GET.invest
Mobilising Renewable Energy Investments

Uganda: Captive Power

Model Business Case: Solar Photovoltaic (PV) for Commercial and Industrial Facilities

INTRODUCTION

This Model Business Case analyses the financial feasibility of medium-size solar photovoltaic (PV) captive power system investments at hypothetical yet realistic sites in Uganda. Captive power[1] — or the self-generation of electricity from renewable energy for internal consumption — may help reduce operating costs and in some cases improve power reliability. The extent of energy savings depends on the cost of electricity, diesel power and the captive plant production costs. It should be noted that a captive power project might be best considered as part of a comprehensive energy management strategy, which would include energy efficiency measures.

The models presented here cover **four customer tariff categories** and **two user load sizes** of typical commercial and industrial facilities in Uganda:

TABLE 1. Types of analysed sites

CUSTOMER TARIFF CATEGORY	DAILY PEAK LOAD (kW)	SYSTEM SIZE (kWp)	COMMENTS
Off-grid	75	90	—
Code 10.2	75	90	—
Code 20	75	90	—
Code 20	75	120	5% spill over scenario
Code 30	300	360	—
Code 30	300	360	Synchronised with diesel generator

1) For a comprehensive definition and overview of captive power in Uganda, please consult the accompanying Developer Guide; accessible at www.get-invest.eu

GET.invest is supported by

Given the level of captive power regulation at the time of writing, the solar PV plant is sized to avoid spill over into the grid, except for the scenario of code 20 facility with 120 kWp PV plant. Battery storage is not considered. In all except the off-grid case, the PV system is synchronised to the grid. In addition, the code 30 case includes a variation comparing a solar PV plant that is also synchronised to a back-up diesel generator.

TARGET AUDIENCE

- **Owners or lessors** of commercial, agricultural or industrial property (e.g., retail space, office buildings, agricultural facilities, factories, etc.) who might consider solar PV for own power generation now or in the future
- **Project developers,** who may be interested in an estimated[2] captive power market of up to 40 MW of solar PV by 2025 among more than 3,200 industrial and 85,000 commercial electricity customers[3] and several off-grid facilities in Uganda

TECHNOLOGY OVERVIEW

Annex A provides more details.

ASSUMPTIONS AND MAIN PARAMETERS

The PV plant of the modelled cases can cover 23% to 30% of the annual energy demand. The expected average daily production from the PV system against the typical facility load is shown in **Figure 1** and **Figure 2**.

FIGURE 1. 75 kW peak load vs. average hourly PV output

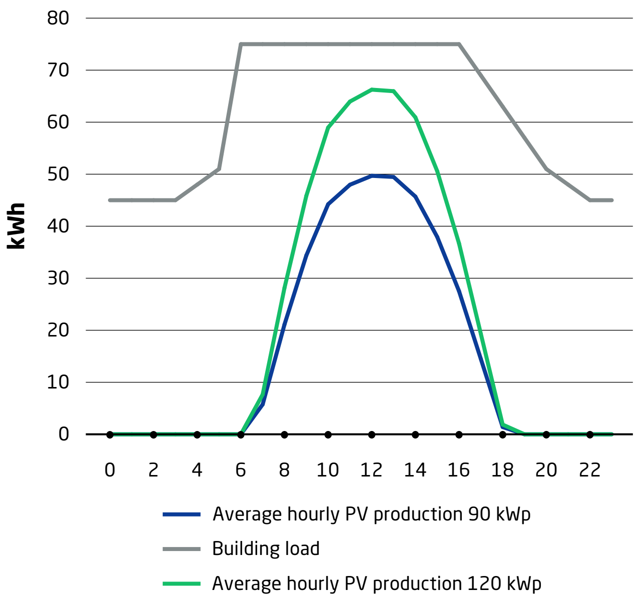
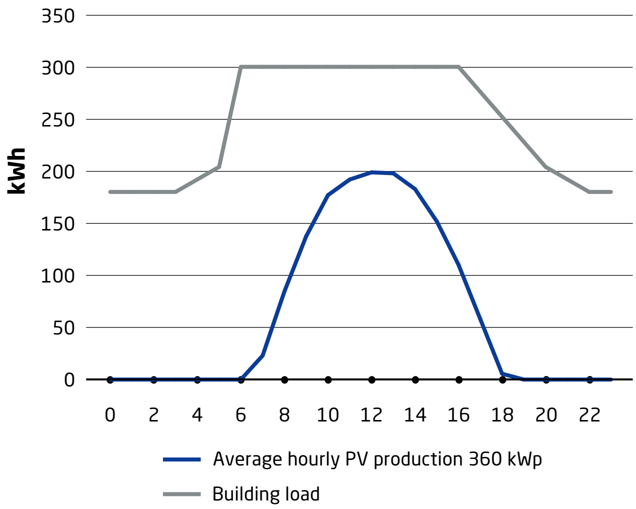


FIGURE 2. 300 kW peak load vs. average hourly PV output



The estimated annual energy yield of the PV system is approximately 1,418 kWh/kWp using PVsyst software, after considering system losses, temperature, cloud cover and panel soiling. Power outages and poor power quality frequency ranges from 1.6%

2) Please consult the accompanying Developer Guide for more details on potential market size estimation; accessible at www.get-invest.eu
3) Derived from Electricity Regulatory Authority (2017), ERA Distribution Statistics Q4 2016. Link: https://www.era.or.ug/index.php/stats/distribution-statistics – last accessed August 2017, link no longer available

to 35% of the year in Uganda.[4] An annual average grid outage time of 4% was assumed for the model, which impacts the PV generation. The main plant characteristics are found in **Table 2**.

TABLE 2. Solar PV system parameters

SOLAR PV PLANT PARAMETER	UNIT	VALUE
Irradiation with 10° tilt	kWh/m²/year	1,928
Approximate yield	kWh/kW/year	1,418
Annual grid outage time	%	4
Annual generation year 1 90 kWp	kWh	125,895
Annual generation year 1 120 kWp	kWh	159,910
Annual generation year 1 360 kWp	kWh	503,561
Annual module degradation	%	0.5

Investment and operating costs

The unit costs for solar PV investment (CAPEX) and operations and maintenance (O&M) are provided in **Table 3**.[5] The estimated costs are based on project experience in Uganda and East Africa during late 2017.

TABLE 3. Solar PV system CAPEX and O&M[6]

PLANT COMPONENT	UNIT	UNIT PRICE	
		90–120 kWp	360 kWp
Modules	EUR/kWp	450	430
Inverters	EUR/kWp	150	140
Balance of plant	EUR/kWp	500	460
Miscellaneous	EUR/kWp	300	270
Total PV	**EUR/kWp**	**1,400**	**1,300**
O&M costs	%	1.5	1.0

PV SYSTEM SIZE	CAPEX		ANNUAL O&M	
	EUR	Mio UGX	EUR	Mio UGX
90 kWp	126,000	537	1,890	8.1
120 kWp	168,000	716	2,520	10.7
360 kWp	468,000	1,993	4,680	19.9

Electricity costs

Electricity tariffs for commercial and industrial consumers in Uganda are comprised of 3–5 components as described in the accompanying GET.invest Developer Guide: **a)** monthly service charge, **b)** time-of-use energy charge **c)** Value Added Tax **d)** a maximum demand charge and **e)** reactive power penalty and reward for industrial users.

For solar PV captive systems, the time-of-use energy charge has the most influence on project viability. This is because monthly fixed charges cannot be avoided with a captive plant nor can the maximum demand charge be reduced due to fluctuations in

4) Derived from:
- World Bank (2014) Enterprise Survey Uganda 2013. Link: http://www.enterprisesurveys.org/data/exploreeconomies/2013/uganda#infrastructure – accessed April 2019
- CDC (2016) What is the Link Between Power and Jobs in Uganda? Final Report by Steward Redqueen, p. 23. Link: https://www.cdcgroup.com/en/news-insight/insight/articles/what-is-the-link-between-power-and-jobs-in-uganda/ – accessed April 2019
- Interviews with and data from existing and potential captive power projects in Uganda. The wide range is due to geographical differences in grid reliability.

5) A UGX-EUR exchange rate of 0.000234769 from October 2017 is used in the Model Business Case

6) CAPEX covers typical solar PV equipment and associated costs including for modules, inverters, mounting cabling, transport, design and commissioning. For the annual operating costs, a percentage of the CAPEX is applied. This includes costs for panel cleaning (at least twice a year) and occasional visits of technicians, replacement of spare parts and insurance costs. The Facility Management is assumed to take care of minor maintenance measures

TABLE 4. Umeme time of use energy tariffs in Uganda, Q4 2017

TARIFF CODE	TARIFF CLASS	TIME OF USE		ENERGY CHARGE / kWh		ENERGY CHARGE +VAT	
	Voltage level and demand	**Period**	**Hours**	**UGX**	**EUR**	**UGX**	**EUR**
10.2	Commercial, 415 V Max 100 A	Peak	18:00–00:00	806.0	0.1892	951.08	0.2233
		Shoulder	06:00–18:00	618.1	0.1451	729.36	0.1712
		Off-peak	00:00–06:00	381.6	0.0896	450.29	0.1057
20	Medium industrial, 415 V Max 500 kVA	Peak	18:00–00:00	738.0	0.1733	870.84	0.2044
		Shoulder	06:00–18:00	565.9	0.1329	667.76	0.1568
		Off-peak	00:00–06:00	345.7	0.0812	407.93	0.0958
30	Large industrial, 11/33 kV 500–1,500 kVA	Peak	18:00–00:00	490.0	0.1150	578.20	0.1357
		Shoulder	06:00–18:00	375.3	0.0881	442.85	0.1040
		Off-peak	00:00–06:00	236.3	0.0555	278.83	0.0655

solar PV output. Therefore, only energy charges are considered. Code 10.2, 20 and 30 tariffs are shown in **Table 4** for Q4 2017.

For diesel generator sets, a cost of EUR 0.3793/kWh (UGX 1,616/kWh) is assumed. For the code 20 scenario with spill over it is assumed that — in a hypothetical future net metering scenario — the project would be compensated for the excess power at a rate that is 50% of the average retail tariff.

Value Added Tax

Value Added Tax (VAT) at 18% on equipment is not considered as it is a throughput tax. Usually VAT is not applicable on solar PV systems in Uganda if the equipment is imported as a complete package — e.g. in a container (otherwise VAT could apply on cabling and mounting equipment). Nevertheless, in some circumstances (see the accompanying Developer Guide) VAT may be charged on CAPEX.

In addition, VAT on end-user electricity tariffs is not considered an avoided cost. Nevertheless, some facility owners may consider VAT as a cost or cash flow item to factor into investment decision-making.

The Umeme tariff, diesel generation and PV system O&M costs are assumed to increase by 5% in 2018 and 2019 and 4% thereafter based on inflation projections for Uganda.

Financing Scenarios

The three financing[7] scenarios — **a)** commercial bank loan, **b)** green credit line and **c)** solar leasing — are assessed for the different model business cases. The following financing assumptions have been made:

a) Commercial bank loan
- 70% debt, 30% equity
- 20% interest rate
- 17% required return on equity
- 5 year loan tenor
- No grace period

b) Green credit line
- 70% debt, 30% equity
- 7% interest rate
- 17% required return on equity
- 10 year loan tenor
- 2 year grace period

c) Solar leasing
- 20% upfront payment
- 7% interest on CAPEX
- 17% investment return for leasing firm
- 8 year lease-to-own term
- Salvage value paid by facility owner

7) It should be noted that as of the end of 2017, all of the seven existing solar PV captive systems in Uganda had been implemented without financing; the owners made the entire investment and/or grants were used

The commercial bank loan is considered for comparison purposes even though the terms are not conducive to captive power investments at the time of writing.

The green credit line option is considered a realistic financing scenario considering existing options for concessional loans such as SUNREF[8] and that usually solar equipment for captive-sized plants is often purchased in USD or EUR and a number of facility owners/long-term lessors have foreign currency revenue streams via export.

For leasing[9], lease-to-own is simulated because the PV system may not be easily removable. The leasing company CAPEX is assumed to be credit financed at 7% to allow comparison with the green credit line scenario, with a 17% return on investment. Exchange rate risk is not considered in the analysis.

The Model Business Case is based on an investment in Euro. In all cases, a one-year preparation, development and construction period has been assumed and 25 years of operation which corresponds to the expected lifetime of the solar PV plant. The division of the present value of costs by the present value of electricity production results in a levelised cost of electricity (LCOE) for the system. The net present value (NPV) is calculated comparing the PV system costs with the expected benefits in terms of grid electricity and diesel back-up savings for each year separately using a discount rate of 17% on equity cash flows, which reflects the assumed required return on equity.[10]

FINANCIAL ANALYSIS RESULTS

The results of the financial analysis for each user profile and system size are presented in **Table 5**, **Table 6** and **Table 7**, respectively for the three financing scenarios. The tables illustrate the return on equity (equity IRR or EIRR) and other project indicators. For the first two scenarios, the Debt Service Cover Ratio (DSCR) is also presented.

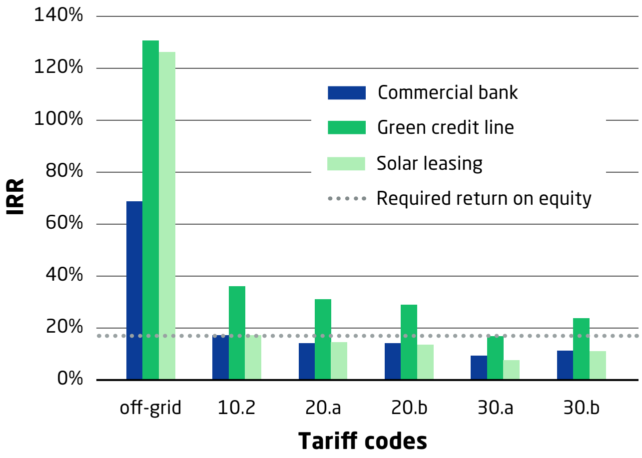
With commercial financing at 20% interest, the captive power investments are not economically viable except for the off-grid case. The equity IRR for the other cases is below the required return on equity of 17% and the equity NPV is negative. Furthermore, the minimum DSCR for the five grid-connected cases does not reach the typical threshold of 1.2 usually required by lenders to finance a project, meaning that the projects do not generate enough cash to pay back the loan.

With financing under the green credit line, the return on equity is attractive for all scenarios. The off-grid case is particularly interesting due to the significant savings. The minimum DSCR condition is not met for the 30.a case. The value of 1.01 is however the minimum value across the time frame, it increases in the following years up to 1.37.

Due to the assumed lease terms, the return expectations and the CAPEX financing, the project indicators are relatively less favourable.

An overview of the results of the analysis in terms of return on equity is found in **Figure 3**.

FIGURE 3. Overview of the financial analysis results



8) The Agence Française de Développement (AFD) funds a green credit line in Uganda under the SUNREF (Sustainable Use of Natural Resources and Energy Finance) programme, which finances renewable energy investments via local commercial banks by means of on lending. Credit was available in USD with an interest rate of 6-7% as of late 2017. A tenor of up to 12 years and a grace period of three years may be available

9) Solar leasing may have not yet been applied to a captive PV project in Uganda but solar leasers are active in East Africa. Some advantages of leasing may include no/low upfront investment and no O&M responsibility. Leasing companies need a return on their investment adjusted to country risks. Lease durations may also initially be limited due to the lack of experience with solar leasing in the Ugandan market

10) The assumed rate of return on equity is based on the relatively risk-free 14.98% coupon on a 15-year Bank of Uganda treasury bond as of June 2018 and, because some risk is priced into the bond, a modest equity risk premium of 2%

TABLE 5. Solar PV project indicators with commercial bank loan

CASE	TARIFF CODE AND VARIATIONS	PEAK LOAD kW	PV SIZE kWp	LCOE		EQUITY IRR %	EQUITY NPV	MINIMUM DSCR
				EUR/kWh	UGX/kWh		EUR	
off-grid	off-grid	75	90	0.207	880.7	69.0	192,460	1.72
10.2	code 10.2	75	90	0.207	880.7	16.4	–3,350	0.62
20.a	code 20	75	90	0.207	880.7	14.5	–13,617	0.56
20.b	code 20, spill over	75	120	0.207	880.7	13.9	–22,014	0.55
30.a	code 30	300	360	0.186	791.7	9.3	–153,922	0.40
30.b	code 30, diesel-tied	300	360	0.178	760.0	12.0	–101,029	0.48

TABLE 6. Solar PV project indicators with green credit line

CASE	TARIFF CODE AND VARIATIONS	PEAK LOAD kW	PV SIZE kWp	LCOE		EQUITY IRR %	EQUITY NPV	MINIMUM DSCR
				EUR/kWh	UGX/kWh		EUR	
off-grid	off-grid	75	90	0.134	569.6	131.7	236,580	4.32
10.2	code 10.2	75	90	0.134	569.6	36.2	40,769	1.55
20.a	code 20	75	90	0.134	569.6	31.0	30,503	1.41
20.b	code 20, spill over	75	120	0.134	569.6	29.6	36,812	1.37
30.a	code 30	300	360	0.118	502.9	18.1	9,951	1.01
30.b	code 30, diesel-tied	300	360	0.113	482.7	24.4	62,845	1.22

TABLE 7. Solar PV project indicators with solar leasing

CASE	TARIFF CODE AND VARIATIONS	PEAK LOAD kW	PV SIZE kWp	LCOE		EQUITY IRR %	EQUITY NPV
				EUR/kWh	UGX/kWh		EUR
off-grid	off-grid	75	90	0.197	840.7	127.2	198,127
10.2	code 10.2	75	90	0.197	840.7	17.7	2,317
20.a	code 20	75	90	0.197	840.7	14.8	–7,950
20.b	code 20, spill over	75	120	0.197	840.7	14.0	–14,458
30.a	code 30	300	360	0.176	751.7	8.0	–131,255
30.b	code 30, diesel-tied	300	360	0.169	721.7	11.4	–78,361

By comparing the results of all scenarios, the following conclusions can be made:

Off-grid — 75 kW peak load | 90 kWp PV system: The solar PV installation does not replace any grid electricity but only diesel generation. The high unit cost for diesel power means that solar PV captive power will be most attractive for off-grid users in all scenarios.

Code 10.2 — 75 kW peak load | 90 kWp PV system: For a code 10.2 customer with a PV system that is grid connected, the potential cost savings are relatively significant against a comparatively higher electricity tariff. However, since the PV plant can only generate electricity when the grid is available and no diesel-back up power is replaced, the savings are less than the off-grid case.

Code 20 — 75 kW load | 90 kWp PV system: The same size PV plant installed at a medium industrial facility (code 20) category provides lower returns than its code 10.2 peer due to lower electricity tariffs.

Code 20 — 75 kW load | 120 kWp PV system spill over scenario: If a code 20 customer with a daily peak load of 75 kW installs a larger 120 kWp PV plant synchronising to the grid and producing 5% excess electricity, the investment is less attractive. The IRR as well as the NPV are lower as compared to the code 20 scenario without spill over. This is because the assumed rate of compensation for excess power is lower than the avoided cost of electricity meaning that excess electricity is sold at a loss.

Code 30 — 300 kW load | 360 kWp PV system: The code 30 model case differs from the others as a higher facility peak load and a larger PV plant capacity have been assumed. The unit prices of the PV plant components as well as the O&M for the solar system are thus lower due to economies of scale. On the other hand, code 30 electricity tariffs are also lower and have a negative impact on the project economics vis-à-vis the other cases.

Code 30 — 300 kW load | 360 kWp PV system also synchronising with a diesel generator: In the cases considered so far (except the off-grid case), the PV installations are synchronised with the grid and as a consequence only grid electricity costs can be avoided due to the fact that during power outages, the PV plant cannot produce and offset diesel power. Simulating a scenario where the PV installation is also tied to a back-up diesel generator improves the economic indicators versus the previous case as the PV generation is increased and diesel cost savings can be achieved.

SENSITIVITY ANALYSIS

A sensitivity analysis was performed on key parameters in the commercial loan and green credit line scenarios to test the result of a change in the variables on the economic performance of the project. The parameters are:

— The energy yield – to account for uncertainty in projections and plant performance

— The investment costs – to account for cost overruns or delays

— The discount rate – to account for different expectations for return on equity

For the energy yield in the commercial loan scenario, the results show that the captive power investments in the majority of the cases only start to reach the 17% return on equity benchmark when the solar PV plant energy yield increases by 15% or more. With the green credit line, the sensitivity tests confirm the feasibility of the investment in most of the model business cases as the IRR generally does not go below 17% even if the energy yield reduces by 25% — However, in two cases (30.a and 30.b), the assumed IRR requirement of 17% is no longer reached.

As for investment costs, a reduction of 15% is needed before most of the cases become viable in the commercial loan scenario. However, even a 25% reduction is not sufficient to allow case 30.a (code 30 customer and grid-tied installation without diesel genset synchronisation) to realise a 17% return. In the green credit line scenario, all cases except 30.a still remain above the return threshold when investment costs increase by up to 25%.

In the case of the discount rate, with a commercial loan most of the projects only become a worthwhile investment if the expected return on equity is lowered by 20% (to 13.6%), or 45% (to about 11%) for case 30.a. In the green credit line scenario, the NPV remains positive in five of the six cases even if the expected return on equity were 45% higher (at about 24.5%). Case 30.a is the most sensitive – any increase greater than 6% in the benchmark (i.e. to an equity return of 18%) causes the NPV to enter negative territory.

FIGURE 4. IRR test against variation in energy yield – commercial loan

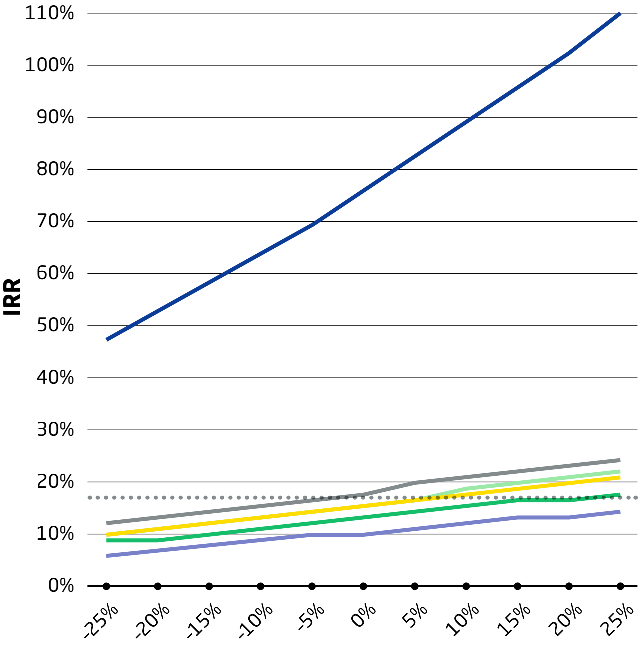


FIGURE 6. IRR test against variation in the investment costs – commercial loan

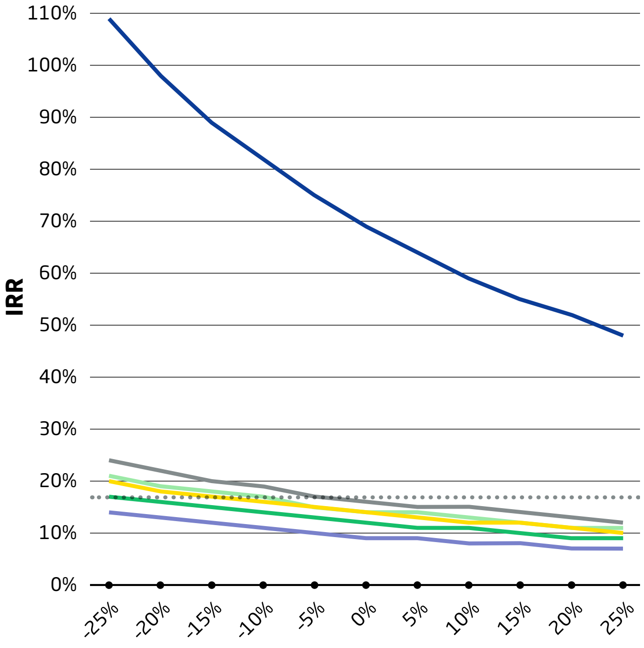


FIGURE 5. IRR test against variation in energy yield – green credit line

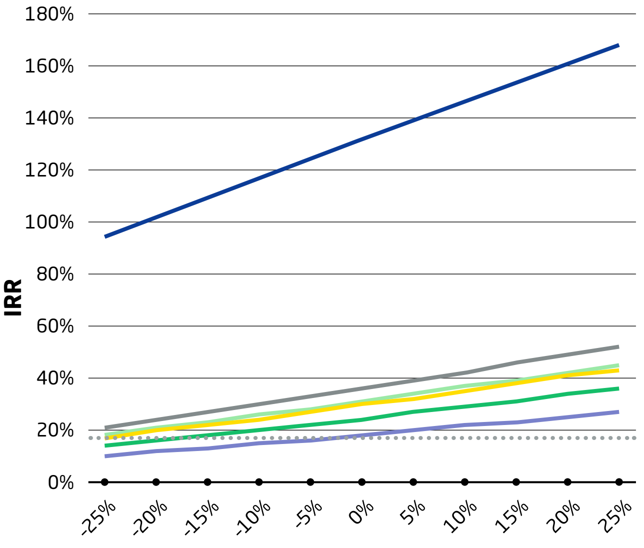
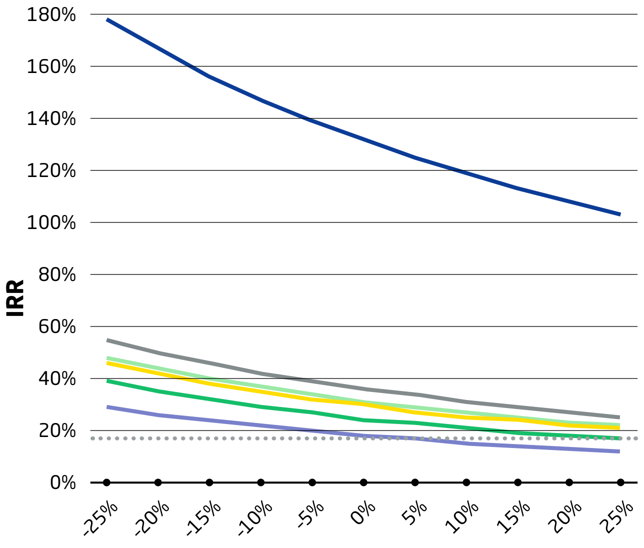


FIGURE 7. IRR test against variation in the investment costs – green credit line



off-grid
20.a
30.a
10.2
20.b
30.b
required return on equity

FIGURE 8. NPV test against variations of the discount rate (-50% to +50%) – commercial loan

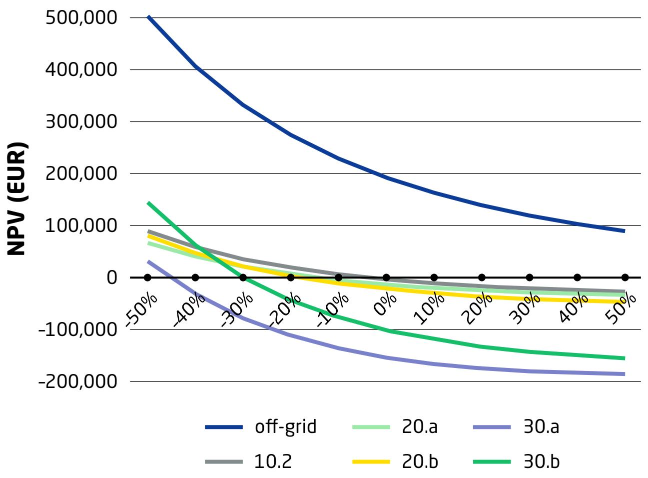
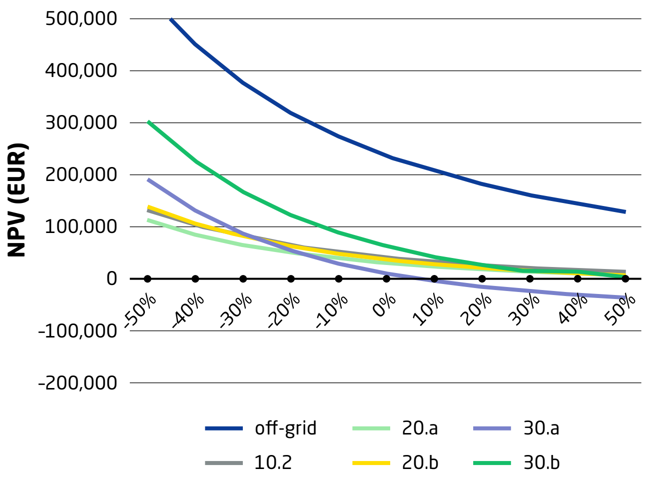


FIGURE 9. NPV test against variations of the discount rate (-50% to +50%) – green credit line



KEY TAKEAWAYS

- An investment in a captive plant is specific to the facility in question and should be made after a detailed assessment and ideally be part of a comprehensive energy management plan.
- The cost of electricity — i.e. the retail tariff or cost of diesel generation — at a facility is the most important factor for the potential viability of solar captive power, the economics of which are based on avoided costs. Based on the tariff levels, solar PV captive investments have high potential for off-grid users and code 10.2 utility customers and medium potential for code 20 customers. Code 30 customers will likely only find solar PV captive projects attractive in specific circumstances, e.g. when investment and/or financing or leasing costs are low.
- Potential risks for captive power projects in Uganda include: **a)** the future direction of the electricity tariff, **b)** lower than expected inflation, **c)** currency exchange rates, and **d)** issues around the need to import most equipment.

ANNEX A

TECHNOLOGY OVERVIEW

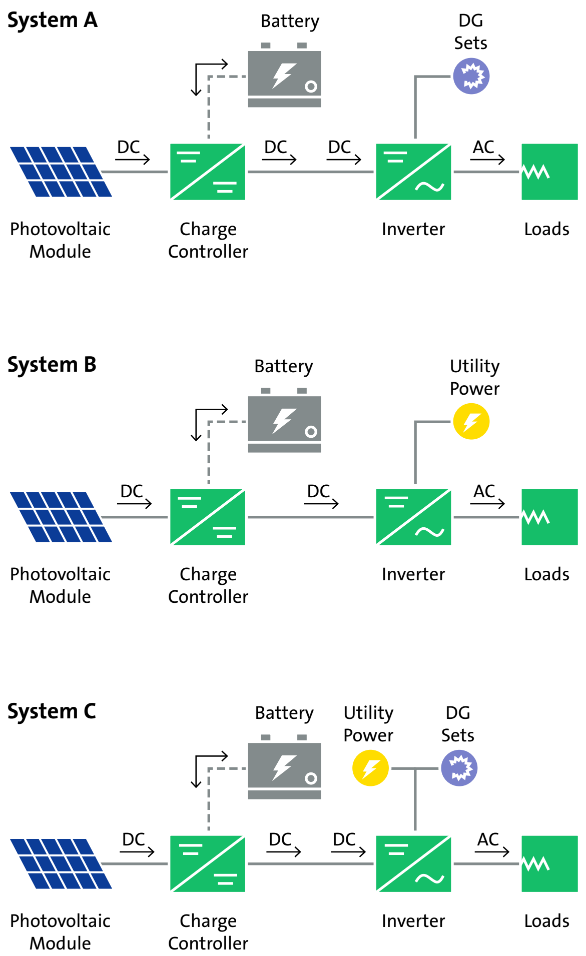
Solar photovoltaic (PV) electricity generation systems consist of three main components:

- **Modules** which convert solar irradiation to Direct Current (DC) electricity
- **Inverters** which convert DC to Alternating Current (AC) electricity for normal use
- **Batteries** (and their charge controllers) save solar electricity for later use. Batteries are optional and usually only needed if solar power will be used at times without sunlight

Solar PV systems range from micro to large-scale. A solar PV system for a larger user can power single- or three-phase loads, offsetting electricity from the grid or a diesel (back-up) generator.

There are two typical configurations for a solar PV captive plant — with and without battery storage. In the latter configuration, PV output is consumed as it is produced, which means during daylight hours. In the former, usually excess PV production can be stored for use in the evening — when grid electricity is more expensive — or for use in the event of grid or back-up generator failure. For off-grid users who rely on diesel generators (DG) (System A **Figure 1**), solar PV can help save fuel costs. If there are diesel generators in addition to a grid connection (System C), the PV system can also provide power during grid outages.

FIGURE 10. Different PV system configurations[11]



A grid-tied PV captive plant (i.e. one that is synchronised with the grid like System B in **Figure 1**) without battery will not be able to supply electricity when the mains power is out because frequency and voltage have to be provided by the grid. Only if the system is integrated with a battery or diesel generator of sufficient size can it continue to operate in autonomous "island" mode. Due to the additional costs for energy storage, the need for and appropriate sizing of a battery should be carefully considered. One option is to size the battery to only bridge short black outs and meet critical loads, where appropriate.

Solar PV systems can be installed on the ground or on the roof of a building (approximately 10–15 m² of space is needed per kW). For ground-mounted installation, shading is a relevant consideration while for roof-mounted systems the orientation and load bearing capacity of the roof (usually at least 20 kg/m²) are important. Fixed-tilt systems are most common.

Performance considerations

A number of factors can influence the actual energy output of a solar PV system in Uganda. These should be taken into account in modelling project performance and in design and planning:

- **Impact of power cuts.** Most grid-tied systems are not designed to run in island mode (see above) and therefore will not supply power when there is a grid outage
- **Seasonal factors.** Heavy precipitation and cloud cover can reduce sunlight hours and solar irradiation. The seasonal variation in solar irradiation in Uganda is shown in the accompanying Developer Guide
- **Dust and dirt.** Projects in both urban and rural areas can be affected
- **Theft** of system components
- **Insufficient maintenance and lack of spare parts**
- **Temperature.** High temperatures reduce the performance of solar PV modules
- **Irradiation levels.** Modelled performance is based on long-term irradiation data. From year to year there can be differences of up to 15–20% in total energy yield

11) Illustration based on: Synergy Enviro Engineers (2018) Solar Photovoltaic Systems. Link: http://www.synergyenviron.com/resources/solar-photovoltaic-systems – accessed 01/03/2018

Variation in solar PV energy yield

To illustrate the variability of solar PV production, a daily load profile over 24 hours in the rainy season for a building in Kampala with a solar PV system and a battery is shown in **Figure 11**. The green band is the portion of the electricity consumption of the facility that is supplied by the grid. The blue is the PV system generation, in this case from 06:45 to 18:45. The orange band is the battery discharging to meet some of the load. There are two blackouts of 30 and 45 minutes in the afternoon. The dips in the solar generation are caused by cloud cover. On this particular day, the solar plant and storage system met about 25% of the daytime load. In terms of monthly performance, the variance in daily load and PV system production over 31 days is presented in **Figure 12**.

FIGURE 11. Example of daily load profile and output from a grid-tied PV-battery system in Kampala[12]

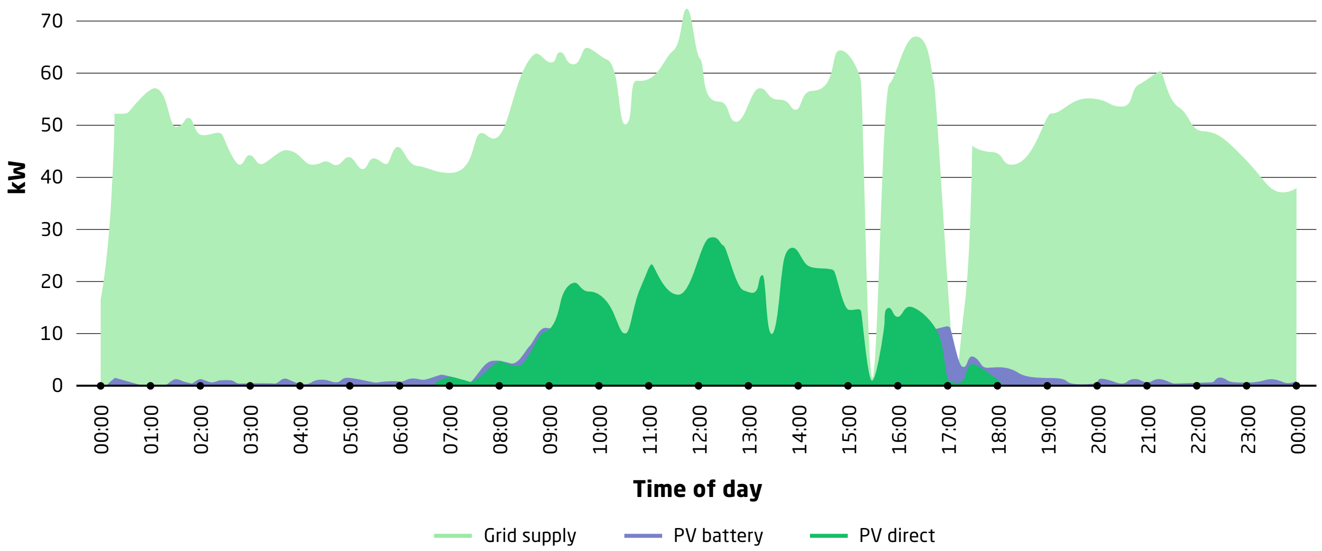
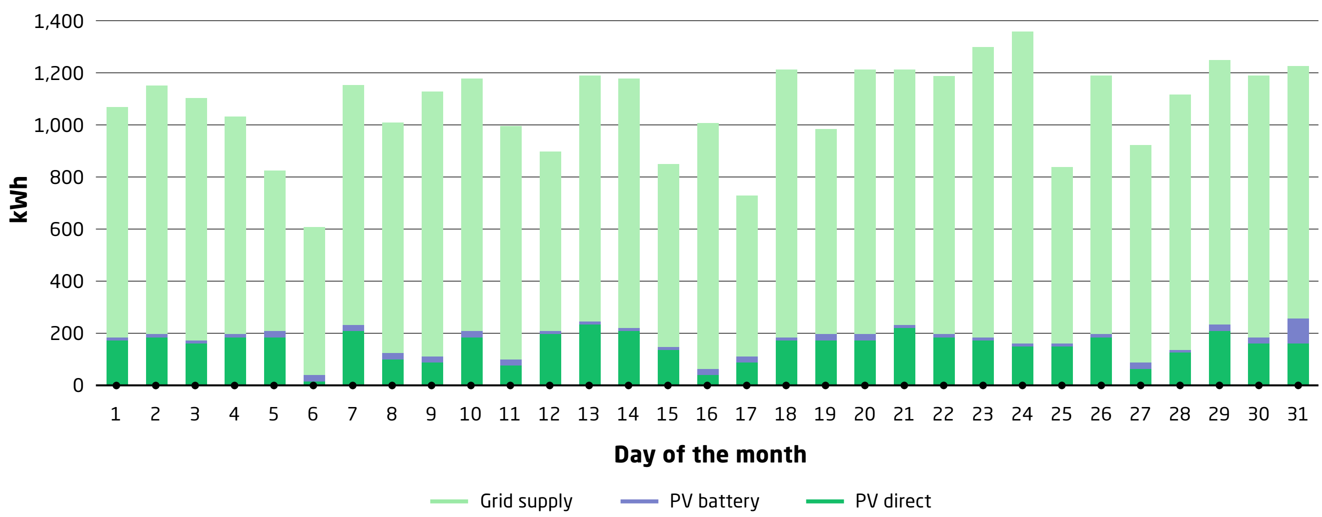


FIGURE 12. Example of PV system generation vs. consumption over a month in Kampala



12) Figures derived from information provided by NEXIRA Energy

ABOUT GET.INVEST MARKET INSIGHTS

The first series of GET.invest Market Insights are published in early 2019 covering four renewable energy market segments in three countries, namely: renewable energy applications in the agricultural value-chain (Senegal), captive power (behind the meter) generation (Uganda), mini-grids (Zambia) and stand-alone solar systems (Zambia).

Each Market Insight package includes **a)** a 'how to' Developer Guide, **b)** Model Business Cases and **c)** Case Studies. The Developer Guide enables the reader to navigate the market and its actors, to understand the current regulatory framework and lays down the step-by-step process of starting a new project/business. The Model Business Case analyses project economics and presents hypothetical, yet realistic, investment scenarios. It hence indicates the criteria for a viable project/business to enable the reader to identify the most cost-effective project/business opportunities. The Case Study analyses the viability of operational or high-potential projects/businesses to highlight lessons learnt and industry trends.

GET.invest Market Insights therefore summarise a wealth of data that may inform early market exploration and pre-feasibility studies. It is recommended to cross-read all three products to gain a comprehensive overview. The products are accessible at www.get-invest.eu.

ABOUT GET.INVEST

GET.invest is a European programme which supports investment in decentralised renewable energy projects. The programme targets private sector business and project developers, financiers and regulators to build sustainable energy markets.

Services include project and business development support, information and matchmaking, and assistance in implementing regulatory processes. They are delivered globally and across different market segments.

GET.invest is supported by the European Union, Germany, Sweden, the Netherlands, and Austria, and works closely with initiatives and industry associations in the energy sector.

GET IN TOUCH

We welcome your feedback on the Market Insights by sharing any questions or comments via email at info@get-invest.eu.

CONTACT

GET.invest
E info@get-invest.eu
I www.get-invest.eu

Place and date: Brussels, June 2019
Photo credits: © GIZ, except where otherwise indicated