Distributed Generation – Opportunities and Challenges

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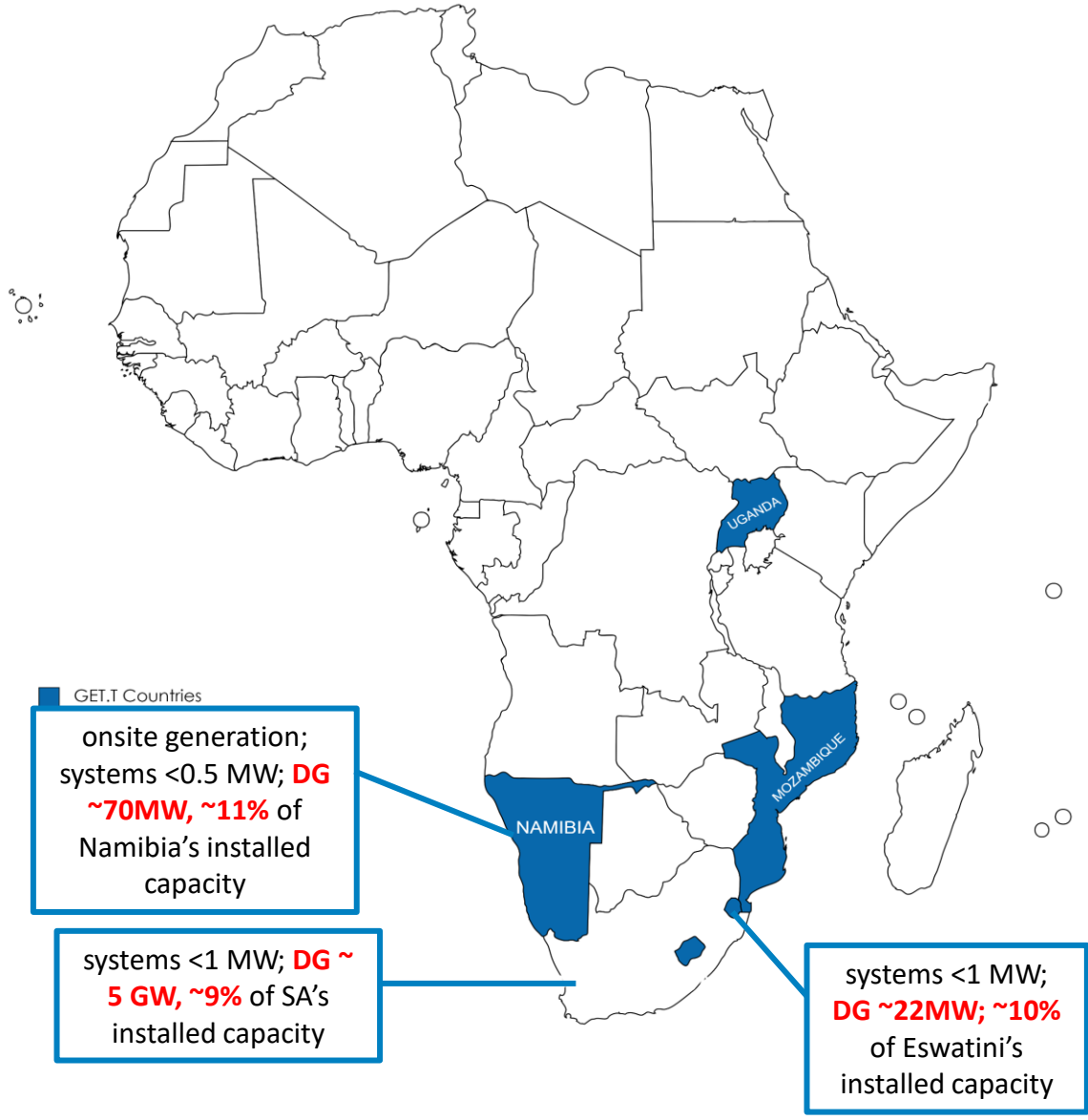
Outline

- DG in Africa
- Challenges of DG deployment
- Opportunities
- Mitigation the Impact of DG
- Conclusion

DG is silently redefining African grids

- Power systems around Africa are being irrevocably changed
- To put into perspective, these are similar penetration levels (as a share of national capacity) we observe in developed markets
- These penetration levels have mostly happened only over 3-4 years,
- On the back of no financial incentives, unlike in mature developed markets



DG poses unique challenges for African utilities (1)

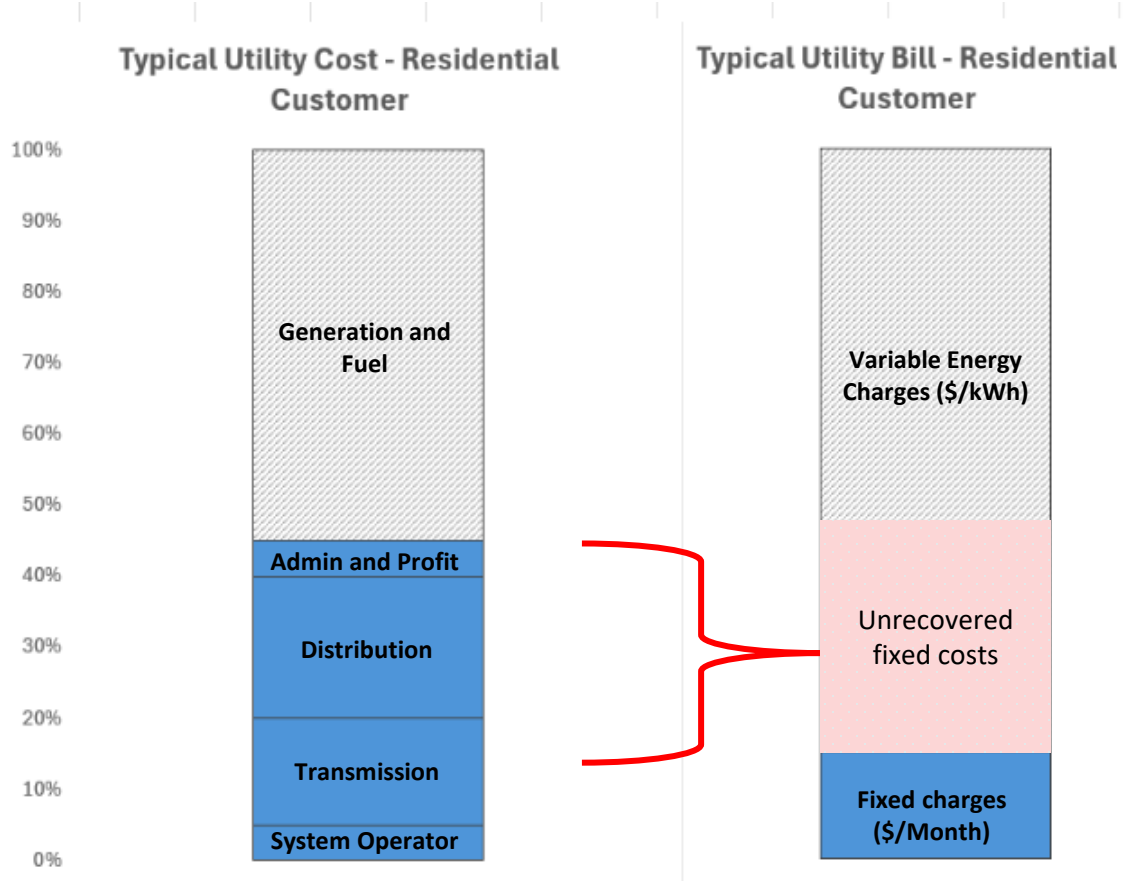
Meanwhile DG is being deployed in a context where utilities are still grappling with:

- Highly subsidized residential customer base
  - DG most appealing and accessible to customer group that typically subsidize the system
  - Risks of further widening the economic divide

Source: ESMAP, 2024

DG poses unique challenges for African utilities (2)

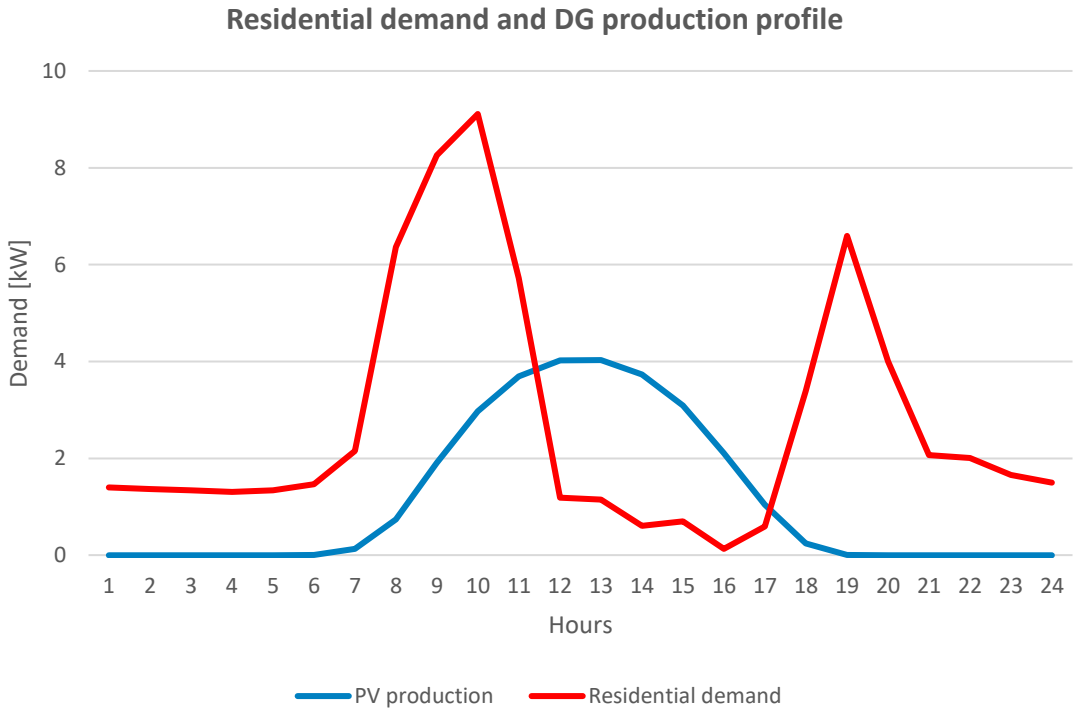
- Mostly non cost-reflective tariffs
- Utility fixed costs (e.g. network costs, billing etc.) recovered through volumetric charges
- DG customers reduce their energy consumption, leading to underrecovery of the utility's fixed costs
- Cost shifting onto nonadopting customers (perverse cross-subsidies)



Source: ESMAP, 2024 and NREL, 2016

DG poses unique challenges for African utilities (3)

- Current compensation mechanisms do not address the value discrepancy between energy injected by customers during off-peak hours and energy withdrawn at peak times.
- Technical safety and power quality concerns
- Utility staff capacity constraints



There are equally several opportunities

- Cost savings for customers

- Leverage private capital

- Increased power reliability

- Reduced total system costs

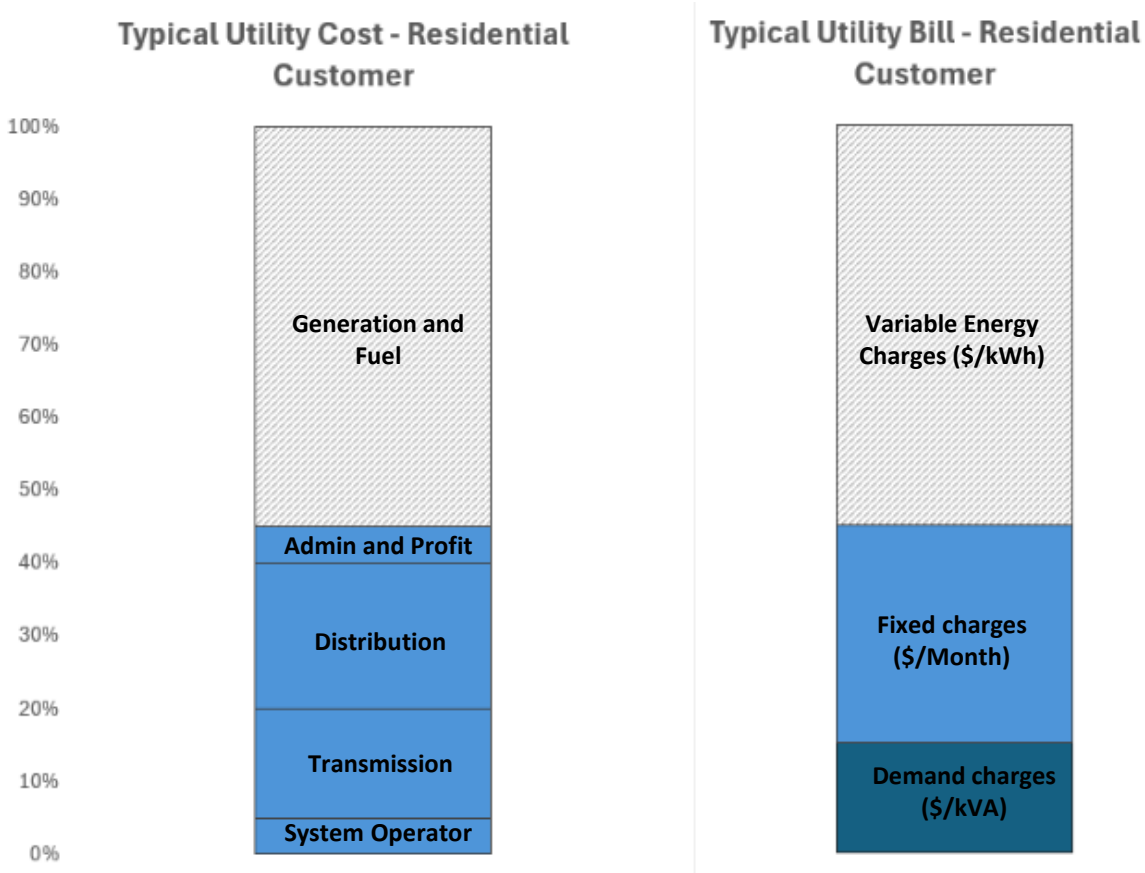
- Reduced GHG

- Reduced transmission and distribution losses

Source: Adapted from ‘Supporting the Development of Distributed Energy in Africa (AFD 2022)’

Mitigating the impact of DG

- Moving to cost-reflectivity – underpinned by a cost of supply study
- Tariff restructuring (i.e., variable, fixed, demand charges)
- Fair compensation arrangements for surplus electricity generation
- Interconnection standards and specifications



Conclusion

- DG deployment bring about several benefits but could also lead to incremental costs to utilities if nothing is done
- Several mitigation measures exists largely related to technical standards, tariff reforms, compensation mechanisms
- Pricing reforms should be underpinned by a Cost of Supply study, specifically to identify network-driven and other fixed costs

Thank You for Your Attention!

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