

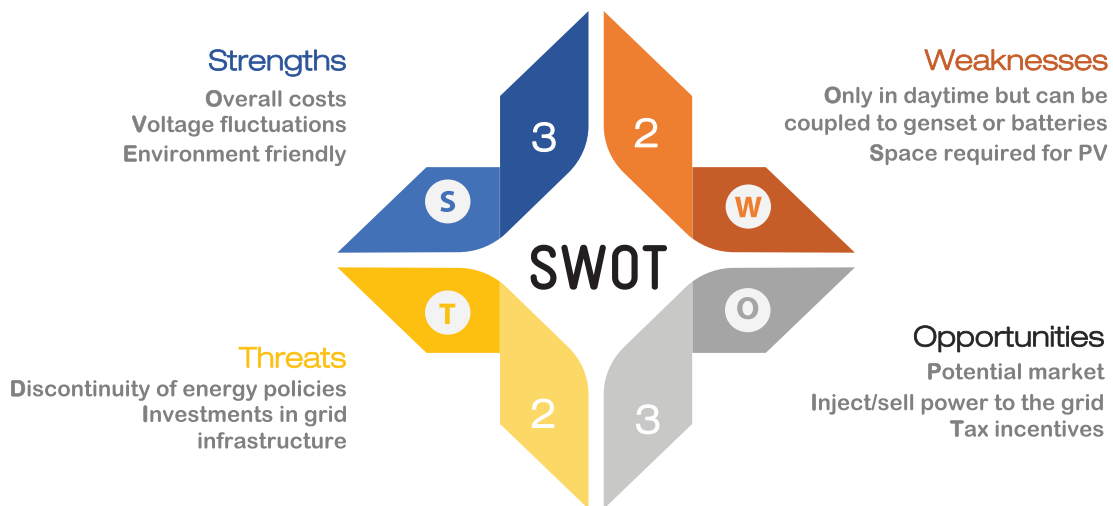


DOES IT MAKE SENSE TO DEVELOP SOLAR PV IN A CONTEXT WHERE THE GRID IS AVAILABLE?

The question of solar PV viability where grid is available is pertinent within the context of solar PV development. There is a perception that solar PV installations only make sense in a rural

context, in largely off-grid settings. Why should a Commercial & Industrial (C&I) electricity consumer invest in a solar PV system when they are already connected to the grid?

Strength and Weakness of purchasing Solar PV when the grid is available.



Why does it make sense to develop solar PV in the premises of C&I electricity consumers, even when the grid is available ?

01

Solar PV module prices have reduced over the years. Virtually all the components that make up the total cost of solar PV installations have experienced cost reductions. IRENA has posited that solar PV is now the cheapest source of electricity generation.

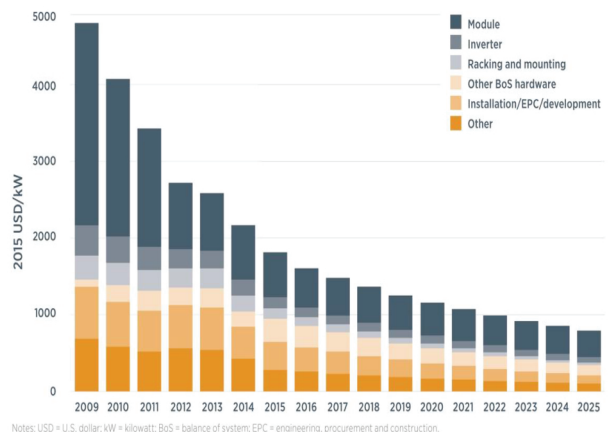


Fig 1. Fall of the world average weighted cost of PV-system for the communal sector (IRENA 2017)

02

Analyses of several grid-connected solar PV systems for C&I electricity consumers show that grid-connected solar is cheaper than electricity from the grid. The main reasons being that grid power in Ghana is based on thermal and hydro resulting in a more expensive mix. Furthermore the losses in distribution are very high.

The amount of grid power replaced by solar PV system becomes cheaper than an equivalent power from the grid by between 20 and 50%.

03

Grid-connected solar can help manage voltage fluctuation challenges that are a daily occurrence for most businesses in Ghana.

04

When hybridised with a genset, which is usually available at most C&I consumer premises, grid-connected solar continues to feed power to the premises even during grid power outage during sunshine hours.

05

The Ghanaian law offers, for grid-tied solutions, the opportunity to inject excess power generated from solar PV in the grid with a net metering scheme. This scheme is however currently suspended.

Table 1. Recent analysis for some C&I consumers in Ghana

Facility type	Agro-processing facility	Retail and Haulage
Estimated current annual grid electricity (kWh)	846,720	76,799
Recommended solar PV capacity (kW)	177	30
Solar PV annual generation (kWh)	267,723	48,467
Payback period (years)	3	4
Cost savings compared to grid	50%	

Source: <https://www.cgdev.org/sites/default/files/electricity-situation-ghana-challenges-and-opportunities.pdf>



Fig 2. PV- Genset Hybrid System (Google)

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