ANNEX IX: ASSUMPTIONS AND INPUT PARAMETERS FOR THE NETWORK PLANNER TOOL

1 ASSUMPTIONS AND INPUT PARAMETERS FOR THE NETWORK PLANNER TOOL

Table 1.1– Demand input parameters.

Category	Metric	Value
Demand (household)	Household unit demand per household per year (Category 1) [kWh]	1 300
Demand (household)	Household unit demand per household per year (Category 2) [kWh]	1 100
Demand (household)	Household unit demand per household per year (Category 3) [kWh]	865
Demand (household)	Household unit demand per household per year (Category 4) [kWh]	480
Demand (household)	Household unit demand per household per year (Category 5) [kWh]	380
Demand (household)	Household unit demand per household per year (Category 6) [kWh]	275
Demand (services)	Services demand per year [kWh]	Determined based on Chapter 5 assumptions for each demand point
Demand (productive)	Productive demand per year [kWh]	Determined based on Chapter 5 assumptions for each demand point

Table 1.2 – Demand input parameters.

Category	Metric	Value
Demographics	Mean household size (rural)	5.3
Demographics	Mean household size (urban)	4.9
Demographics	Mean interhousehold distance (Categories 1,2,3) [m]	15
Demographics	Mean interhousehold distance (Categories 4,5,6) [m]	30
Demographics	Population growth rate per year (rural)	1.42%
Demographics	Population growth rate per year (urban)	3.21%
Demographics	Urban population threshold	5 000

Table 1.3 – Distribution input parameters.

Category	Metric	Value
Distribution	Low voltage line cost per meter [USD]	24.0
Distribution	Low voltage line equipment cost per connection [USD]	200.0
Distribution	Low voltage line equipment operations and maintenance cost as fraction of equipment cost	1%
Distribution	Low voltage line lifetime [years]	30
Distribution	Low voltage line operations and maintenance cost per year as fraction of line cost	1%

Table 1.4 – Financial input parameters

Category	Metric	Value
Finance	Economic growth rate per year	2.34%
Finance	Elasticity of electricity demand	1
Finance	Interest rate per year	5%
Finance	Time horizon [years]	30

Table 1.5 – Grid connection input parameters.

Category	Metric	Value
System (grid)	Available system capacities (transformer) [kVA]	5 – 1 000
System (grid)	Distribution loss	12%
System (grid)	Electricity cost per kilowatt-hour [USD]	0.15
System (grid)	Installation cost per connection [USD]	25.0
System (grid)	Medium voltage line cost per meter [USD]	36.1
System (grid)	Medium voltage line lifetime [years]	30
System (grid)	Medium voltage line operations and maintenance cost per year as fraction of line cost	1%
System (grid)	Transformer cost per grid system kilowatt [USD]	105.0
System (grid)	Transformer lifetime [years]	20
System (grid)	Transformer operations and maintenance cost per year as fraction of transformer cost	3%

The mini-grid alternatives parameters and the solar off-grid parameters are based on the assumptions defined in **Chapter 5**. Many of these parameters are site specific, hence had to be detailed for each demand point.