



**Observatoire Europe-Afrique 2030**

**Data Sheet « Value Chain »**

**Data Sheet n°2**

**Hybrid-Solar Mini-Grid**

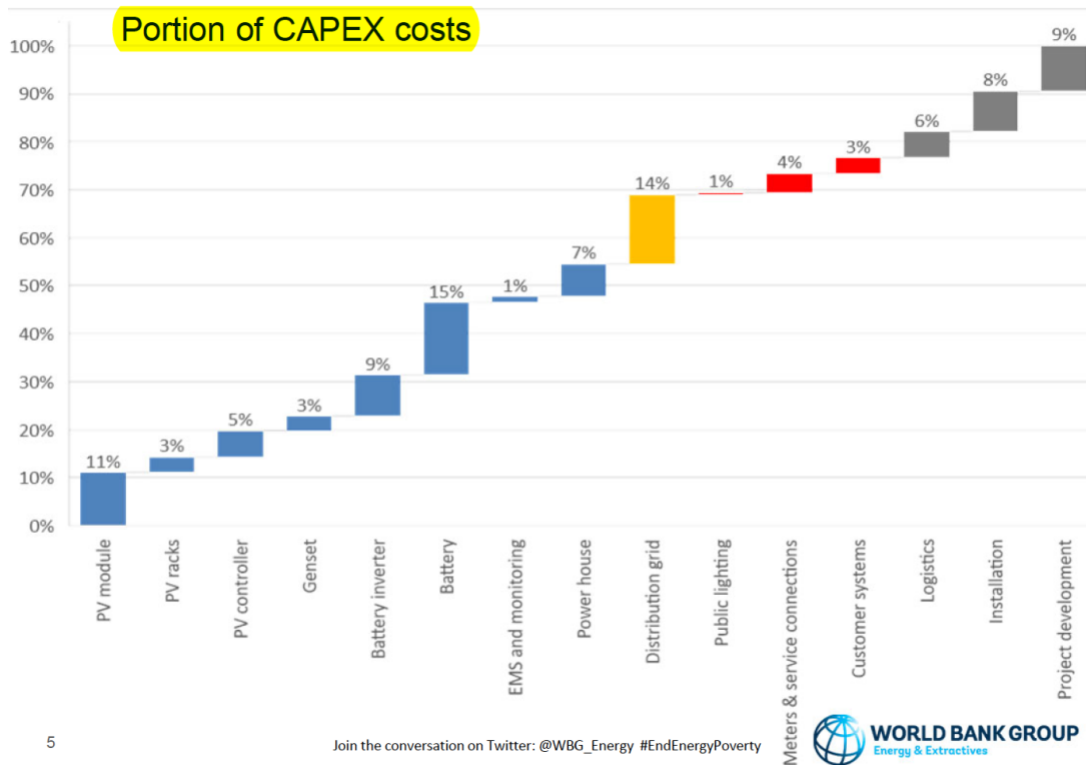
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# 1- Main components of a hybrid solar mini-grid

A mini-grid is an electricity supply system with a generating capacity of between 1 kW and 10 MW that can operate in isolation from the main utility grid. It comprises at least one electricity generation unit and a local distribution network, and supplies electricity to more than one consumer. A microgrid has an output of 1 to 20 kW and is included in the definition of a mini-grid.

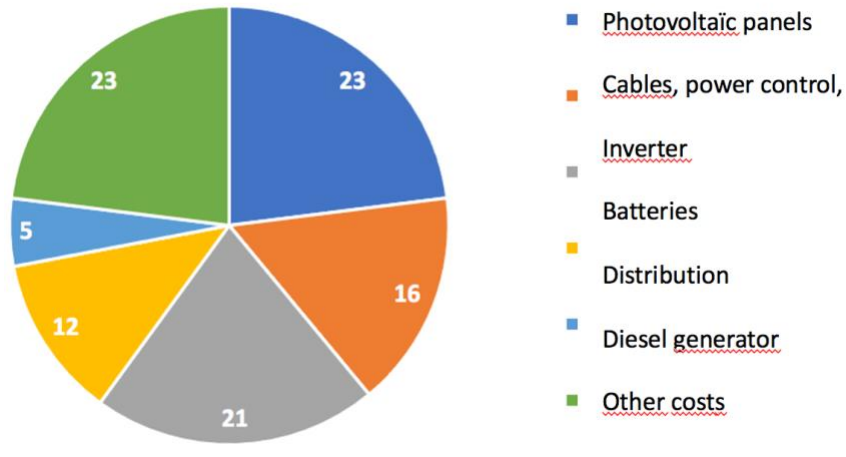
## 2- Investment Costs

The graphs below show the breakdown by main components of investment costs for a solar/diesel microgrid of around 40kW.

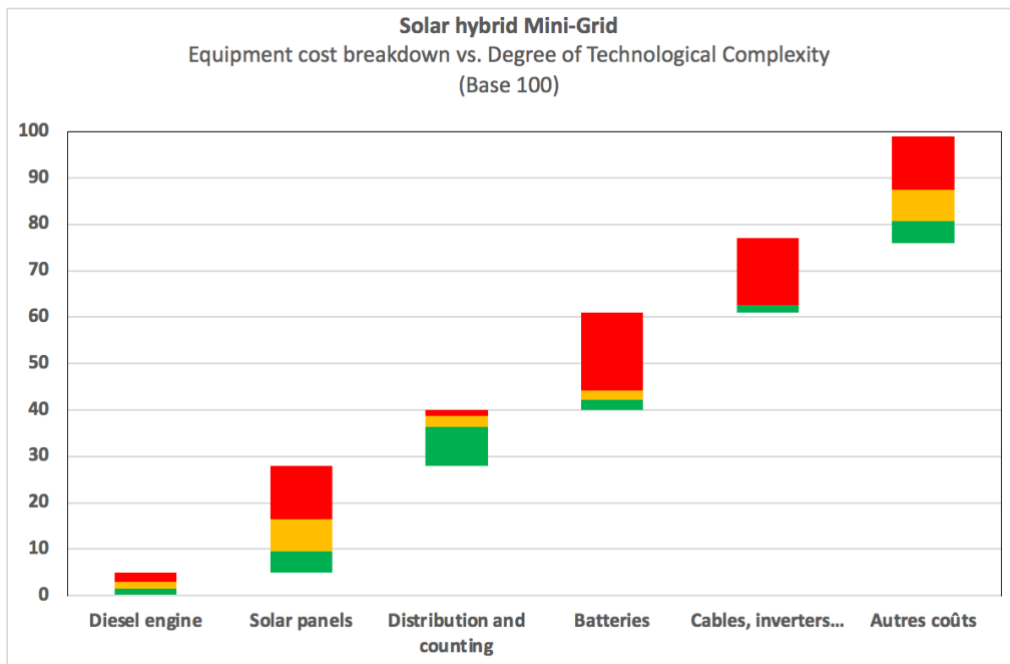


The main cost items for a mini-grid are solar photovoltaic modules (11% on average), batteries (15%) and the distribution grid (14%). There are considerable variations between grids. In one, the battery accounts for 39% of costs. In some mini-grids, distribution accounts for around a third of costs.

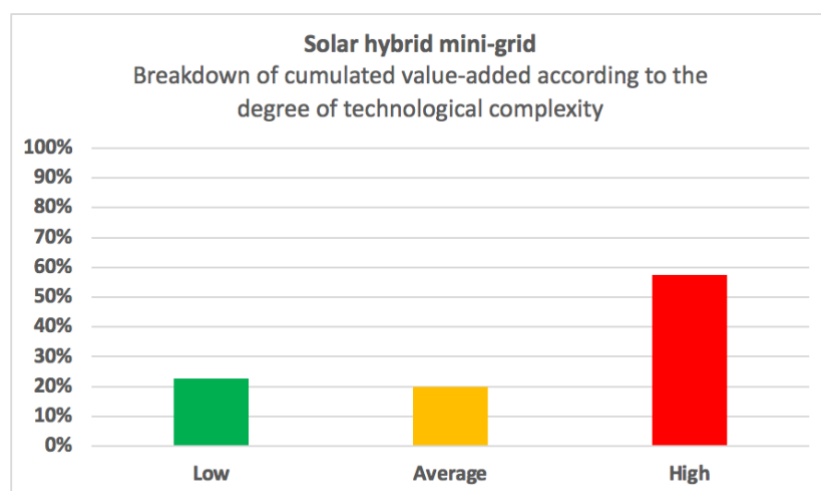
Investment cost of a hybrid-solar mini-grid (in %)



### 3- Value Chain



*Source: Observatoire Europe-Afrique 2030. These figures have been estimated on the basis of bibliographical information. They represent orders of magnitude.*



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## 4- Sources of Information

<https://www.otovo.fr/blog/le-solaire-et-vous/fabrication-panneau-solaire/#fabrication>

[http://www.ecreee.org/sites/default/files/manual\\_ecowas\\_final\\_28022019.pdf](http://www.ecreee.org/sites/default/files/manual_ecowas_final_28022019.pdf)

[https://ifdd.francophonie.org/media/docs/publications/658\\_EnergiesRenouv.Fiche8.SystemesHybrides.pdf](https://ifdd.francophonie.org/media/docs/publications/658_EnergiesRenouv.Fiche8.SystemesHybrides.pdf)

[http://docnum.univ-lorraine.fr/public/DDOC\\_T\\_2016\\_0127\\_MOUHAMMAD\\_AL\\_ANFAF.pdf](http://docnum.univ-lorraine.fr/public/DDOC_T_2016_0127_MOUHAMMAD_AL_ANFAF.pdf)

[https://iea-pvps.org/wp-content/uploads/2020/01/PVPS\\_T9\\_-\\_Hybrides\\_FR\\_-\\_updated\\_Feb\\_2014.pdf](https://iea-pvps.org/wp-content/uploads/2020/01/PVPS_T9_-_Hybrides_FR_-_updated_Feb_2014.pdf)

USAid / African Union / Power Africa – February 2021 – Unlocking Africa’s mini-grid market – Guidelines Summary – SURE Programme.

Mini grid costing and innovation – Mini grids for half a billion people - Chris Greacen - Global Facility on Mini Grids - Learning Event - Accra, Ghana - June 26, 2019.

Micro-réseaux d’électricité 100% solaire isolés en Afrique - Eléments de dimensionnement, coût de l’électricité, dépendance au climat régional et au profil de demande - \_Nicolas Plain.