# Guinea

National Electrification Rate [1]
- National: 35%
- Urban: 83%
- Rural: 9%

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Population
- Total: 13.1 million [2]
- Urban ratio: 36.1% [2]

Population growth
- Medium population growth: 2.5%  [2]
- High population growth: 2.8% [2]

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Average household size, urban: 5.6 people [3]
Average household size, rural: 6.5 people [3]
Average electricity consumption per
- Household: 392 kWh/year
- Capita: 65 kWh/year (Tier 3) [1], [4]

Low demand target[1]: U3-R1
High demand target: U4-R3

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Off-grid technology cost [5]–[9]:
- Expected PV mini-grid cost: ~2950 $/kWp
- Expected Hydro mini-grid cost: ~3000 $/kWp
- Expected Wind mini-grid cost: ~3750 $/kWp
- Expected PV stand-alone (or SHS) costs:
    - ~9620 $/kWp  if kW < 0.02
    - ~8780 $/kWp if  0.02< kW < 0.05
    - ~6380 $/kWp if  0.05< kW < 0.1
    - ~4470 $/kWp if  0.1< kW < 1
    - ~6950 $/kWp  if kW > 1

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Grid generating cost
- Expected on-grid cost: 0.015 $/kWh [10], [11]

T&D costs [12], [13] [14], [15] [8], [16]–[21]:
- HV line (69-132 kV): ~53000 $/km
- MV line (11-33 kV): ~7000 $/km
- LV line (0.2 – 0.4 kV): ~4250 $/km
- HV to MV substation (1000 kVA): ~25000 $/unit
- MV to MV substation (400 kVA): ~10000 $/unit
- Service transformer (50 kVA): ~4250 $/unit

Grid generation capacity cap per year: ~79 MW/year
Grid connection limit: ~2.5% population/year

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**Note**! The Medium Voltage (MV) lines is the modelling output of Gridfinder[2], a modified version of Facebook's open source Pathfinder[3] algorithm. This approach was adopted in the absence of actual, mapped and publicly available data for the country (at the time of publication). The modelled MV lines have been visually inspected and curated using existing HV lines. Modelled MV lines more than 100 km away from existing HV lines have been abstracted and not used in the electrification model. While the 100 km buffer is a well-educated estimate, is yet an assumption. **Therefore, we warmly welcome your feedback and we would be glad to update the results with new, better datasets in case those exist**.

[1] U: Urban households; R: Rural households; 1-5: Electrification Tiers as defined by ESMAP's Multitier framework
[2] https://github.com/carderne/gridfinder
[3] https://github.com/facebookresearch/many-to-many-dijkstra

## References[4]


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[4] For additional information refer to GEP data & cost assumptions guide.