Output file columns

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| Variable | Type | Unit | Description |
| Country | String | - | Name of the country |
| Admin1 | String | - | Admin level 1 name |
| X\_deg | Float | degrees | Longitude |
| Y\_deg | Float | degrees | Latitude |
| GridCellArea | Float | sq. km | area of population settlement |
| id | Integer | indicator | ID given to each cluster |
| Pop | Float | people | Population in each cluster for the start year as given by the GIS dataset |
| NightLights | Integer | nW cm−2 sr−1 | Values of light intensity |
| GHI | Float | kWh/km^2 | Solar irradiation |
| Travelhours | Float | hours | Distance to nearest town in hours |
| SubstationDist | Float | km | Distance to nearest substation |
| RoadDist | Float | km | Distance to nearest road |
| CurrentMVLineDist | Float | km | Distance to nearest existing ML line |
| PlannedMVLineDist | Float | km | Distance to nearest planned MV line |
| CurrentHVLineDist | Float | km | Distance to nearest current HV line |
| PlannedHVLineDist | Float | km | Distance to nearest planned HV line |
| HydropowerFID | Integer | indicator | ID given to each potential site |
| Hydropower | Float | kW | Small scale hydropower potential |
| HydropowerDist | Float | km | Distance to potential hydropower point |
| Cat\_1 | Integer | - | Number of category 1 health facilities |
| Cat\_2 | Integer | - | Number of category 2 health facilities |
| Cat\_3 | Integer | - | Number of category 3 health facilities |
| Unc | Integer | - | Number of unclassified schools |
| Prim | Integer | - | Number of primary schools |
| Sec | Integer | - | Number of secondary schools |
| TransformerDist | Float | km | Distance to nearest service transformer |
| IsUrban | Integer | 0 for rural 1 for urban | All 0 after extraction, urban/rural split gets assigned in the algorithm |
| ResidentialDemandTierCustom | Float | kWh/capita/year | Indicative residential electricity demand target |
| PerCapitaDemand | Float | kWh/capita/year | Indicative residential electricity demand target |
| HealthDemand | Float | kWh/capita/year | Indicative electricity demand for health facilities |
| EducationDemand | Float | kWh/capita/year | Indicative electricity demand for educational facilities |
| AgriDemand | Float | kWh/capita/year | Indicative electricity demand for agricultural processes |
| CommercialDemand | Float | kWh/capita/year | Indicative electricity demand target for commercial activity |
| Commercial\_Multiplier | Float | 0 to 1 | Commercial demand, measured as a share of the residential demand (used instead of the CommercialDemand variable). |
| GridPenalty | Float | 1 to 5 | Indicator suggesting an additional cost to grid extension costs reflecting geospatial suitability |
| WindCF | Float | % | Estimated capacity factor for wind technologies; certain technical parameters are taken into consideration |
| PopStartYear | Float | people | Population in the base year of the analysis |
| ElecPopCalib | Float | people | Calibrated version of ElecPop |
| Pop2025 | Float | people | Projected population at the intermediate year (2025) |
| Pop2030 | Float | People | Projected population at the end year of the analysis (2030) |
| Pop2020 | Float | people | Population in the base year of the analysis (2020) |
| ElecStart | Integer | 0-1 | 0 if settlement not electrified today; 1 if electrified today; Retrieved from calibration algorithm |
| GridDistCalibElec | Float | km | Distance to nearest grid element (after calibration) |
| FinalElecCode2020 | Integer | 0-7 | Code defining type of technology providing electricity if electrified in base year |
| NumPeoplePerHH | Float | people | Number of people in household; value for urban or rural respective to how the settlement is characterized |
| NewConnections2025 | Float | people | Total population in step minus non electrified population in cluster |
| EnergyPerSettlement2025 | Float | kWh by 2030 | Estimated electricity demand target in the settlement baed on new connections |
| MG\_Hydro2025 | Float | USD/kWh | LCOE estimated for mini-grid hydro in the step year |
| MG\_PV\_Hybrid2025 | Float | USD/kWh | LCOE estimated for mini-grid pv/diesel/battery hybrid in the step year |
| MG\_Wind\_Hybrid2025 | Float | USD/kWh | LCOE estimated for mini-grid wind/diesel/battery hybrid in the step year |
| SA\_PV2025 | Float | USD/kWh | LCOE estimated for stand-alone diesel in the step year |
| Grid2025 | Float | USD/kWh | LCOE estimated for the Grid in the step year |
| MinGridDist2025 | Float | km | Indicating the distance of the grid, if settlement gets grid electrified in the process |
| ElectrificationOrder2025 | Integer | 1-X | Number indecating at which electrification loop is getting connected by grid |
| MinimumOverall2025 | String | tech abbreviation | Abbrevation defining type of off-grid technology providing electricity in the step year |
| MinimumOverallLCOE2025 | Float | USD/kWh | LCOE of the least cost off grid option selected |
| MinimumOverallCode2025 | Integer | 1 - 7 code | Code defining type of off-grid technology providing electricity in the step year |
| InvestmentCost2025 | Float | USD | Total investment if electrification is achieved |
| InvestmentCapita2025 | Float | USD/capita | Estimated investment per capita if electrification is achieved |
| ElecStatusIn2025 | Integer | 0-1 | Final electrification status in the step year (after running prioritization algorithm) |
| FinalElecCode2025 | Integer | 1 - 7 code | Final tech code for settlements that get electricity in the step year |
| NewCapacity2025 | Float | kW | Additional capacity for the least cost technology identified in the step year |
| NewConnections2030 | Float | people | Total population minus non electrified population in cluster |
| EnergyPerSettlement2030 | Float | kWh | Estimated electricity demand target in the settlement based on new connections |
| MG\_Hydro2030 | Float | USD/kWh | LCOE estimated for mini-grid hydro in the step year |
| MG\_PV\_Hybrid2030 | Float | USD/kWh | LCOE estimated for mini-grid pv in the step year |
| MG\_Wind\_Hybrid2030 | Float | USD/kWh | LCOE estimated for mini-grid wind in the step year |
| SA\_PV2030 | Float | USD/kWh | LCOE estimated for stand-alone diesel in the step year |
| Grid2030 | Float | USD/kWh | LCOE estimated for the grid |
| MinGridDist2030 | Float | km | Indicating the distance of the grid, if settlement gets grid electrified in the process |
| ElectrificationOrder2030 | Integer | 1-X | Number indicating at which electrification loop is getting connected by grid |
| MinimumOverall2030 | Integer | String | Abbreviatifinveston defining type of off-grid technology providing electricity in the step year |
| MinimumOverallLCOE2030 | Float | $/kWh | LCOE of the least cost off grid option selected |
| MinimumOverallCode2030 | Integer | 1 - 7 | Code defining type of off-grid technology providing electricity in the step year |
| InvestmentCapita2030 | Float | USD/caopita | Estimated investment per capita if electrification is achieved |
| InvestmentCost2030 | Float | USD | Total investment if electrification is achieved |
| ElecStatusIn2030 | Integer | 0-1 | Final electrification status in the step year (after running prioritization algorithm) |
| FinalElecCode2030 | Integer | 1-7 | Final tech code for settlements that get electricity in the step year |
| NewCapacity2030 | Float | kW | Additional capacity for the least cost technology identified in the step year |
| MVConnectDist | Float | km | MV line distance to closest HV line. 0 if the settlement is not connected to the grid. |
| TotalEnergyPerCell | Float | kWh/year | Total electricity demand (all sectors considered) in the settlement by the end year of the analysis |
| Tier | Int | 1-5 | Tier classification of the consumption per capita in the settlement |