Session 5: Utility landscape in Sub-Saharan Africa

Session Content

- Pillars for sustainable development of power sector in an emerging country
- Core mandate of an electric utility
- Key business areas
- Conclusion

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Pillars for sustainable development of power sector in an emerging country

- Systematic optimized (least-cost) planning and implementation of investments in all segments of the supply chain
  - Government's responsibility
  - Needed to address security of supply in a context of growing demand
  - A specific approach is needed for electrification to move towards universal access: National Electrification Strategy (NES)

- Efficient operational performance of service providers (utilities) in all business areas

- Financial sustainability: revenues (tariff + subsidies) allowing recovery of costs of efficient service delivery
  - Tariff revenues allocated among categories of consumers (tariff charges) to recover costs incurred for efficient service delivery.
  - "Social safety net" to protect low-income users unable to pay cost-reflective charges

Core mandate of an electric utility

- Provide electricity service to **all** its customers in compliance of applicable regulations and standards:
  - Electricity supply (frequency and duration of interruptions, voltage variations, etc.)
  - Customer service.

- **Permanently** meter, bill and collect all amounts of energy being consumed by users connected to its networks.

- Carry out operations in all business areas with efficiency, transparency and accountability.
  - Optimized processes and activities (P&A) in each business area supported by functionalities of state-of-art management information systems (MIS)

Key business areas

- **Electricity service to customers**
  - Networks operation and maintenance (O&M)
  - Attending and diligently solving customers' complaints on quality of electricity service (outages and others).
  - Networks rehabilitation, reinforcement and upgrade.
  - Energy and transmission services purchases
- **Commercial operations**
  - Revenue cycle of postpaid customers: meter reading, billing, collection, service disconnection/reconnection
  - Management of prepayment customers
  - Management of commercial losses
  - Attending customers in agencies, via Contact Center (calls, social media).
- **Corporate functions**
  - Accounting and financial management
  - Human resources
  - Procurement and logistics (warehouses, transport)
  - Regulatory affairs
  - Communications and other corporate affairs

Electricity service to customers

- **Attending and solving customers' complaints**
  - Highest priority: restore service to normal condition in the shortest possible time (reduce duration of interruptions and other incidents).
  - **Key tool: Outage/Incidents Management System (OMS/IMS) with permanently updated database on customers indexing/mapping to network assets used for electricity service supported by Geographic Information System (GIS).**
    - Identifies incidents in network infrastructure related to complaints received from customers. Resources available (maintenance and repair crews and equipment are directly allocated to address and solve those incidents.
    - Provides information on operating condition of assets (recurrent failures, etc.) relevant to prioritize maintenance actions.
    - Enhances efficiency, transparency and accountability in operations.
- **Networks rehabilitation, replacement, reinforcement and upgrade**
  - Incorporation of switchgear and other equipment to enhance operational flexibility and optimize the use of transmission capacity of network infrastructure
  - Identify and adopt at the time of replacement least-cost (over lifetime) network topologies allowing to meet applicable standards on quality of service. Impact of network topology on management of technical and non-technical losses

Electricity service to customers

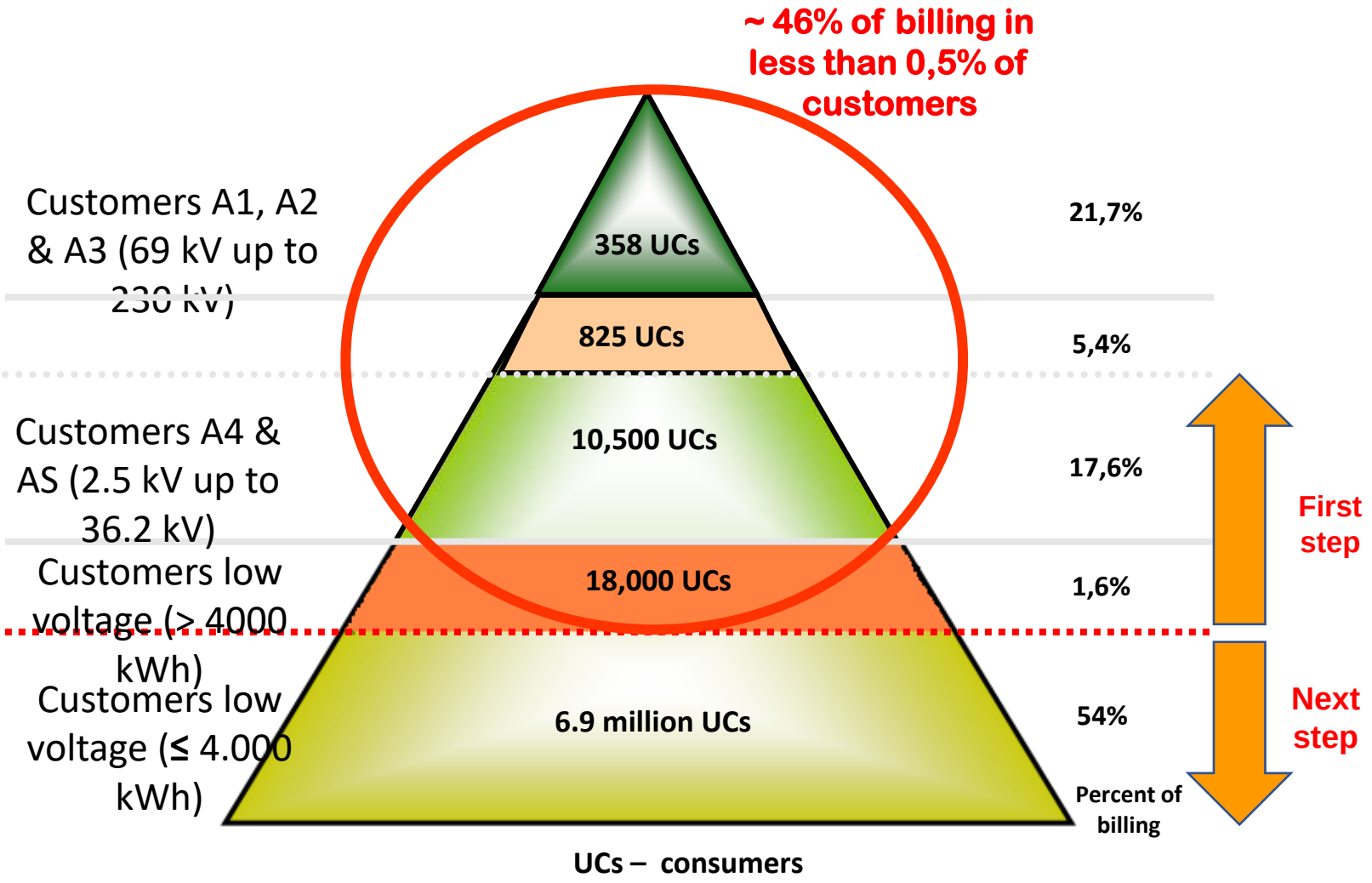
- **Networks operation and maintenance**
  - Decentralization of field operations (as close as possible to customers) while keeping full control on them at all levels: **information systems systematically used (no exception).**
  - Condition based maintenance supported by digital applications with focus on critical equipment for service delivery supported by Asset Management System (AMS)
  - Live line maintenance to minimize service interruptions to carry out scheduled works
  - Use of drones equipped with devices to detect condition of network assets
  - SCADA for operation and control of high and medium voltage networks

Commercial operations (1)

- **All commercial operations supported by state-of-art Commercial Management System (CMS)**

- **Metering**
  - All customers must have consumption meters
  - Advanced Metering Infrastructure (AMI) applied to high-value segment of large customers (all supplied in HV and MV and largest in LV)
    - Operational procedures adopted for systematic consumption monitoring and confirming and correcting any abnormal situation detected through AMI
  - Handheld units (HHUs) used to record meters readings for all other customers (recording on paper fully eliminated)
    - Pictures taken and digitalized in each meter reading operation
    - HHUs loaded with regular consumption intervals for each customer
    - Automated transfer of data from HHUs to billing module of CMS
    - Abnormal consumption cases treated separately from regular billing (meter inspection order created on CMS).

CEMIG Brazil: - Structure of served market (ABC effect)



CEMIG's Metering Control Center

Commercial operations (2)

- **Billing and collection**
  - All billing operations carried out through CMS
  - Massive deployment of e-billing using mobile phone communications (SMS, WhatsApp), WEB, etc.
  - Full outsourcing of collection driven by maximizing options comfortable to customers for bill payment: **mobile payments systems are the best arrangement available worldwide**
  - Systematic application of service disconnection to non-paying customers following due prior notice
  - Converting to prepayment customers with poor bill payment records: conditions to be objectively defined and monitored by regulatory agency.
  - Use of pictures on meter reading to address all complaints on billing

Commercial operations (3)

- **Management of prepayment customers**
  - Prepayment module of CMS or vending platform interfaced with CMS is the only source to generate online STS compliant tokens
  - Purchases of prepayment customers systematically monitored, and field inspections carried out to verify potentially abnormal situations
  - Premises of prepayment customers should be periodically inspected to assess their condition and adopt corrective action as needed.
  - Split reversible prepayment meters increasingly adopted
    - Prepayment or post-payment implemented through CMS.
    - Help management of non-technical losses

- **Management of non-technical losses**
  - Prioritization of areas based on amounts of energy (kWh) consumed but not sold

- **Attending customers**

  - Adopting processes that allow use of Contact Center for all commercial operations
    - Customers don’t want and should not need to move to a commercial agency

Corporate resources and regulatory affairs

- **Systematic use of state-of-art Enterprise Resource Planning (ERP) to manage corporate resources with efficiency, transparency and accountability**

- **Technically robust systematically applied methodology for setting and periodically adjusting Allowed Revenue Required (ARR).**

- **Optimization of the tariff structure to ensure neutrality for utility and consumers**

    - Fixed, demand and energy charges respectively reflecting fixed, demand related, and energy related costs incurred across the value chain (G, T, D&R) for efficient service delivery adopted in all tariff categories. **Financial viability of power sector depends on NOT subsidizing the wealthier. Implementation of this principle through a trajectory ('glide path") over a transition period with automatically applied steps**

    - Only exception: social tariff applied exclusively to low-income/vulnerable consumers. Parameters of social tariff defined based on affordability

    - Adopting reactive power pricing (penalties and bonuses) to optimize the use of transmission capacity of existing networks

    - Net billing adopted to manage distributed energy resources (DER)

- **Procedures for systematic regulatory monitoring and oversight of quality of service provided to customers through real time access to records of OMS and CMS.**

Conclusion

- **Serving its customers is the reason for the existence of a power utility.**
  - **Customers pay salaries of staff (not government)**
- **Customer service focused approaches for operations in key business areas that also maximize efficiency, transparency and accountability should be adopted.**
  - **Incorporation of digital technologies and other IT applications should be considered in that context.**

Thank you

Any questions?

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