

**Derilinx with the World Bank Group  
Supporting access to Sustainable Energy for Developing Countries**

**Opendata reshaping the Sustainable Energy Development: Solar Energy sizing tool for  
Developing Countries**

<https://storagesizing.energydata.info/>

## **1. Need identification**

Access to rural electricity plays a critical role in development. It unlocks key components of poverty namely accessing health services, education, jobs and environmental protection.

In developing countries, renewable energy with storage is emerging into a commercially viable alternative to fossil-based generation. Among the energy storage options available, battery storage is becoming a feasible solution to increase system flexibility, due to its fast response, easy deployment and cost reduction trends.

The World Bank is supporting the sustainable scale up of investments in battery storage in developing countries and it also is convening an international partnership, the [Energy Storage Partnership](#) (ESP), to adapt and develop new energy storage solutions to the needs of developing countries.

Optimally sizing the energy and power components of battery energy storage systems (BESS) is crucial to maximize the benefits of hybrid solar plus storage plants.

Battery sizing is a complex multi-dimensional problem that requires key performance factors such as the energy and power requirements, the intended application (operating regime), cost of the different components, among others.

Defining the energy application intended to be supported is an essential part of sizing the energy storage system as it determines the number of hours of storage needed.

Derilinx created together with World Bank specialist team members, the Solar PV + Storage Optimisation Tool to accelerate the development of new greenfield solar PV and battery energy storage hybrid projects in developing countries.

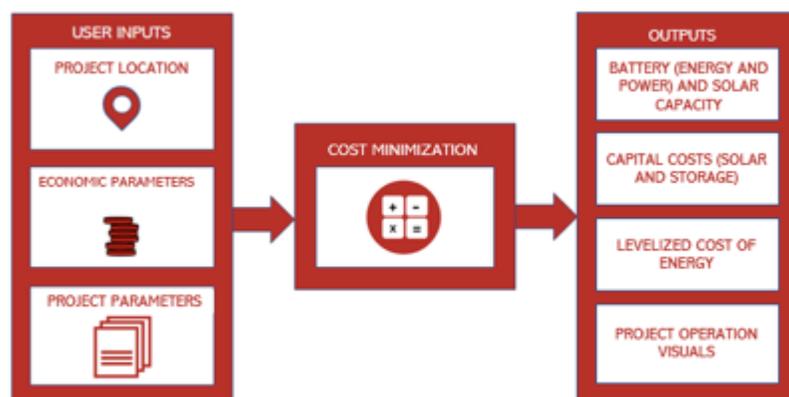
## **2. Use of data analytics (and/or) AI.**

The objective of this tool (available on [storagesizing.energydata.info](https://storagesizing.energydata.info/)) is to provide a preliminary assessment of the energy storage sizing requirements (both in terms of energy and power), and the project cost of hybrid solar PV and energy storage systems, using energy storage for smoothing and shifting applications:

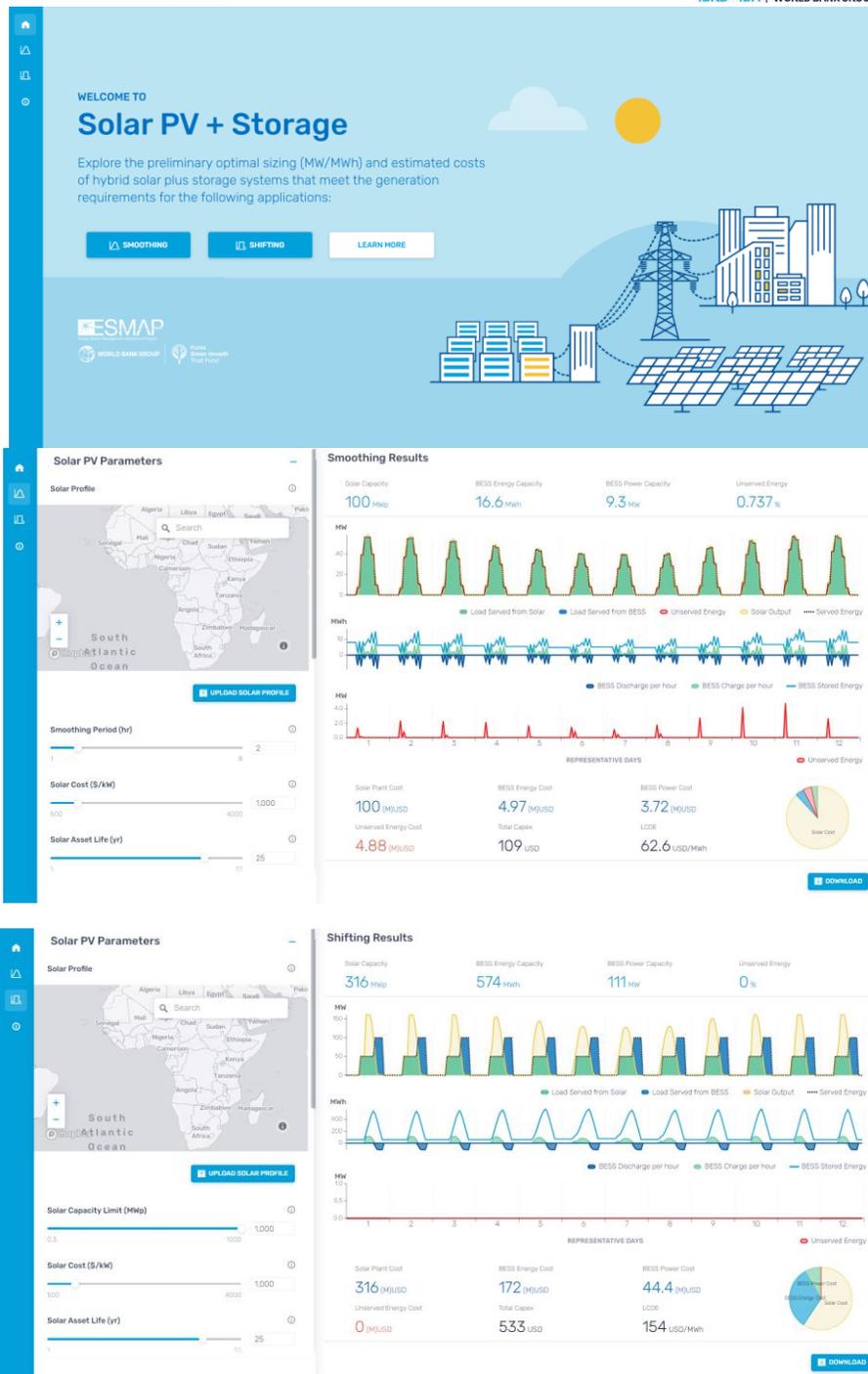
- Solar PV energy output **smoothing**: the battery energy storage system (BESS) is used to flatten the fluctuation of solar power output over a period of time, thus facilitating its integration in the grids. As such, the hybrid solar plus storage system can provide steady power output over a desired time window, usually a period of minutes to hours. Solar output smoothing is equivalent to providing reserves only to address the variability and uncertainty of the solar PV plant, providing the necessary time for other generating units to respond. This application involves dimensioning the battery for a given solar PV plant.
- Solar PV energy output **shifting** to meet a given demand profile: the BESS is charged during Renewable Energy generation hours and discharged to meet the profile defined by the user. Solar energy shifting guarantees a given output profile during a certain time duration, thus increasing the availability of round-the-clock power. This application involves dimensioning the solar PV and battery systems.

The tool is a user friendly interactive optimisation platform that enables users to:

- Select key input parameters to the data optimisation model including project location (solar cover), economic parameters and particular project parameters
- Receive outputs that are linked to the optimisation of the Total Costs linked to setting and running the selected the Solar Battery:
  - Battery and Solar Capacity
  - Costs including capital cost, levelised costs of energy
  - Downloaded outputs that can be used for initial project planning/feasibility study on the field



The following screenshots illustrate how easy it is to use, how interactive it is and how visually appealing it is, also enabling users to download optimisation inputs and outputs for further use at this early greenfield planning stage.



### 3. Social benefit achieved.

The platform enables to accelerate both the identification of potential Solar PV Batteries Sites and the development of such projects.

The primary social benefit of this tool is targeted at unlocking and accelerating access, for developing countries, to renewable energy effectively having critical positive impact on poverty components such as health, education, income and environment.

#### **4. Evidence of impact.**

The Solar PV Tool was launched in November 2020 with targeted users including World Bank Group Sustainable Energy Specialist Teams and field/in-situ government technical advisors in charge of rolling-out Sustainable Energy Programmes in developing countries.

Initial virtual roadshows have gathered hundreds of these users that have given sterling feedback on how useful that optimisation tool will be in acceleration Solar PV Batteries development in the field. Feedback received includes:

- *“The key blocker linked to Renewable Energy Development on the continent is the assessment of potential and actual sizing of solar set-up for economic assessment - this optimisation platform will really help accelerate this phase”*
- *“This platform is a game change for establishment of Solar Renewable Energy Solutions in Developing Countries”*
- *“Both World Bank Specialists and Consultant have now access to a standardised platform that will make decision making consistent and transparent vis-a-vis Solar Energy Investments”*

Since its launch the average usage statistics shows more than a 100 users per day both from World Bank Development Advisors and Government Officials across the African Continent.

#### **5. Future plans.**

Derilinx together with the World Bank Group will further fine tune that optimisation tool to improve outputs and improve user experience. The partnership is also about to launch a Geospatial Renewable Energy Planning tool that will enable planners to accelerate the identification and development of Renewable Energy projects globally across Solar and Wind (on-shore and off-shore) energy.