to utilities
Output	• **Electronic components** • **Plastic raw materials** • **Mechanical sub-components**	• **Assembled and programmed PCB** • **Molded plastic enclosure components**	• **Fully assembled electric meter**
M300 relevance	• **Low:** Limited upstream localization potential due to high IP barriers and advanced manufacturing requirements	• **Medium** - Electronics manufacturing, particularly SMT, remains complex and capital-intensive, while plastic enclosure molding can be viable for localization at scale	• **High:** Assembly and testing offer the most scalable local opportunity, driven by lower complexity and strong alignment with local demand
			

1. Surface mount technology
2. Printed circuit board

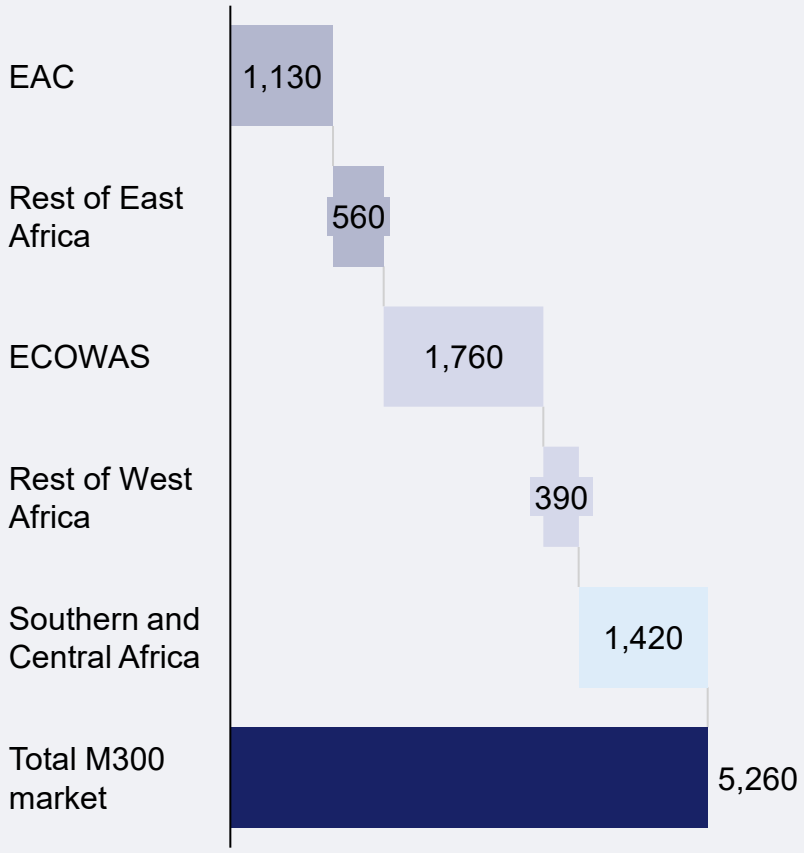
Source: Press search, company websites

M300 creates a market opportunity of ~USD 5-6bn for electric meters across Africa

Electric meter market under M300 per country, in USD million, 2025-'30



Electric meter market under M300 by region, in USD millions, 2025-'30



Takeaways

- **M300 can create a $5.3bn incremental market opportunity** for electric meters over 2025-30
- **Demand concentrates** in key regional trade corridors, with **EAC and ECOWAS representing ~USD 1.1bn and ~USD 1.8bn markets respectively**

Closing Nigeria's metering gap[1] could unlock an additional ~$375mn market, reinforcing its role as the anchor market for local manufacturing scale[2]

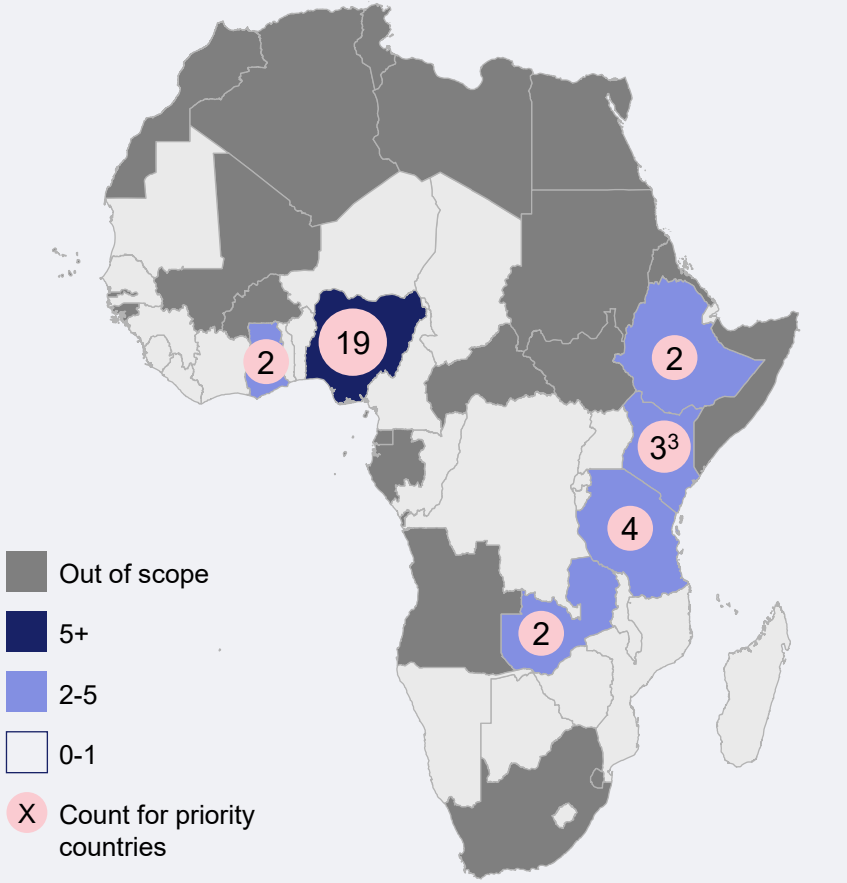
1. The Nigerian Electricity regulatory commission report states that there are still 5 million active users that are unmetered, with an average single-phase meter price of ~75$
2. The unmetered problem is not well documented in other top markets, with Tanzania, DRC & Ethiopia potentially representing additional large markets with a large share of active connections on estimated billing. In Kenya this is not an issue with a relatively small unmetered gap

Source: Market opportunity model, National Compacts, Expert interviews, Nigerian Electricity Regulatory Commission report

Nigeria emerges as the meter manufacturing hub of the continent

NON-EXHAUSTIVE

Number of identified unique transformer manufacturers per country



Identified top suppliers in priority countries

Country	Company Name	Years of experience	Estimated FTEs[1]	Production Capacity
	Mojec meter company	20+	250	5mn
	Protogy	20+	70	1.2mn
	Unistar Hi-Tech Systems Limited	10+	n.a	1.2mn
	MBH power limited	20+	70	920k
	MEMMCOL	30+	60	n.a
	CHINT Kenya meter factory	2	40	400k
	Elsewedy Electric East Africa Limited	5	n.a[3]	n.a
	SF Smart Energy Limited (SF Hexing Energy)	7	n.a	n.a
	Alpha TND	10+	n.a	1.2mn

In Nigeria, total combined capacity of top 4 players represents **~8.3 million meters / year**, a capacity that is largely sufficient to meet the domestic M300 demand of 2.6 million meters / year[3]

1. Based off D&B estimates or company websites when disclosed
2. Large industrial complex, difficult to know exact team and production capacity of electric meters
3. With the other two identified players focused on other electrical components as their core business
4. Assumed 1 meter per connection, with M300 demand forecasting 13m connections in Nigeria over 5 years

Source: Press search, S4G McKinsey

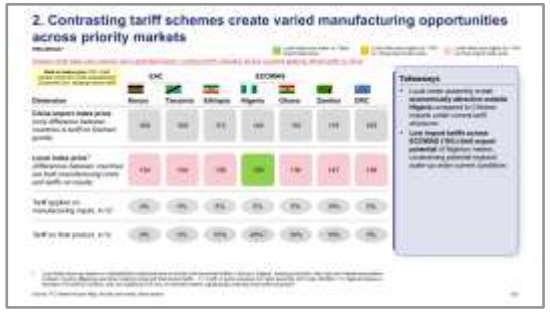
Cost analysis methodology structured across four steps to estimate financial viability of local manufacturing vs. importing

1. Base scenario in Kenya and Nigeria

Developed a bottom-up cost comparison between local manufacturing and Chinese imports to establish a base scenario in Kenya and Nigeria. Structured the analysis to compare total landed costs on a like-for-like basis

2. Base scenario extrapolation on other M300 countries

Scaled the base comparison across additional countries by modifying tariffs and logistics costs. Isolated cross-country differences to enable direct benchmarking of competitiveness

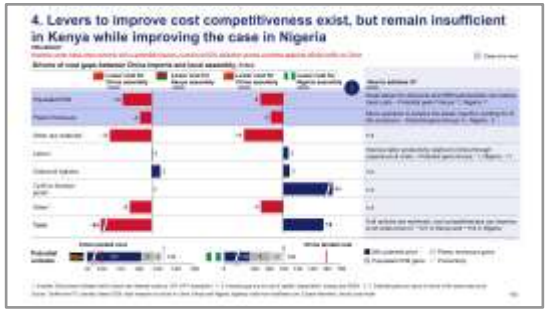


3. Sensitivity on key hypotheses

Varied key parameters one at a time to test the robustness of results and identify tipping points. Assessed how changes in external conditions impact relative competitiveness

4. Driver costs modeling on base case scenarios

Decomposed total cost differences into individual drivers to understand sources of competitiveness gaps. Linked each driver to actionable levers to quantify improvement potential

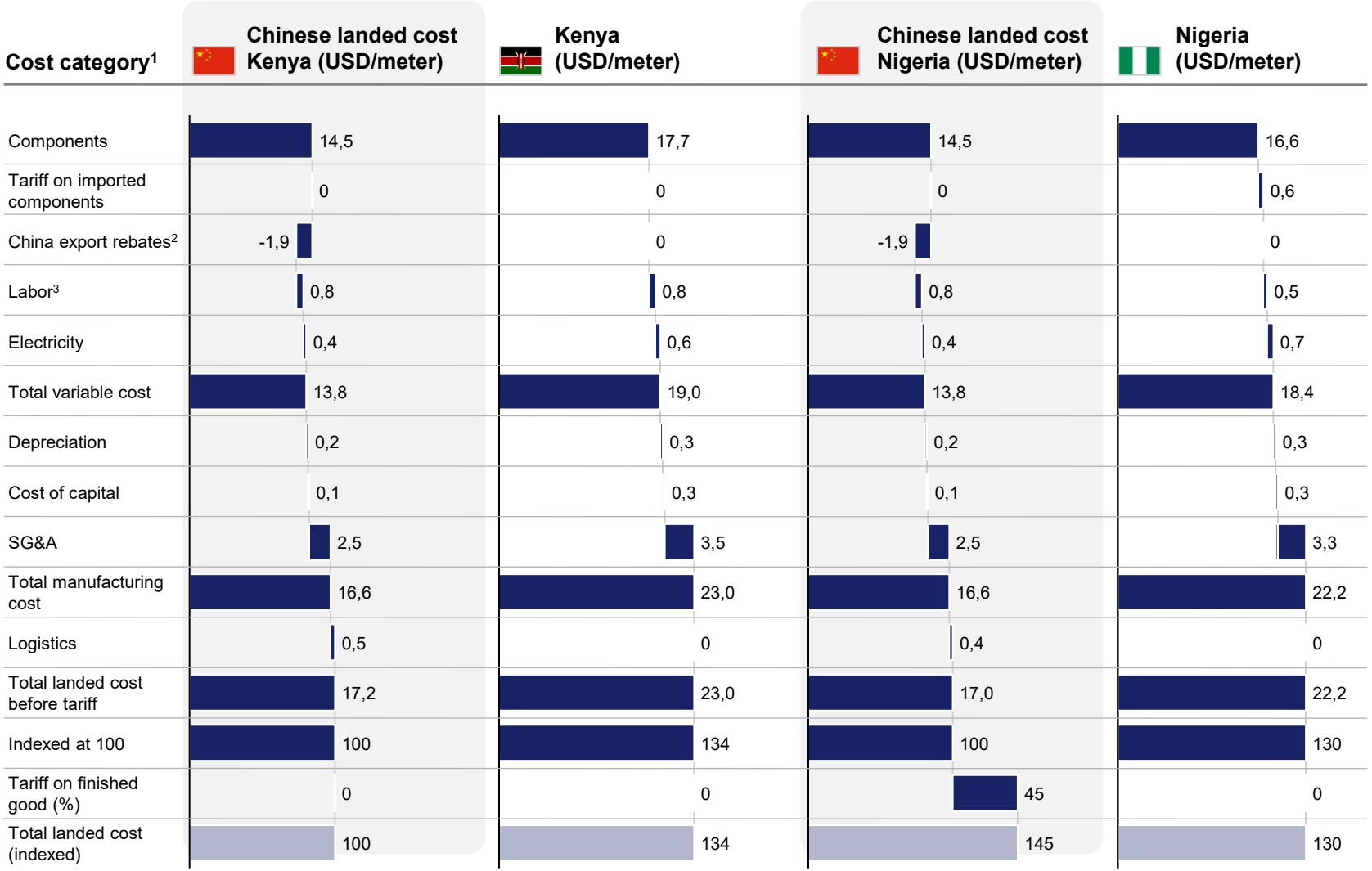


We used a set of assumptions to accurately assess cost competitiveness of electric meter assembly

Category	Assumption
Technical	• Assumed we are manufacturing a single phase, electronic, pre-paid smart meter
Raw materials	• Assumed China manufacturers the plastic enclosure in house, reducing raw material costs • For African countries, assumed that the electronics (PCB), terminal blocks and plastic enclosure are imported from China • Assumed packaging and other accessories costs represent 15% of total raw material costs and are locally sourced • Assumed Chinese manufacturers are eligible for the 13% rebate through the existing China export rebate schemes (modelled only on raw materials for simplicity)
Labor costs	• Assumed labor productivity for China using ILO productivity index relative to Moroccan case example. Adapted productivity measures based on FTE to capacity ratios found for existing players in Nigeria (~70% of China) and Kenya (~50% of China)
Production capacity	• Assumed production plant with a capacity of 500,000 meters • Assumed base case of 80% utilization rate across countries
Fixed costs	• Assumed a factory CAPEX of $3million • Assumed a useful life of 30 years • Assumed a cost of debt of 10% in Kenya given privileged access to capital by leveraging M300 DFI partners. Assumed debt to equity split of 65%-35% for China and of 30%-70% for Kenya • Assumed SG&A as being 10% of total manufacturing costs (as it also includes certification costs)
Shipping costs	• Estimated shipping costs for Shanghai to Nairobi/Lagos using Searates.com for 40ft container (as of Feb 2026)

1. Nigeria assembly is competitive due to tariff protection, while Kenya is not competitive under current conditions

Analysis under base case scenario with a greenfield factory, running at 80% utilization across countries applying official tariffs vs China



Key insights

- **Cost structure is dominated by raw materials (~80%)**, particularly the imported electronics, constraining local value capture and differentiation
- **Chinese competitiveness is driven by scale and integration**, with large-scale production, deep upstream integration, and access to low-cost electricity enabling structurally lower costs
- **Nigeria benefits from existing scale advantages**, enabling lower raw material costs through bulk procurement, an experienced and cheap labor force, and more efficient logistics compared to Kenya
- **Competitiveness is primarily policy-driven**, with tariff protection in Nigeria offsetting cost disadvantages, while lack of protection leaves Kenya uncompetitive.

1. All key assumptions are found in Back Up, the manufacturing model considers the cost per meter for a single phase, pre-paid electronic smart meter // 2. Assumes Chinese manufacturers benefit from the 13% rebate on all their raw materials via the government export incentive scheme // 3. labor costs consider both the average employee salary and production productivity (number of FTE needed per production line)

1. Detailed BOM shows economics with strong exposure to upstream integration and high shipping costs associated to plastic enclosures

Component	Sourcing	Estimated price Exwork, USD			+	Logistic costs[1], USD			+	Tariffs, USD			=	Landed component costs, USD		
																
Populated PCB[2]	China	8.9	10.6	9.8		-	0.1	0.1		-	-	0.5		8.9	10.7	10.3
Plastic enclosure[3]	China	1.4	1.7	1.7		-	0.4	0.4		-	-	0.1		1.4	2.1	2.2
Terminal blocks (metals)	China	2.0	2.0	2.0		-	0.2	0.2		-	-	-		2.0	2.2	2.2
Other consumables & packaging	Local	2.2	2.7	2.5		-	-	-		-	-	-		2.2	2.7	2.5
Total		**14.5**	**17.0**	**15.9**		**-**	**0.7**	**0.7**		**-**	**-**	**0.6**		**14.5**	**17.7**	**17.2**

1. Estimated cost of container shipping from Shanghai to Nairobi/Lagos divided by estimated number of components that can fit in one 40ft container. For terminal blocks, took a standard 10% logistics and handling fee
2. Ex-work price is higher for Nigeria and Kenya given the lack of upstream integration, paying for factory margin. Nigeria is assumed to get more favorable conditions given scale
3. Showing the base case when the plastic enclosure is molded in China. Assumes molding is integrated into Chinese operations, where as a factory margin is payed by Nigerian and Kenyan manufacturers importing the enclosure

Source: Tariffs from ITC website, March 2026, desk research on prices in China, Kenya and Nigeria (Accio.com, Alibaba), logistics costs from SeaRates.com

2. Contrasting tariff schemes create varied manufacturing opportunities across priority markets

Analysis under base case scenario with a greenfield factory, running at 80% utilization across countries applying official tariffs vs China

Local index price lower vs. China import index price

Local index price higher by <10% vs. China import index price

Local index price higher by >10% vs China import index price

Note on index price: 100 = total landed costs from China manufactured component (incl. shipping) before tariffs

	EAC			ECOWAS			
Dimension	**Kenya**	**Tanzania**	**Ethiopia**	**Nigeria**	**Ghana**	**Zambia**	**DRC**
China import index price *(only difference between countries is tariff on finished goods)*	100	100	115	145	110	115	105
Local index price[1] *(differences between countries are both manufacturing costs and tariffs on inputs)*	134	134	138	130	130	147	138
Tariff applied on manufacturing inputs, in %[2]	0%	0%	5%	5%	5%	15%	5%
Tariff on final product, in %	0%	0%	15%	45%[3]	10%	15%	5%

Takeaways

- Local meter assembly is **not economically attractive outside Nigeria** compared to Chinese imports under current tariff structures
- **Low import tariffs across ECOWAS (10%) limit export potential** of Nigerian meters, constraining potential regional scale-up under current conditions

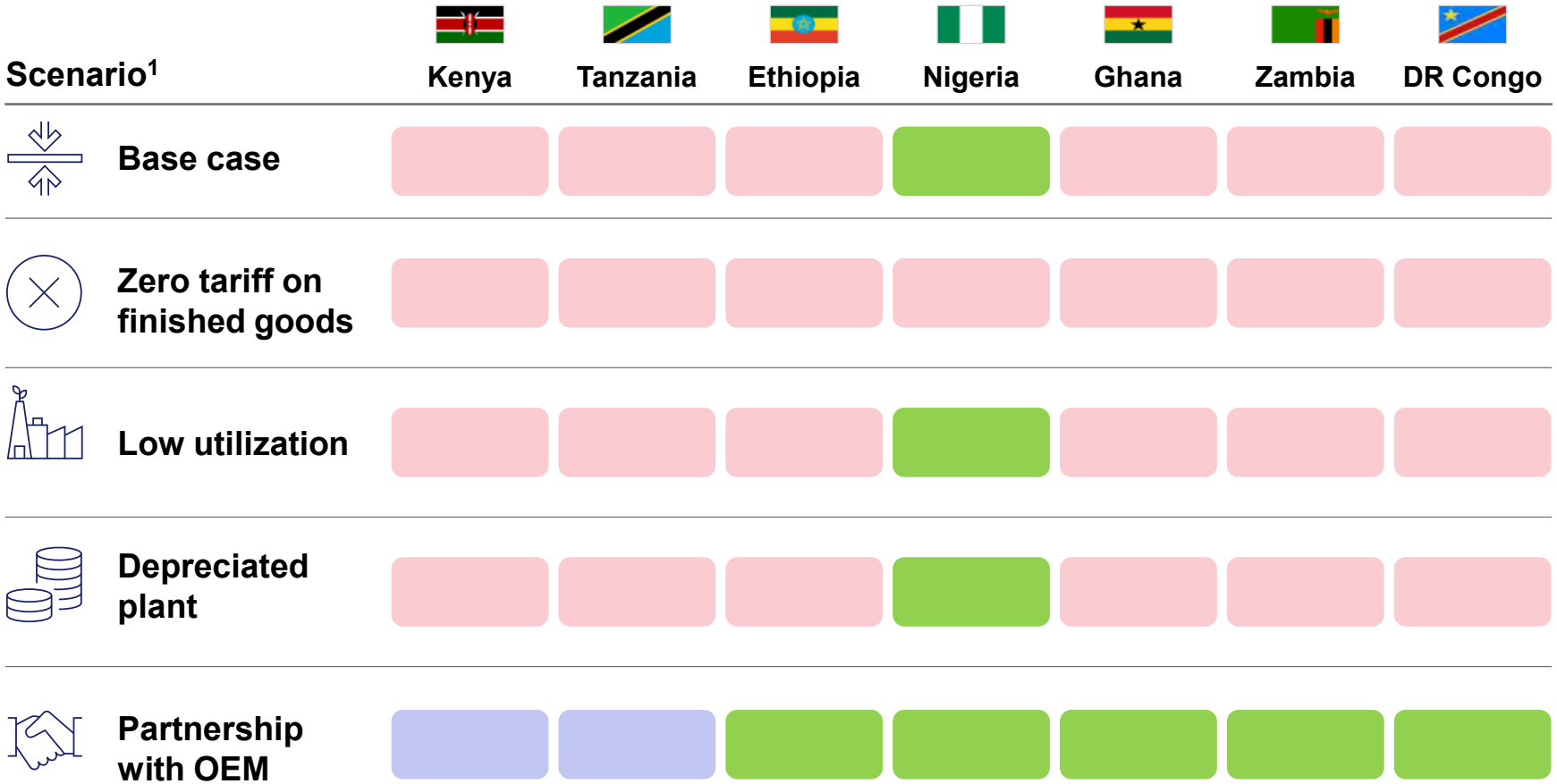
1. Local index prices are based on a standardized model anchored on should-cost benchmark (either in Kenya or Nigeria), keeping production, labor and raw material assumptions constant. Country differences are driven solely by input and final product tariffs // 2. Tariff on parts necessary for meter assembly (HS Code: 902890) // 3. Nigeria imposes a standard 10% tariff (ECOWAS), with and additional 35% levy on imported meters, significantly protecting local meter production

Source: ITC Market Access Map; should cost model, press search

3. Most analyzed countries can localize meter assembly through OEM partnerships

Base case is a greenfield factory, running at 80% utilization across countries applying official tariffs vs China

Favorable | Could be unlocked | Unlikely



Key takeaways

- **Limited capex intensity reduces sensitivity to utilization and depreciation**, preserving unit economics even at lower volumes
- **OEM-led local manufacturing (greenfield or local JV) is the biggest value lever**, capturing parent-scale benefits (volume, purchasing power, know-how) to materially reduce cost

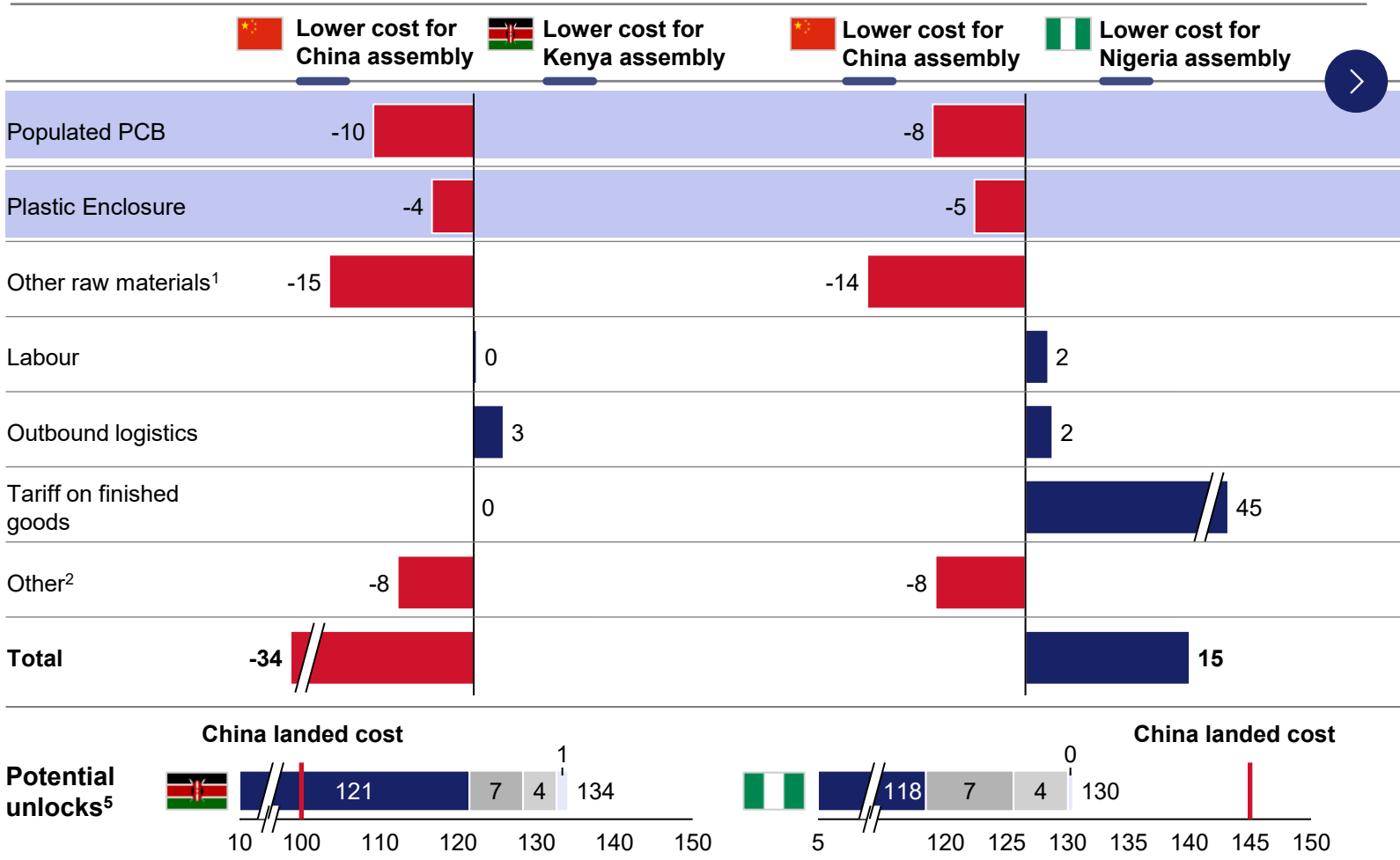
1. Changing one parameter at a time relative to base case

4. Levers to improve cost competitiveness exist, but remain insufficient in Kenya while improving the case in Nigeria

Analysis under base case scenario with a greenfield factory, running at 80% utilization across countries applying official tariffs vs China

Deep dive next

Drivers of cost gaps between China imports and local assembly, index



How to address it?
Scale allows for discounts and OEM partnerships can reduce input costs – Potential gains[3] Kenya: 7, Nigeria: 7
Move upstream to localize the plastic injection molding for of the enclosure – Potential gains Kenya: 4 ; Nigeria : 4
n.a
Improve labor productivity relative to China through experience & scale – Potential gains Kenya : 1, Nigeria : <1
n.a.
n.a.
n.a
If all unlocks are achieved, cost competitiveness can improve to an index price of ~121 in Kenya and ~118 in Nigeria

Min potential price
Plastic enclosure gains
Populated PCB gains
Productivity

1. Includes China export rebates which reduce raw material costs by 13% (VAT exemption) // 2. Includes gap due to cost of capital, depreciation, energy and SG&A // 3. Potential gains are given in terms of the base index price

Source: Tariffs from ITC website, March 2026, desk research on prices in China, Kenya and Nigeria, logistics costs from SeaRates.com, Expert interviews, should cost model

Upstream integration and improved input pricing can improve competitiveness for Nigeria, while Kenya remains uncompetitive

Analysis under base case scenario with a greenfield factory, running at 80% utilization across countries applying official tariffs vs China

% Base case assumptions

What conditions help local assembly of electric meters narrow the cost gap

China import price index:	Kenya: 100	Nigeria: 145	ECOWAS: 110

Local index price lower or equal vs. China import index price

Local index price higher vs. China import index price

Plastic enclosure	Premium paid on electronic board vs. China[1] 30%	25%	20%	15%	10%	5%
Imported from China	138	134	131	127	124	120
Locally produced	133	130	126	123	120	116
Imported from China	141	138	134	130	127	123
Locally produced	137	133	130	126	122	119

Local assembly remains relevant driven by non-price advantages

OEM partnerships enable preferential input access: Partnerships with global OEMs can provide access to components and kits at more competitive prices, partially offsetting scale disadvantages

Local content requirements support market access: Procurement frameworks and local content policies can favor domestic assembly, improving ability to win tenders despite higher costs

Proximity to utilities enables faster delivery and service: Local presence allows shorter lead times, greater stock flexibility, and quicker maintenance or replacement, critical for utility operations

1. Modelled premium paid as the factory margin for access to the populated PCB board (before logistics costs and tariffs). Base case is assumed as lower given scale and experience of Nigerian actors relative to Kenya

Source: Should cost model, press search, expert interviews

Kenya and Nigeria stand out for their manufacturing capabilities; others show varying constraint levels across infrastructure and skills

Manufacturing scaling attractiveness High — Low

Dimension	Sub-dimension	Kenya	Tanzania	Ethiopia	Nigeria	Ghana	Zambia	DRC
FX	FX volatility, last 3 years, in %	7%	2%	18%	29%	25%	15%	4%
	FX regulatory limitations	Low	Medium	High	Medium	Low	Low	High
Manufacturing	Existing elec. equipment manufacturing base	Medium-High	Low	Medium	Medium-High	Medium	Low	Low
	M300 market size, in USD bn	~2.5-3.5	~3.5-4.5	~3.5-4.5	~5-6	~0.4-0.8	~0.8-1.2	~3-4
	Manufacturing Value Added per capita, in USD	156	92	46	212	244	99	80
	Africa Infrastructure Development Index 100-basis	26	15	20	26	28	22	10
	# graduates in electrical and processing fields	Medium-High	Medium-Low	Medium	Medium-High	Medium	Low	Low
Logistics	Logistics Performance Index, from 1 to 5	2.8	2.6	2.6	2.6	2.5	2.6	2.5
	Export potential within Africa	High	Medium	Medium	High	Medium	Medium	Low
How appealing is the market		**High**	**Medium**	**Medium**	**High**	**Medium-high**	**Low**	**Low**

Takeaways

- **Kenya and Nigeria** best positioned to anchor regional supply chains, **combining existing manufacturing bases with large domestic markets**
- **Ghana** offers solid fundamentals with **high manufacturing value add and infrastructure**, but lacks sufficient market scale
- **Tanzania and Ethiopia show partial readiness**, with improving infrastructure but gaps in industrial scale and workforce depth
- **Zambia and DRC** exhibit the **highest constraints**, particularly in existing manufacturing base, skills availability, and infrastructure
- **Infrastructure, scale, and workforce** emerge as the most consistent enablers or barriers across markets

Source: IMF International Financial Statistics ; World Bank Logistics Performance Index 2023; African Development Bank Africa Industrialization Index 2022; African Infrastructure Development Index; National higher education statistics

Local champions in Nigeria and OEM partnerships in East Africa drive the most viable manufacturing pathways

High Medium Low

Country	Demand[1]	Existing presence[2]	Economic compete-tiveness vs China[3]	Industrial readiness	Assessment
Kenya				Strong	**OEM partnership candidate**, large market and strong industrial base, but competitiveness remains policy-sensitive
Tanzania				Medium	**OEM partnership candidate**, with large market, but competitiveness remains policy-sensitive
Ethiopia				Medium	**Domestic-scale opportunity**, large market and industrial base, but limited regional export potential
Nigeria				Strong	**Upstream integration of local champions**, large protected market with established players and installed capacity enabling further expansion
Ghana				Medium	**Conditional regional play**, viable if it can serve neighboring markets at scale
Zambia				Limited	**Constrained assembly case**, limited scale and high logistics burden
DR Congo				Weak	**Constrained assembly case**, logistics challenges and limited industrial base reduce viability

1. Market size under M300. High = USD, 300mn+ , Medium = USD, 300-100mn , Low = USD, 100-0mn
2. Number of identified existing players manufacturing / assembling electric meters. High = 10+, Medium = 2-9, Low = <2
3. Local price index relative to China landed price (including tariffs). High = 10+ points cheaper, Medium = 10-0 points cheaper, Low = more expensive

Key insights

- **Nigeria offers the strongest immediate opportunity**, with established local champions, installed capacity, and tariff protection enabling expansion
- **OEM partnerships provide the most viable entry model in other large markets**, allowing players to capture local demand despite limited cost competitiveness
- **Unlocking OEM partnerships requires demand visibility and policy support**, including local content frameworks and procurement alignment to de-risk investment

Agenda

Executive summary

Detailed report

Component deep dives

- Cables
- Transformers
- Switchgears
- Meters
- **Poles**
- Detailed list of manufacturers

Executive summary – Poles

Market opportunity	**Poles represent a ~USD 7–9 bn equipment opportunity under Mission 300,** driven by grid and mini-grid deployment across LV and MV distribution networks, where poles are a core infrastructure component required for all connection types
Competitiveness dynamics	**Concrete poles offer ~20–25% lower total cost of ownership due to longer lifetime (~25 vs. ~15 years),** despite higher upfront costs; local production is generally competitive given high transport costs and low value density, although wood poles still see meaningful import flows in several markets
Industrial landscape	**Pole manufacturing is already localized,** with fragmented local players and limited reliance on imports; concrete poles benefit from standardized production using widely available inputs, while wood poles depend on constrained forestry resources and treatment capacity
Priority regional platforms	**Concrete pole manufacturing can be developed across most markets due to local input availability and proximity-to-demand requirements; wood pole manufacturing is viable only in selected markets** (notably Kenya and Tanzania) where forestry, demand, and logistics conditions are aligned, while large markets such as Nigeria structurally favor concrete solutions
Strategic implications	**Scaling local concrete pole manufacturing represents a robust opportunity to support electrification while strengthening domestic industrial capacity**; targeted support may also be considered for wood pole value chains in selected regions where structural conditions enable sustainable production

Market opportunity model focuses primarily on electricity distribution components in scope for manufacturing scaling in Africa

Poles

NOT EXHAUSTIVE

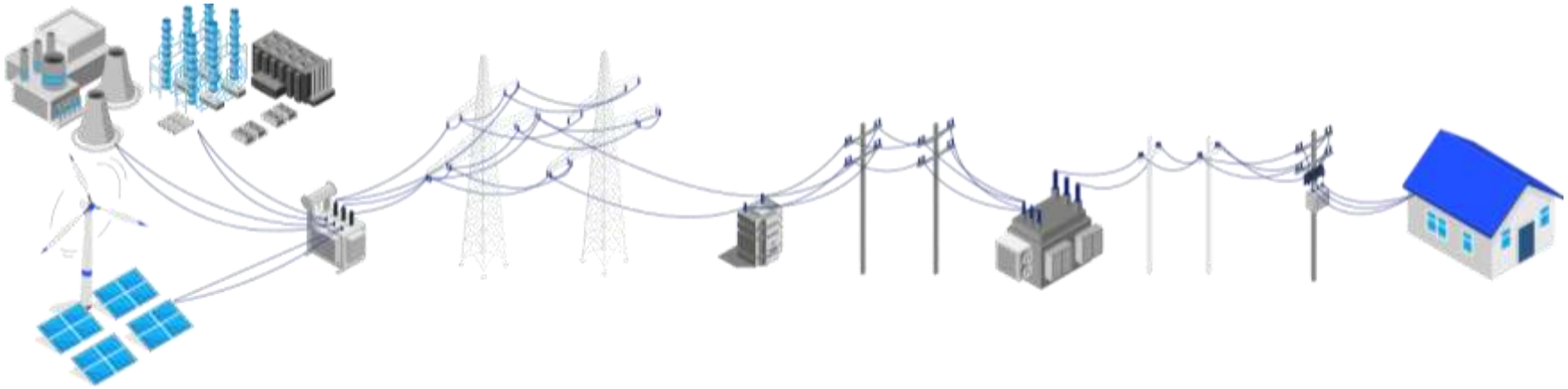
Electricity flow

Generation
Production of electricity through various energy sources

Transmission
Transport of electricity over long distances

Distribution
Delivery of electricity to homes and businesses

Illustration



Grid BOM items

Energy generator	HV transformer	MV transformer	MV switchgear	LV distribution cable	Service drop cable	Customer distribution board
	HV distribution cable	MV distribution cable	MV to LV transformer	LV line support pole	Energy meter	
	HV line support towers	MV line support towers	LV switchgear			

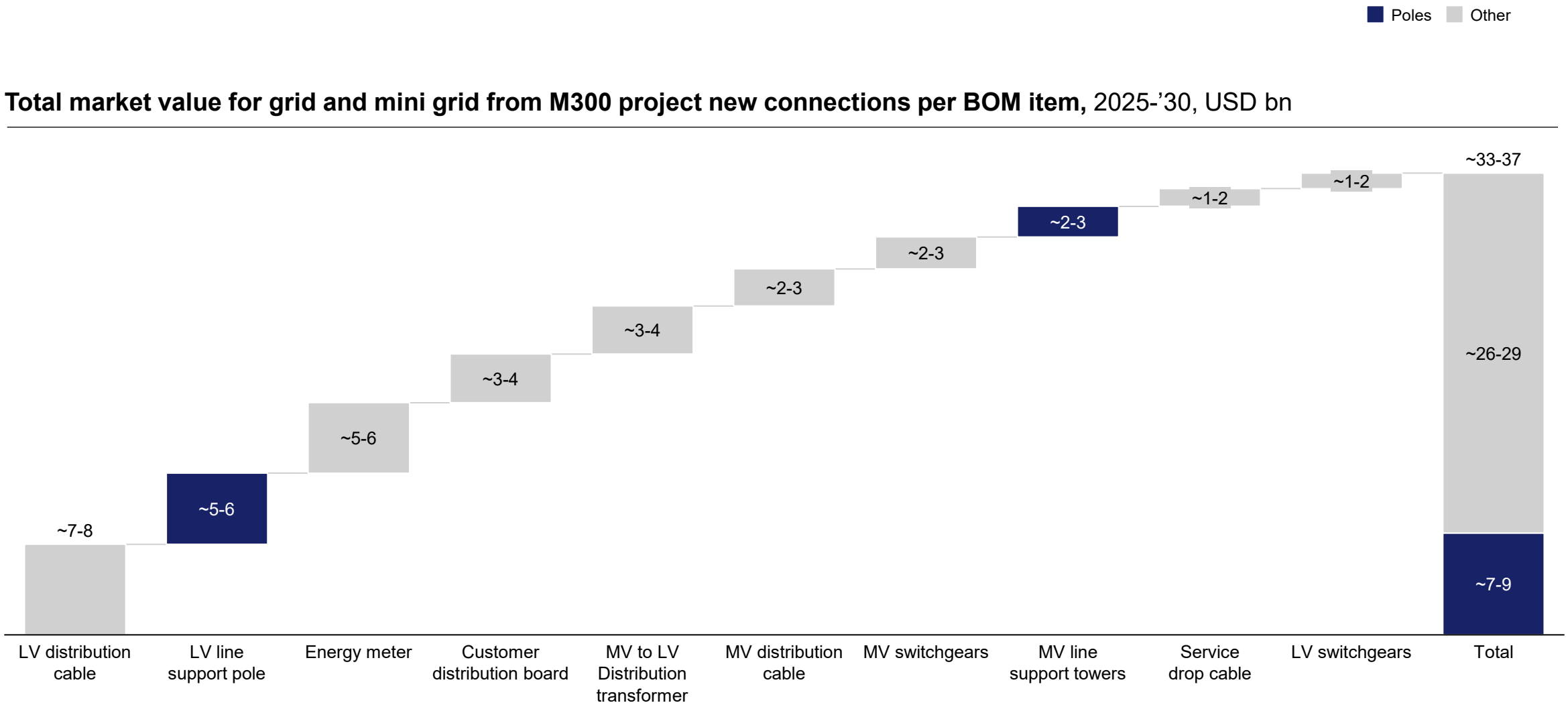
Mini-grid BOM items

Solar PV modules	Inverter / power conversion system	LV switchgear	LV distribution cable	Service drop cable	Customer distribution board
Battery storage system			LV line support pole	Energy meter	
Backup diesel generator					

Source: Market opportunity model, Expert interviews

Poles – M300 drives ~USD 7-9bn in poles demand in Africa

Total market value for grid and mini grid from M300 project new connections per BOM item, 2025-'30, USD bn



Source: Market opportunity model, Expert interviews

Pole supply is localized, concrete wins on lifecycle cost, while wood remains widely used despite import dependence

NOT EXHAUSTIVE

Deep-dive on next pages

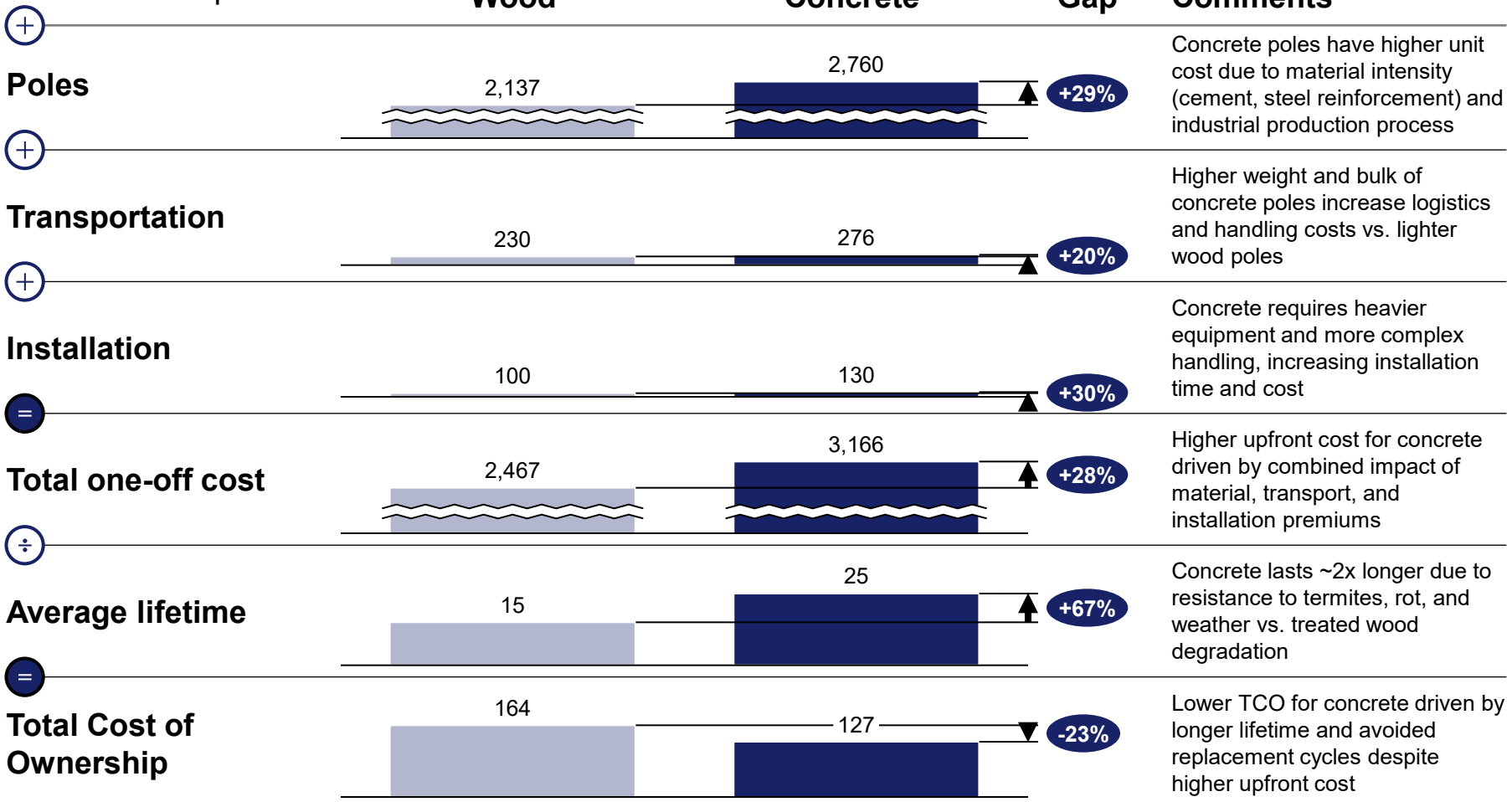
Pole type	Description	Production information	Share within LV poles, %	Share within MV poles, %	Est. TCO[1], in USD/km
A. Concrete poles	• Precast prestressed poles produced via spinning or vibration in industrial plants • Long lifetime (30–50 yrs) with high mechanical strength and resistance to weather, fire, and theft • Heavy and bulky (1–1.5t, 9–15m), requiring truck transport and lifting equipment, making local production more competitive	• Predominantly local manufacturers (e.g., Bett – Kenya, Beker – Ethiopia) • Fragmented market (5–15 players per country), utility-driven demand	~50%	~75%	164
B. Wood poles	• Timber poles (eucalyptus/pine) requiring industrial treatment to extend durability • Treatment process includes debarking, drying/seasoning, pressure impregnation (CCA or creosote), and curing • Lightweight and easy to transport and install, but shorter lifetime (10–20 yrs) and exposed to termites, rot, and weather degradation	• Mix of local treatment plants and imports (notably South Africa) • Supply constrained by forestry and treatment capacity	~50%	~20%	127
C. Steel towers	• Galvanized steel tubular or lattice structures, often modular • High strength-to-weight ratio enabling longer spans and easier transport than concrete • Higher cost structure, requires corrosion protection (galvanization), and exposed to theft due to metal value	• Regional / international suppliers (South Africa, China, India) • Some local assembly but often imported kits	~0%	<5%	*Out of scope*

Used for specific cases (urban, long span) and HV cables

1. Total costs of ownership, including pole for 1km of installation, transportation, installation divided by average pole lifetime

Source: Market opportunity model, Expert interviews

Poles – Overall TCO is in favor for concrete poles, which can be locally manufactured everywhere



Key takeaways

- **Concrete delivers ~20–25% lower TCO**, driven by ~2x longer lifetime and reduced replacement cycles
- **Wood lifetime (~15 yrs) structurally constrained** in markets like Nigeria due to termites, humidity, and decay risks
- **Transition to concrete remains uneven** (e.g., Nigeria, Ghana) as higher upfront capex slows adoption despite clear lifecycle advantage
- **Concrete can be locally manufactured across most African markets**, leveraging widely available inputs (cement, aggregates) and avoiding import dependence

Source: Market opportunity model, Expert interviews

A. Concrete pole manufacturing is highly standardized and localized, driven by transport constraints and industrial precast processes

NOT EXHAUSTIVE

Simplified value chain	Raw materials sourcing	Fabrication & casting	Curing, testing & finishing	Logistics & installation
Description	• Sourcing of cement, sand, aggregates, water and prestressing steel (rebar/strands) • Inputs largely locally available (especially cement and aggregates), with partial dependence on imported steel • Bulk, low value-density materials favor proximity to production sites	• Preparation of prestressing cages and placement in steel molds • Concrete casting using centrifugal spinning or vibration to ensure compaction and strength • Mechanized, repeatable process with high standardization across pole sizes (typically 9-15m)	• Steam or controlled curing to reach early strength, followed by continued curing • Demolding, surface finishing, and integration of inserts (earthing, fittings interfaces) • Systematic quality control including dimensional checks and mechanical load testing to meet utility standards	• • Transport typically within ~100-300 km radius from plant to project sites, rarely exceeding ~400-500 km due to cost • High weight (~1-1.5t) and length (up to 15m) require flatbed trucks and specialized handling • Installation using cranes and trained crews, often coordinated directly with utilities or EPCs
Output	• Bulk raw materials enabling continuous production • Prepared reinforcement and concrete mix for casting	• Freshly cast prestressed poles with defined geometry and structural performance • High-volume, standardized production output	• • Finished poles compliant with utility specifications (30-50 year lifetime) • Tested and certified products ready for deployment	• Delivered and installed poles forming the backbone of distribution networks • Long-life infrastructure with low maintenance requirements

Production is inherently local, with plants serving ~100-300 km catchment areas, as transport costs quickly outweigh manufacturing savings, leaving little to no role for imports

Source: Press search, company websites

B. Wood poles rely on constrained forestry supply and low-complexity downstream processes

NOT EXHAUSTIVE

Simplified value chain	Forestry & harvesting	Processing & treatment	Assembly & fittings	Logistics & installation
Description	• Sourcing of timber (eucalyptus, pine) from plantations or natural forests • Tree felling, debarking, and cutting to required pole lengths (typically 9-12m)	• Drying and seasoning to reduce moisture content and improve preservative absorption • Pressure impregnation (CCA, creosote) to protect against rot, insects, and fungi • Curing and fixation of chemicals, followed by grading and quality inspection	• Installation of metal fittings including cross-arms, bolts, brackets, and anchoring hardware • Drilling and preparation according to utility specifications • Basic integration of components before deployment	• Transport of poles to storage yards and project sites (lighter than concrete but still bulky) • On-site installation without heavy equipment, typically manual or light machinery
Output	• Raw timber logs suitable for pole production • Initial sizing and classification of poles	• Treated and standardized poles meeting durability requirements (10-20 year lifetime) • Poles compliant with utility standards	• Poles equipped with required fittings and ready for installation • Pre-configured structures for faster deployment	• Delivered and installed poles in distribution networks • Ready-to-use infrastructure for LV/MV lines

Supply is highly constrained by forestry availability, limiting scalability and consistency of supply in some countries (e.g., Nigeria with 1+ years of lead time)

Source: Press search, company websites

B. Wood pole manufacturing viability is constrained by misalignment between forestry, demand, and logistics across African markets

Manufacturing scaling attractiveness High → Low

Dimension	South Africa	EAC: Kenya	EAC: Tanzania	Ethiopia	ECOWAS: Nigeria	ECOWAS: Ghana	Zambia	DR Congo
Exploitable forests, in acres	High	Medium	High	Medium	High	Medium	Low	Very high
Access to preservatives (CCA, creosote)	High	Medium	Medium	Low	Medium	Medium	Medium	Low
Domestic M300 installation market (LV & MV), in USD mn	n.a.	Medium (~100–200)	Medium (~100–200)	Medium (~150–250)	Very high (~400–700)	Medium (~150–300)	Low (~50–100)	Medium (~150–300)
Share of wood poles in LV poles, %	n.a.	High (~40–60%)	Medium (~20–40%)	Medium (~20–30%)	Low (~10%)	Low (~10%)	High (~40–60%)	High (~40–60%)
Logistics Performance Index, from 1 to 5	3.2	3	2.5	2.3	2.5	2.8	2.7	2
Export potential within Africa	High	Medium	Medium	Low	Medium	High	Medium	Low
How appealing is the market	n.a.	Medium–High	High	Low–Medium	Medium	Medium	Low-Medium	Low
	Key exporter				*Wood poles are not used due to durability issues (e.g., termites, humidity) increasing replacement cycles*			

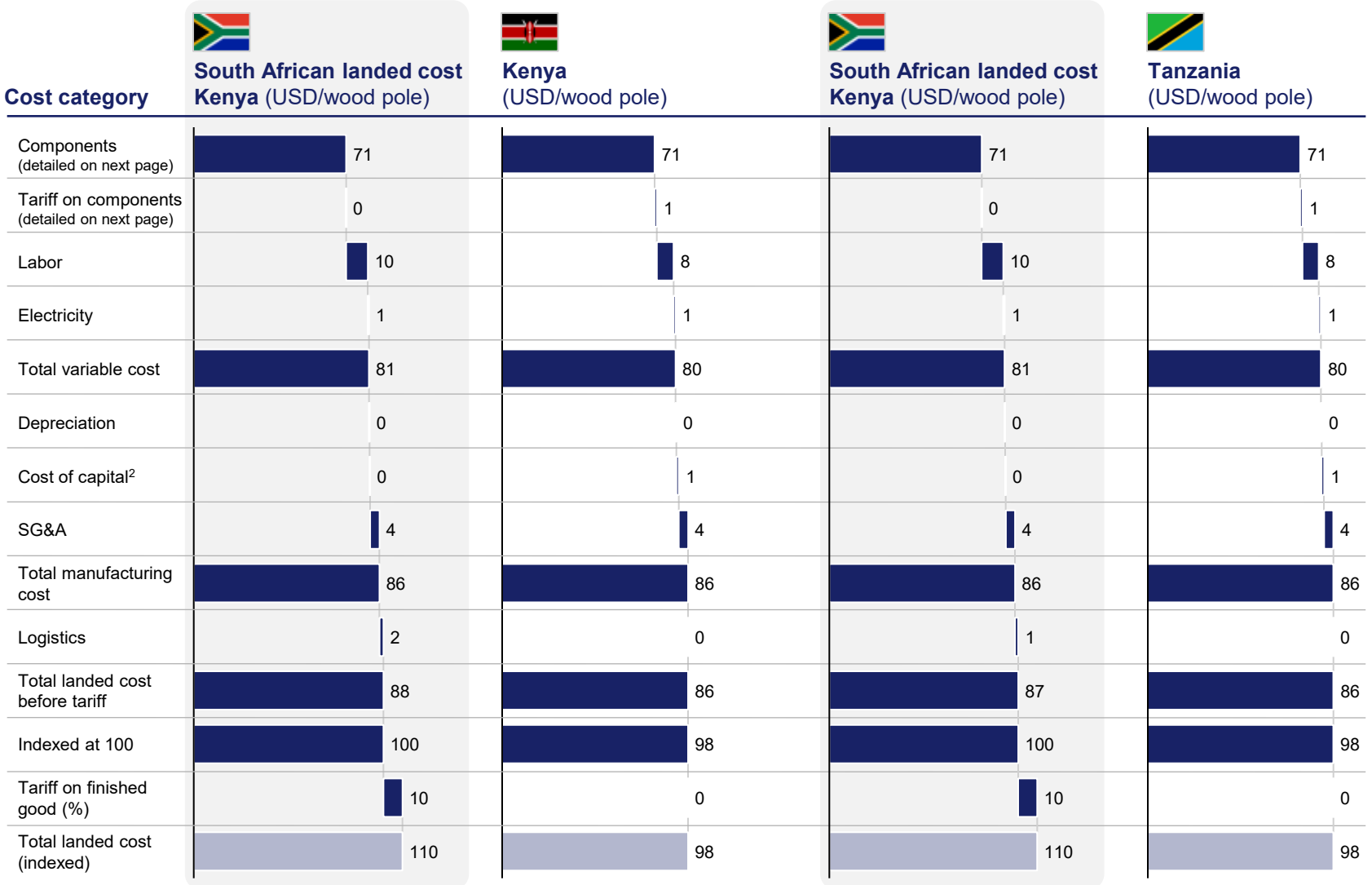
Key takeaways

- **Wood pole attractiveness is limited to a few balanced markets** (Tanzania, Ghana) where forestry, demand, and logistics align
- **Large markets (Nigeria) are structurally constrained** by limited forestry and high usage of concrete poles
- **High-forest countries** (DRC, Zambia) face weak demand density and poor logistics, limiting industrial scalability
- **Treatment inputs and industrial capabilities** remain bottlenecks, with dependence on imported preservatives across most markets
- **Export potential is constrained by low value density and logistics costs,** limiting regional hub economics
- **Kenya and Tanzania emerge as priority markets**, where forestry availability, sufficient demand scale (~$100-200m), and relatively strong logistics enable viable local treatment and supply

B. Wood poles – We used a set of assumptions to accurately assess cost competitiveness of wood poles manufacturing

Category	Assumption
Technical	Assumed production of treated wooden distribution poles (8–12m), including debarking, drying/seasoning, pressure treatment (CCA/creosote), and curing
Raw materials	Assumed wood logs sourced locally where forestry is available, with treatment chemicals (CCA/creosote) partly imported and priced at ~$10 per pole equivalent
Conversion costs	Assumed labor productivity based on local benchmarks, with ~800–1,500 poles per worker per year depending on country efficiency
Fixed costs	Assume treatment plant CAPEX of ~$500k with ~30-year asset life Assume cost of capital of ~3% in South Africa and ~10% in Kenya & Tanzania Assume SG&A and overhead represent ~5% of production costs
Production capacity	Assume plant capacity of ~50,000 poles per year with baseline utilization rate of ~60–90% depending on market maturity
Shipping costs	Assume limited long-distance transport due to low value density, with ~5% logistics cost premium for regional trade

B. Wood poles – Local manufacturing is competitive in East Africa, with limited cost gap vs imports and strong logistics advantage



Key insights

- **Local manufacturing is cost-competitive vs imports (~2–10% gap)**, as lower labor costs and absence of import tariffs offset slightly higher input costs
- **Logistics strongly favor local production**, given low value density of poles, making transport costs a key disadvantage for imports
- **Raw material structure supports localization**, with wood sourced locally, limiting exposure to FX and import dependency (except treatment chemicals)
- **Limited scale economies reduce import advantage**, unlike more complex components, keeping cost gaps relatively narrow
- **Local production enables faster delivery and supply reliability**, critical for utility roll-out timelines under M300

B. Wood poles manufacturing viability concentrated in a few balanced markets with aligned forestry, demand, and logistics

High Medium Low

Country	Demand[1]	Existing presence	Economic compete-tiveness vs SA[2]	Industrial readiness	Assessment
Kenya	High	High	Low	Strong	Strong local treatment base with available forestry and demand, enabling domestic supply and regional export potential
Tanzania	High	Medium	Low	Strong	Attractive hub with strong forestry resources and growing demand, supporting local production and regional trade
Ethiopia	High	Medium	High	Medium	Cost-competitive production but constrained by logistics and export barriers, limiting scalability
Nigeria	Low	Low	*Not applicable due to low local market demand*		
Ghana	Low	Low			
Zambia	Medium	Medium	Low	Limited	Strong forestry base but limited demand and weak logistics reduce industrial scalability
DR Congo	Medium	Medium	Low	Limited	Abundant forestry resources but very weak logistics and fragmented demand limit manufacturing viability

1. Market size under M300. High = USD, 300mn+ , Medium = USD, 300-100mn , Low = USD, 100-0mn
2. Local price index relative to South Africa landed price (including tariffs). High = 10+ points cheaper, Medium = 10-0 points cheaper, Low = more expensive

Key insights

- **Wood pole manufacturing is only viable in a few "balanced" markets**, where forestry availability, demand density, and logistics align (notably Kenya and Tanzania)
- **Most large markets (e.g., Nigeria, Ghana) structurally favor concrete**, due to durability issues (termites, humidity) and lifecycle cost considerations
- **High-forestry countries (e.g., DRC, Zambia) lack demand density and logistics**, limiting their ability to scale industrial production
- **Low value density limits regional trade**, making wood poles a largely local market with constrained export potential
- **Treatment inputs and industrial capabilities remain bottlenecks**, with reliance on imported chemicals across most markets

Agenda

Executive summary

Detailed report

Component deep dives

- Cables
- Transformers
- Switchgears
- Meters
- Poles

Detailed list of manufacturers

Identified manufacturers / assemblers of electrical components (1/11)[1]

ID	Supplier name	Produces cables?	Produces transformers?	Produces switchgears?	Produces distribution panels?	Produces meters?	Produces poles?	Manufacturing / assembly sites	Country HQ
1	ORION Transformers	✓	✓	✓	✓			Kampala , Uganda	Uganda
2	Ethioengineering Group PLC	✓	✓	✓				Mojo, Ethiopia; Adama, Ethiopia; Bishoftu, Ethiopia	Ethiopia
3	Kilimanjaro Cables (T) Limited	✓	✓	✓				Dar es Salaam , Tanzania	Tanzania
4	Elsewedy Electric East Africa Limited	✓	✓			✓		Dar es Salaam, Tanzania	Tanzania
5	Multi Cable Limited	✓	✓			✓		Dar es Salaam, Tanzania	Tanzania
6	African Diamond Cable	✓	✓					Tema, Ghana	Ghana
7	Cableries do Congo SPRL	✓	✓					Kinshasa, Republic of the Congo	Republic of the Congo
8	Congo Cables	✓	✓					Lubumbashi, Democratic Republic of Congo	Democratic Republic of the Congo
9	Nexans Cote d'Ivoire S.A.	✓	✓					Abidjan, Ivory Coast	Ivory Coast
10	Proton Alukivu SPRL	✓	✓					Kinshasa , Democratic Republic of Congo	Democratic Republic of the Congo
12	Synco Electrical	✓	✓					Lagos , Nigeria	Nigeria
11	CDIVINE ANSWER INT'L LTD.	✓		✓	✓			Lagos, Nigeria	Nigeria
13	Mojec Meter Company	✓			✓	✓		Apapa, Nigeria	Nigeria
14	A&bt global ventures	✓			✓			Agbara, Nigeria	Nigeria
15	Everwell Cable and Engineering Company	✓					✓	Mkuranga, Tanzania	Tanzania
16	ZamCables	✓					✓	Lusaka, Zambia	Zambia
17	Addis Cable Manufacturing PLC	✓						Sheger City , Ethiopia	Ethiopia
18	Alfa Cables	✓						Kigali , Rwanda	Rwanda
19	ASL Cables	✓						Nairobi, Kenya	Kenya
20	Belayab Cable	✓						Addis Ababa, Ethiopia	Ethiopia
21	Berliac Cables & Wires	✓						Lagos, Nigeria	Nigeria
22	BIKROBE BUSINESS GROUP PLC.	✓						n.a., Ethiopia	Ethiopia
23	BMET Energy Telecom Industry & Trade LLC	✓						Oromia, Ethiopia	Ethiopia
24	Cable Manufacturers	✓						Blantyre, Malawi	Malawi

1. Excludes Egypt and South Africa based manufacturers, second list explicitly for those 2 countries found below given number of identified companies

Source: S4G McKinsey

Identified manufacturers / assemblers of electrical components (2/11)

ID	Supplier name	Produces cables?	Produces transformers?	Produces switchgears?	Produces distribution panels?	Produces meters?	Produces poles?	Manufacturing / assembly sites	Country HQ
25	CABLE XPERTS	✓						Nairobi, Kenya	Kenya
26	Chakira Cable	✓						Tunis, Tunisia	Tunisia
27	Coast Cables	✓						Mombasa, Kenya	Kenya
28	Coleman Wires and Cables	✓						Arepo, Nigeria; Sagamu, Nigeria	Nigeria
29	Cometstar Group	✓						Agbara, Nigeria	Nigeria
30	Cutix Plc	✓						Otolo, Nigeria	Nigeria
31	Dante Wire	✓						Lagos, Nigeria	Nigeria
32	Denki Wire and Cable	✓						Akure, Nigeria	Nigeria
33	DEVISTAR	✓						Ikpoba-Okha, Nigeria	Nigeria
34	D-power Brand	✓						Lagos, Nigeria	Nigeria
35	East African Cables LTD	✓						Nairobi, Kenya; Nairobi, Kenya; Dar es Salaam, Tanzania	Kenya
36	Elsewedy Cables Ethiopia PLC	✓						Dukem, Ethiopia	Ethiopia
37	Enerywirecable	✓						Port Harcourt, Nigeria	Nigeria
38	ETHIOPIA PLASTIC S.C	✓						n.a., Ethiopia	Ethiopia
39	Euro Cable PLC	✓						Mkuranga, Tanzania	Ethiopia
40	EVERWELL CAMEROON CABLE ENGINEERING	✓						Douala, Cameroon	Cameroon
41	Finlay Brushware Ltd.	✓						Nairobi, Kenya	Kenya
42	Geoelis Cables Limited	✓						Onitsha , Nigeria	Nigeria
43	Imacab	✓						Casablanca, Morocco	Morocco
44	John Zobis Group	✓						Onitsha, Nigeria	Nigeria
45	Kabelmetal Nigeria Plc	✓						Ikeja, Nigeria	Nigeria
46	Kencables Limited	✓						Nairobi, Kenya	Kenya
47	Kenwestcables	✓						Nairobi, Kenya	Kenya
48	Kenya Fiber Optic Supplier	✓						Nairobi, Kenya	Kenya

Source: S4G McKinsey

Identified manufacturers / assemblers of electrical components (3/11)

ID	Supplier name	Produces cables?	Produces transformers?	Produces switchgears?	Produces distribution panels?	Produces meters?	Produces poles?	Manufacturing / assembly sites	Country HQ
49	Klysat Cables & Wires Ltd	✓						n.a., Nigeria	Nigeria
50	KOMBOLCHA STEEL PRODUCTS INDUSTRY PLC	✓						n.a., Ethiopia	Ethiopia
51	Lagostar Wire & Cable	✓						Agbara, Nigeria	Nigeria
52	Legend Cables	✓						Kigali , Rwanda	Rwanda
53	Les Cableries Du Senegal - S.A	✓						Dakar , Senegal	Senegal
54	MASAI CABLES	✓						Kitengela, Kenya	Kenya
55	Master Cable	✓						Dar es Salaam, Tanzania	Tanzania
56	Mdahan Gabioun Wire Factory	✓						n.a., Ethiopia	Ethiopia
57	Metal Fabricators of Zambia Plc	✓						Luanshya, Zambia	Zambia
58	Metsec Cables Limited	✓						Nairobi, Kenya	Kenya
59	MicCom Cables and Wires	✓						Lagos , Nigeria	Nigeria
60	Midal Cables International Limitada	✓						Matola, Mozambique	Mozambique
61	Neelkanth Cables Limited	✓						Ndola, Zambia	Zambia
62	Nexans Kabelmetal Ghana Ltd	✓						Tema, Ghana	Ghana
63	Nexans Maroc S.A.	✓						Casablanca, Morocco; Mohammedia, Morocco	Morocco
64	Nigerchin	✓						Lagos, Nigeria	Nigeria
65	Nigerian Wire and Cable	✓						Ibadan, Nigeria	Nigeria
66	Plasticable S.A.	✓						Abidjan , Ivory Coast	Ivory Coast
67	Power Blue Nile	✓						Mekelle, Ethiopia	Ethiopia
68	PREFOS	✓						Kumasi, Ghana	Ghana
69	Purechem Cable & Wires	✓						Sango Otta, Nigeria	Nigeria
70	Raddyfiber	✓						Mwanambaya , Tanzania	Tanzania
71	Reroy Cable	✓						Tema, Ghana	Ghana
72	Rhinocable Manufacturing	✓						Addis Ababa, Ethiopia	Ethiopia

Source: S4G McKinsey

Identified manufacturers / assemblers of electrical components (4/11)

ID	Supplier name	Produces cables?	Produces transformers?	Produces switchgears?	Produces distribution panels?	Produces meters?	Produces poles?	Manufacturing / assembly sites	Country HQ
73	SCC-Uganda	✓						Kampala, Uganda	Uganda
74	SHEBA CABLE & WIRE INDUSTRIES PLC.	✓						n.a., Ethiopia	Ethiopia
75	SICABLE - Société Ivoirienne De Cables S.A.	✓						Abidjan , Ivory Coast	Ivory Coast
76	Sierra Cables East Africa Limited (Kenya)	✓						Nairobi, Kenya	Kenya
77	Tanga cable industry	✓						Tanga, Tanzania	Tanzania
78	Cable Corporation Ltd	✓						Lugazi, Uganda	Uganda
79	Standard cable Corporation	✓						Luanda, Angola	Uganda
80	Total Cables (U) Limited	✓						Jinja, Uganda	Uganda
81	Hi-Tech Metals Limited	✓						tbc, Uganda	Uganda
82	Malicâble	✓						n.a., Mali	Mali
83	West Africa Cables	✓						Tsévié, Togo	Togo
84	ViViRa Câble	✓						n.a., Guinea	Guinea
85	JM Group	✓						Khartoum North, Sudan; Al Souk al Mahaly, Sudan	Sudan
86	Tropical Cable	✓						Tema, Ghana	Ghana
87	Tropical Int. Group Inc	✓						n.a., Tanzania	Tanzania
88	Tunisie Cables	✓						Tunis , Tunisia	Tunisia
89	UF CABLE	✓						Sheger City , Ethiopia	Ethiopia
90	Uniflex Wires and Cables Ltd	✓						Lusaka, Zambia	Zambia
91	Vecan Cable Limited	✓						n.a., Nigeria	Nigeria
92	Wesco cable	✓						Agbara, Nigeria	Nigeria
93	ZALCO	✓						Lusaka, Zambia	Zambia
94	General Cable Condel (Prysmian Group)	✓						Luanda, Angola	Angola
95	Prysmian Cables and Systems Tunisia	✓						Menzel Bouzelfa, Tunisia	Tunisia
96	ABCOS Industrial Ltd		✓	✓	✓			Nairobi, Kenya	Kenya

Source: S4G McKinsey

Identified manufacturers / assemblers of electrical components (5/11)

ID	Supplier name	Produces cables?	Produces transformers?	Produces switchgears?	Produces distribution panels?	Produces meters?	Produces poles?	Manufacturing / assembly sites	Country HQ
97	Afrizam Electrical Equipment Limited		✓	✓	✓			Lusaka, Zambia	Zambia
98	Aggreko Projects Limited		✓	✓	✓			Ikeja, Nigeria	Nigeria
99	Alphapower Electrical Technology		✓	✓	✓			Addis Ababa, Ethiopia	Ethiopia
100	Collective Power		✓	✓	✓			Port Harcourt, Nigeria	Nigeria
101	PCTL Automation		✓	✓	✓			Nairobi, Kenya	Kenya
102	Southern switchgear		✓	✓	✓			Lusaka, Zambia	Zambia
103	Specialised Power Systems Limited		✓	✓	✓			Nairobi, Kenya	Kenya
104	Steema Transformer & Electricals (U) Ltd		✓	✓	✓			Jinja, Uganda	Uganda
105	Transudan		✓	✓	✓			Khartoum, Sudan	Sudan
106	TANELEC LTD.		✓	✓		✓		Arusha, Tanzania	Tanzania
107	Bolamark Engineering Ltd.		✓	✓				Amuwo-Odofin, Nigeria	Nigeria
108	Global Energy E&F Sarl		✓	✓				Abidjan, Ivory Coast	Ivory Coast
109	LTL Transformers Tanzania (Pvt) Ltd (LTLT Tanzania)		✓	✓				Dar es Salaam, Tanzania	Tanzania
110	Pan Africa Transformers & Switchgears Ltd (Kenya)		✓	✓				Nairobi, Kenya	Kenya
111	HAWKER SIDDELEY		✓	✓				Matola, Mozambique	Mozambique
112	Electrin Nigeria Limited		✓		✓			Isheri, Nigeria	Nigeria
113	Prime Power Generators Kenya		✓		✓			Nairobi, Kenya	Kenya
114	Purcee Industrial		✓		✓			Kolwezi, Democratic Republic of Congo	Democratic Republic of the Congo
115	Unitech Transformers Africa Ltd		✓		✓			Nairobi, Kenya	Kenya
116	MAHASHAKTI KENYA LTD		✓			✓		Nairobi, Kenya	Kenya
117	Yocean (Group) Ltd		✓			✓		Nairobi, Kenya	Kenya
118	Elsewedy Electric Nigeria Limited		✓			✓		Lagos, Nigeria	Nigeria
119	Abay Transformers PLC		✓					Addis Ababa, Ethiopia	Ethiopia
120	ADDIS TRANSFORMER & SWITCHGEARS PLC		✓					Burayu, Ethiopia	Ethiopia

Source: S4G McKinsey

Identified manufacturers / assemblers of electrical components (6/11)

ID	Supplier name	Produces cables?	Produces transformers?	Produces switchgears?	Produces distribution panels?	Produces meters?	Produces poles?	Manufacturing / assembly sites	Country HQ
121	ADVANTAGE INDUSTRIAL PLC		✓					Sheger, Ethiopia	Ethiopia
122	Empower Transformers Limited (Kenya)		✓					Karai , Kenya	Kenya
123	Gozik Electrical		✓					Zaria, Nigeria	Nigeria
124	I-Cons Sa		✓					Dakar, Senegal	Senegal
125	Macroplast Transformers		✓					Dar es Salaam, Tanzania	Tanzania
126	MAX transformer		✓					Adama, Ethiopia	Ethiopia
127	Melazal Manufacturing Industry PLC (Tora Holding Company)		✓					Tigray, Ethiopia	Ethiopia
128	N Joule		✓					Addis Ababa, Ethiopia	Ethiopia
129	Nile Transformers		✓					Jinja, Uganda	Uganda
130	Nova Transformer		✓					Abuja, Nigeria	Nigeria
131	NUR INVESMENT GROUP		✓					Gelan, Ethiopia	Ethiopia
132	Skipper Nigeria Limited		✓					Lagos, Nigeria	Nigeria
133	Affluence electric appliances manufacturing plc		✓					n.a., Ethiopia	Ethiopia
134	El-Sewedy Electric Zambia Limited		✓					Ndola, Zambia	Zambia
135	TopClass Power		✓					Abuja, Nigeria	Nigeria
136	Transfo Energy		✓					Akaki Kaliti, Ethiopia	Ethiopia
137	Soguitrel Transformers		✓					Conakry, Guinea	Guinea
138	Wagwago Electric		✓					Addis Ababa, Ethiopia	Ethiopia
139	Westrafo Ghana Ltd		✓					Prampram, Ghana	Ghana
140	Duff engineering			✓	✓	✓		Nairobi, Kenya	Kenya
141	Kenmet			✓	✓	✓		Nairobi, Kenya	Kenya
142	Nationwide Electrical Industries			✓	✓	✓		Nairobi, Kenya	Kenya
143	Switchgear			✓	✓	✓		Nairobi, Kenya	Kenya
144	ADEOS International			✓	✓			Algiers, Algeria; Dakar, Senegal; Kinshasa, Democratic Republic of Congo	Senegal

Source: S4G McKinsey

Identified manufacturers / assemblers of electrical components (7/11)

ID	Supplier name	Produces cables?	Produces transformers?	Produces switchgears?	Produces distribution panels?	Produces meters?	Produces poles?	Manufacturing / assembly sites	Country HQ
145	Africano Electro			✓	✓			Accra, Ghana	Ghana
146	Baseline Fabrication Company			✓	✓			Ilupeju, Nigeria	Nigeria
147	EES SERVICES			✓	✓			Port Harcourt, Nigeria	Nigeria
148	Electrical Switchgear Ltd (ESL) – Automation Ghana Group			✓	✓			Accra, Ghana	Ghana
149	GIL Automation			✓	✓			Lagos, Nigeria	Nigeria
150	Imexolutions (IMEX Engineering LV Systems & Solutions)			✓	✓			Nairobi, Kenya	Kenya
151	JS Electromec Limited			✓	✓			Dar es Salaam, Tanzania	Tanzania
152	Lucy Switchgear FZE			✓	✓			Honeydew , South Africa	United Arab Emirates
153	Majitec			✓	✓			Nairobi, Kenya	Kenya
154	Panel Tech Systems			✓	✓			Nairobi, Kenya	Kenya
155	SAN Motors			✓	✓			Addis Ababa, Ethiopia	Ethiopia
156	SIREL			✓	✓			Dakar, Senegal	Senegal
157	SMART ENERGIES			✓	✓			Dakar, Senegal	Senegal
158	SwitchGreen Energy Ltd			✓	✓			Enugu, Nigeria	Nigeria
159	Todays Technology			✓	✓			Lagos, Nigeria	Nigeria
160	Tranos			✓	✓			Lagos, Nigeria	Nigeria
161	Omega General Electricals			✓	✓			Kampala, Uganda	Uganda
162	Global Engineering Pls			✓				Lagos, Nigeria	Nigeria
163	Shoreline Power Company Limited			✓				Ilupeju , Nigeria	Nigeria
164	Power Controls				✓	✓		Nairobi, Kenya	Kenya
165	Reliable Fabricators Ltd Kenya				✓	✓		Nairobi, Kenya	Kenya
166	MEMMCOL				✓	✓		Mowe, Nigeria	Nigeria
167	FEMADEC TRADING LIMITED				✓	✓		Lagos State, Nigeria	Nigeria
168	Protogy				✓	✓		Oyo State, Nigeria	Nigeria

Source: S4G McKinsey

Identified manufacturers / assemblers of electrical components (8/11)

ID	Supplier name	Produces cables?	Produces transformers?	Produces switchgears?	Produces distribution panels?	Produces meters?	Produces poles?	Manufacturing / assembly sites	Country HQ
169	Craftsman_KE				✓		✓	Nairobi, Kenya	Kenya
170	Alpha Mechatronics				✓			Accra, Ghana	Ghana
171	Arc Control Limited				✓			Kampala, Uganda	Uganda
172	Bati Services Ltd				✓			Dar es Salaam, Tanzania	Tanzania
173	Discrete Technology				✓			Lagos, Nigeria	Nigeria
174	ELECTRICAL PANEL				✓			Lagos, Nigeria	Nigeria
175	Master Panels Ltd				✓			Dar es Salaam, Tanzania	Tanzania
176	Multipower Engineering Limited				✓			Lagos, Nigeria	Nigeria
177	Rowtina Switchgears				✓			Nnewi, Nigeria	Nigeria
178	Sharps Electrical (PTY) LTD				✓			Gaborone, Botswana	Botswana
179	Sigma Engineering				✓			Addis Ababa, Ethiopia	Ethiopia
180	Société d'Ingénierie et de Maintenance Électrique, SIMELEC				✓			Marcory, Ivory Coast	Ivory Coast
181	Luso Brás Moçambique, Lda				✓			Matola, Mozambique	Mozambique
182	ENCEL (Empresa Nacional de Construções Eléctricas)				✓			Luanda, Angola	Angola
183	CHINT Kenya meter factory					✓		Athi River, Kenya	Kenya
184	CHINT Meters Uganda Factory					✓		Mbale, Uganda	Uganda
185	MBH Power Limited					✓		Tema, Ghana	Nigeria
186	Long March PLC					✓		Adama, Ethiopia	Ethiopia
187	Baobab Energy Systems Tanzania					✓		Kinondoni, Tanzania	Tanzania
188	Inreli Energy					✓		Lagos, Nigeria	Nigeria
189	Unistar Hi-Tech Systems Limited					✓		Lagos, Nigeria	Nigeria
190	Wasion Group (Tanzania) Limited					✓		Mkuranga District, Tanzania	Tanzania
191	SF Smart Energy Limited					✓		Ubungo, Tanzania	Tanzania
192	SMART METER TECHNOLOGY LIMITED					✓		Nairobi, Kenya	Kenya

Source: S4G McKinsey

Identified manufacturers / assemblers of electrical components (9/11)

ID	Supplier name	Produces cables?	Produces transformers?	Produces switchgears?	Produces distribution panels?	Produces meters?	Produces poles?	Manufacturing / assembly sites	Country HQ
193	Shenzhen Star Instrument Co., Ltd.					✓		Tatu Industrial Park, Kenya	China
194	Chris-Ejik Engineering Limited					✓		Lagos, Nigeria	Nigeria
195	Emerald Renewables Business					✓		Calabar, Nigeria	Nigeria
196	M E Metering Company Ltd					✓		Uturu, Nigeria	Nigeria
197	Morgan Energy Limited					✓		Abuja, Nigeria	Nigeria
198	Sabrud Consortiums Ltd.					✓		Awka, Nigeria	Nigeria
199	Smart Meters Company Limited					✓		Kaduna, Nigeria	Nigeria
200	Technovati Limited					✓		Kaduna, Nigeria	Nigeria
201	Anietronic Limited					✓		Abuja, Nigeria	Nigeria
202	Exon Transnational					✓		Abuja, Nigeria	Nigeria
203	dVentus Technologies PLC					✓		n.a., Nigeria	Nigeria
204	Ghana Electrometer Ltd (GEM)					✓		Accra, Ghana	Ghana
205	Intelligent Metering Solutions (IMES)					✓		Accra, Ghana	Ghana
206	ALPHA TND Ltd					✓		Accra, Ghana	Ghana
207	Zambia Electrometer Limited					✓		Ndola, Zambia	Zambia
208	Savenda Electronics					✓		Lusaka, Zambia	Zambia
209	Positivo BGH					✓		n.a., Rwanda	Rwanda
210	Zhejiang Hengye Electronics Co., Ltd.					✓		Luanda , Angola	China
211	MYBAB Electronics Manufacturing PLC					✓		n.a., Ethiopia	Ethiopia
212	PAKTIM METERING NIG LTD					✓		Lekki, Nigeria	Nigeria
213	AMAL TECHNOLOGIES LTD					✓		Lagos, Nigeria	Nigeria
214	Alliance Energy Benin (AEB						✓	Abomey-Calavi, Benin	Benin
215	Ambiance Tree Farm						✓	Kamutuuza, Uganda	Uganda
216	Coast Concrete Poles Ltd (CCPL)						✓	Bagamoyo, Tanzania; Mwanza, Tanzania	Tanzania

Source: S4G McKinsey

Identified manufacturers / assemblers of electrical components (10/11)

ID	Supplier name	Produces cables?	Produces transformers?	Produces switchgears?	Produces distribution panels?	Produces meters?	Produces poles?	Manufacturing / assembly sites	Country HQ
217	Asuboa Wood Treatment Ltd						✓	Juaso, Ghana	Ghana
218	Beker PLC						✓	Dire Dawa, Ethiopia	Ethiopia
219	DN Products						✓	Mtili, Tanzania	Tanzania
220	ELBM (Electricité Béton & Métal)						✓	Abidjan, Ivory Coast	Ivory Coast
221	Groupe Guiriba International (GGI)						✓	Bobo-Dioulasso, Burkina Faso	Burkina Faso
222	Gilgil Treatment Industries (GTI)						✓	Gilgil, Kenya	Kenya
223	Intrepids Treated Poles Ltd						✓	Lamu, Kenya	Kenya
224	IZUNGO CONCRETE POLES						✓	Dar Es Salaam, Tanzania	Tanzania
225	Kampala Poles Treatment Plant Ltd (KPTP)						✓	Kampala, Uganda	Uganda
226	Kreative Concrete Products Ltd						✓	Kisaju, Kenya	Kenya
227	Lomagundi Poles						✓	Mt Hampden, Zimbabwe	Zimbabwe
228	MUFINDI WOODPOLES PLANT & TIMBER LIMITED						✓	Dar es Salaam, Tanzania	Tanzania
229	Nile Fibreboard Uganda						✓	Kampala, Uganda	Uganda
230	NPD Ltd						✓	Jabana, Rwanda	Rwanda
231	Prebat						✓	Dakar, Senegal	Senegal
232	SABA Engineering						✓	Debre Tabor, Ethiopia	Ethiopia
233	SBR Investments Ltd						✓	Eldoret, Kenya	Kenya
234	SCCP (Société Camerounaise de Construction et de Prestations)						✓	Souza, Cameroon	Cameroon
235	Société Ferroviaire Congo (SFC)						✓	Likasi, Democratic Republic of Congo	Democratic Republic of the Congo
236	SOCORITRA (Burkina)						✓	Ouagadougou, Burkina Faso	Burkina Faso
237	Trucks City Limited						✓	Nairobi, Kenya	Kenya
238	VisionPro Ltd						✓	Ogijo, Nigeria	Nigeria
239	Vitek Engineering Company Ltd						✓	Abuja, Nigeria	Nigeria
240	Wood Handlers						✓	Nyeri, Kenya	Kenya

Source: S4G McKinsey

Identified manufacturers / assemblers of electrical components (11/11)

ID	Supplier name	Produces cables?	Produces transformers?	Produces switchgears?	Produces distribution panels?	Produces meters?	Produces poles?	Manufacturing / assembly sites	Country HQ
241	World Poles Limited						✓	Eldoret, Kenya	Kenya
242	Eastern Forest (Pvt) Ltd						✓	Mt. Hampden, Zimbabwe	Zimbabwe
243	Green Resources						✓	Dar Es Salaam, Tanzania	Tanzania
244	Greystone Industries Ltd						✓	Mitubiri, Kenya	Kenya
245	GTMH Mali						✓	Bamako, Mali	Mali
246	Honorific Ventures International Limited						✓	Simawa , Nigeria	Nigeria
247	Mekloy Integrated Services Company Ltd						✓	Bayelsa State, Nigeria	Nigeria
248	Meru Wood Industries						✓	Meru, Kenya	Kenya
249	Miro Forestry & Timber Products						✓	Drobonso, Ghana	Ghana
250	MTSL Energies						✓	Buyala, Uganda	Uganda
251	Rokewood (ROKE Investment International Ltd)						✓	Namanve, Uganda	Uganda
252	Rosoga Investments Limited						✓	Nakuru Industrial Area, Kenya	Kenya
253	SAI – Société Africaine d'Investissement						✓	Birni, Benin	Benin
254	SEGC Électrique						✓	Dougar, Senegal	Senegal
255	Société Ivoirienne de Préfabrication (SIP)						✓	Abidjan, Ivory Coast	Ivory Coast
256	Skylark Construction Ltd (precast manufacturing)						✓	Kisumu, Kenya	Kenya
257	SSK INTERGRATED SERVICES LIMITED						✓	Port Harcourt, Nigeria	Nigeria
258	Timber Treatment International Ltd						✓	Londiani, Kenya	Kenya
259	Ultimate Forests Company Limited (UFCL)						✓	Kigali, Rwanda	Rwanda
260	Yash Poles Limited						✓	Kisaju, Kenya	Kenya
261	Zamcrete Industries Limited						✓	Lusaka, Zambia	Zambia
262	BETT Company (K) Ltd (BETT Kenya)						✓	n.a., Kenya	Kenya
263	East Africa Concrete Products Ltd (EACPL)						✓	n.a., Uganda	Uganda
264	Tanzania Concrete Pole Manufacturing Co. Ltd (TCPM)						✓	n.a., Tanzania	Tanzania

Source: S4G McKinsey

Identified manufacturers / assemblers of electrical components – South Africa & Egypt specific (1/5)

ID	Supplier name	Produces cables?	Produces transformers?	Produces switchgears?	Produces distribution panels?	Produces meters?	Produces poles?	Manufacturing / assembly sites	Country HQ
265	GE Vernova South Africa (PTY) LTD	✓	✓	✓	✓	✓		Bryanston, South Africa	South Africa
266	Siemens Proprietary Limited	✓	✓	✓	✓	✓		Midrand, South Africa	South Africa
267	Legrand	✓	✓			✓		Cairo, Egypt	Egypt
268	Elsewedy Electric	✓	✓					10th of Ramadan City, Egypt	Egypt
269	Aberdare Cables (Pty) Limited	✓						Pietermaritzburg, South Africa; Gqeberha, South Africa; Gauteng, South Africa	South Africa
270	Alvern Cables	✓						Witfield, South Africa	South Africa
271	AM Hengtong Africa Telecoms	✓						Kempton Park , South Africa	South Africa
272	Bidvest Commercial Products (Pty) Ltd	✓						Johannesburg, South Africa	South Africa
273	Cable Max Cables	✓						Cape Town, South Africa	South Africa
274	Cabletronics	✓						Germiston, South Africa	South Africa
275	CBI - electric: African Cables (Pty) Ltd.	✓						Vereeniging, South Africa	South Africa
276	CCG Cable Terminations (PTY) LTD	✓						Kempton Park, South Africa	South Africa
277	Continental Compounders (Pty) Ltd.	✓						Durban, South Africa	South Africa
278	Copper Cables & Connectors (Pty) Ltd	✓						Boksburg, South Africa	South Africa
279	Cullin Africa CC	✓						Olifantsfontein, South Africa; Brackenfell, South Africa	South Africa
280	Designer Cables (Pty) Ltd	✓						Midrand, South Africa	South Africa
281	Electro Cable Egypt	✓						Mostorod , Egypt	Egypt
282	Empire Cables	✓						Shaggar City, Ethiopia	South Africa
283	Flexicor Cables (Pty) Ltd	✓						Germiston, South Africa	South Africa
284	General Cable Egypt	✓						6th of October City, Egypt	Egypt
285	HELU KABEL	✓						Roodepoort, South Africa	South Africa
286	Intercable (Pty) Ltd	✓						Edenvale, South Africa	South Africa
287	Malesela Taihan Electric Cable	✓						Vereeniging, South Africa	South Africa
288	Metaplast Chemicals (PTY) LTD	✓						Germiston , South Africa	South Africa

Source: S4G McKinsey

Identified manufacturers / assemblers of electrical components – South Africa & Egypt specific (2/5)

ID	Supplier name	Produces cables?	Produces transformers?	Produces switchgears?	Produces distribution panels?	Produces meters?	Produces poles?	Manufacturing / assembly sites	Country HQ
289	Mwanga Afrika Cables (Pty) Ltd	✓						Germiston, South Africa	South Africa
290	Powermite Africa (Pty) Limited	✓						Johannesburg, South Africa	South Africa
291	Proof Engineering SA Pty Ltd.	✓						Johannesburg , South Africa	South Africa
292	SealTron SA	✓						La Mercy, South Africa	South Africa
293	SILCOM (Pty) Ltd	✓						Centurion, South Africa	South Africa
294	South Ocean Electric Wire Company (Proprietary) Limited	✓						Alberton , South Africa	South Africa
295	TULISA CABLES	✓						Johannesburg , South Africa	South Africa
296	uBumbano Operating Company	✓						Johannesburg , South Africa	South Africa
297	Wilec	✓						Olifantsfontein, South Africa; Johannesburg , South Africa	South Africa
298	YOA Cable (Yangtze Optics Africa Cable)	✓						La Mercy, South Africa	South Africa
299	AFRICA SWITCHGEAR (PTY) LTD		✓	✓	✓	✓		Germiston, South Africa	South Africa
300	Edge Line Engineering		✓	✓	✓			Johannesburg, South Africa	South Africa
301	Elio Electro Tech CC		✓	✓	✓			Benoni, South Africa	South Africa
302	PCB Power Transformers		✓	✓	✓			Industria, South Africa	South Africa
303	POWER TRANSFORMERS		✓	✓	✓			Cape Town , South Africa	South Africa
304	Schneider Electric Egypt SAE		✓	✓	✓			Badr City, Egypt	Egypt
305	WEG South Africa (PTY) LTD		✓	✓	✓			Johannesburg , South Africa; Wadeville , South Africa; Heidelberg, South Africa	South Africa
306	Jocastro		✓	✓		✓		Atlantis Industrial, South Africa	South Africa
307	ABB South Africa (Pty) Ltd.		✓	✓				Johannesburg, South Africa	South Africa
308	ACTOM (Pty) Ltd.		✓	✓				Knights, South Africa; Germiston, South Africa	South Africa
309	Jasco Electronics Holdings Limited		✓	✓				Halfway House, South Africa	South Africa
310	Mitsubishi Corporation		✓	✓				Sandton, South Africa	South Africa
311	Semeg		✓	✓				Germiston, South Africa	South Africa
312	Tristar Electrical		✓	✓				Boksburg, South Africa	South Africa

Source: S4G McKinsey

Identified manufacturers / assemblers of electrical components – South Africa & Egypt specific (3/5)

ID	Supplier name	Produces cables?	Produces transformers?	Produces switchgears?	Produces distribution panels?	Produces meters?	Produces poles?	Manufacturing / assembly sites	Country HQ
313	Volt Ampere Electrical And Mechanical Engineering (Pty) Ltd		✓	✓				Pretoria, South Africa	South Africa
314	Winder Controls		✓	✓				Johannesburg, South Africa	South Africa
315	Penbro Kelnick (PTY) LTD		✓		✓			Pretoria, South Africa	South Africa
316	AM2PM Electrical Services		✓					Boksburg, South Africa	South Africa
317	Armcoil Afrika (pty) Ltd		✓					Roodepoort, South Africa	South Africa
318	BAYNES TRANSFORMERS TECHNOLOGY (PTY) LTD		✓					Meyerton, South Africa	South Africa
319	El Nasr Transformers & Electrical Products Co.		✓					Badr City, Egypt	Egypt
320	Elektra Transformers		✓					Krugersdorp, South Africa	South Africa
321	Eloff Transformers		✓					Cape Town, South Africa	South Africa
322	Elolam Transformers		✓					Kampala, Uganda; Johannesburg, South Africa	South Africa
323	Free State Transformers		✓					Bloemfontein, South Africa	South Africa
324	Instryment Transformer Technologies (Pty) Ltd		✓					Johannesburg, South Africa	South Africa
325	Lehman Transformers		✓					Durban, South Africa	South Africa
326	Matlakse		✓					Bloemfontein, South Africa	South Africa
327	Maverick Generators		✓					Pretoria, South Africa	South Africa
328	PHD Powerhouse		✓					Johannesburg, South Africa	South Africa
329	Radian TRC		✓					Heidelberg, South Africa	South Africa
330	Red Metal Mining		✓					Edenvale, South Africa	South Africa
331	Reliable Transformers		✓					Benoni, South Africa	South Africa
332	Revive Electrical Transformers		✓					Meyerton, South Africa	South Africa
333	Scarlitron Pty Ltd		✓					Benoni, South Africa	South Africa
334	SGB-SMIT POWER MATLA		✓					Cape Town, South Africa; Pretoria, South Africa	South Africa
335	Trans Electron		✓					Driehoek , South Africa	South Africa
336	Transfix Transformers SA Pty Ltd.		✓					Botshabelo, South Africa	South Africa

Source: S4G McKinsey

Identified manufacturers / assemblers of electrical components – South Africa & Egypt specific (4/5)

ID	Supplier name	Produces cables?	Produces transformers?	Produces switchgears?	Produces distribution panels?	Produces meters?	Produces poles?	Manufacturing / assembly sites	Country HQ
337	Transformco Electric		✓					Rosslyn, South Africa	South Africa
338	Transformer Manufacturers		✓					Germiston, South Africa	South Africa
339	Circuit Breaker Industries (pty) Ltd			✓	✓	✓		Elandsfontein, South Africa	South Africa
340	CHINT EMEGAC Factory			✓	✓			Cairo, Egypt	Egypt
341	Denwa Engineering (PTY) LTD			✓	✓			Boksburg , South Africa	South Africa
342	E D S Switch Boards (Pty) Ltd			✓	✓			Cape Town , South Africa	South Africa
343	Eaton Electric (South Africa) Pty Ltd			✓	✓			Wadeville, South Africa	South Africa
344	Low Voltage Switchboards (pty) Ltd			✓	✓			Kempton Park , South Africa	South Africa
345	Malaysian Switchgear Distributors			✓	✓			Johannesburg, South Africa	South Africa
346	MISR ELECTRICAL AND MECHANICAL INDUSTRIES COMPANY (MEMICO) S.A.E			✓	✓			10th of Ramadan City , Egypt	Egypt
347	Outec			✓	✓			Ekurhuleni, South Africa	South Africa
348	REEF SWITCHBOARD MANUFACTURERS (PTY) LTD.			✓	✓			Boksburg , South Africa	South Africa
349	Schneider Electrical SA (Proprietary) Limited			✓	✓			Boksburg , South Africa	South Africa
350	Switchgear Unlimited			✓	✓			Boksburg, South Africa	South Africa
351	Adamas Construction			✓				Akasia , South Africa	South Africa
352	Dimako Transformers			✓				Booysens, South Africa	South Africa
353	GEM Switchgear			✓				Boksburg, South Africa	South Africa
354	New Way Power Proprietary Limited			✓				Alberton , South Africa	South Africa
355	RWW Engineering			✓				Johannesburg, South Africa	South Africa
356	Distribution Boards SA				✓			Johannesburg, South Africa	South Africa
357	Electrahertz				✓			Pretoria, South Africa	South Africa
358	Iritron				✓			Pretoria, South Africa	South Africa
359	JB Switchgear Solutions				✓			Brakpan, South Africa	South Africa
360	Romor Electrical Group				✓			Johannesburg, South Africa	South Africa

Source: S4G McKinsey

Identified manufacturers / assemblers of electrical components – South Africa & Egypt specific (5/5)

ID	Supplier name	Produces cables?	Produces transformers?	Produces switchgears?	Produces distribution panels?	Produces meters?	Produces poles?	Manufacturing / assembly sites	Country HQ
361	Solve Engineering Solutions				✓			Germiston , South Africa	South Africa
362	Staro Electrical Systems				✓			Sasolburg, South Africa	South Africa
363	Wenko Electrical cc				✓			Vanderbijlpark, South Africa	South Africa
364	African Metering Solutions					✓		Johannesburg, South Africa	South Africa
365	Conlog					✓		Durban, South Africa	South Africa
366	Hexing Electrical SA					✓		Midrand, South Africa	South Africa
367	Prei Instrumentation (PTY) LTD					✓		Johannesburg, South Africa	South Africa
368	Aveng Manufacturing Infraset (Poles & Masts division)						✓	n.a., South Africa	South Africa
369	Brits Poles						✓	Hartbeespoort, South Africa	South Africa
370	Brondal Treated Timbers						✓	Nelspruit, South Africa	South Africa
371	C.I.S MASTS AND TOWERS						✓	Vanderbijlpark, South Africa	South Africa
372	ENDD Lighting & Structural						✓	Benoni, South Africa	South Africa
373	Falcus Manufacturing						✓	Boksburg, South Africa	South Africa
374	George Stott and Company						✓	Johannesburg, South Africa	South Africa
375	Global High Mast						✓	Germiston, South Africa	South Africa
376	Infrapower Steelworks						✓	Alberton, South Africa	South Africa
377	Lighting Structures						✓	Nigel, South Africa	South Africa
378	MTO Group						✓	George, South Africa;	South Africa
379	New Forests Company (NFC)						✓	Namwasa, Uganda; Kilolo, Tanzania; Nyungwe, Rwanda	South Africa
380	Pole Africa						✓	Estcourt, South Africa	South Africa
381	R&B Timber Group						✓	Harding, South Africa; Richmond, South Africa	South Africa
382	Rocla (Pty) Ltd						✓	De Aar, South Africa	South Africa
383	Saltus Holdings Africa Pty Ltd						✓	Pretoria, South Africa	South Africa
384	Sectional Poles						✓	Babelegi, South Africa	South Africa
385	Vuka Timbers						✓	Commondale, South Africa	South Africa

Source: S4G McKinsey