

PV+Batteries in weak power systems

Case of The Gambia, Central African Republic and Guinea-Bissau

Solar Knowledge Exchange 2019
Ouarzazate - Morocco

February 2019





Weak power systems

- ✓ Scarce supply capacity – not covering demand, mainly during peak hours (evening)
- ✓ Unreliable networks with low T&D capacity and high technical losses
- ✓ Frequent outages and blackouts
- ✓ Reduced or inexistent reserve capacity
- ✓ Absence of network control systems
- ✓ Reduced resources for O&M activities
- ✓ Limited interconnection with other systems (island mode)
- ✓ Under these circumstances stand alone PV would not be recommendable

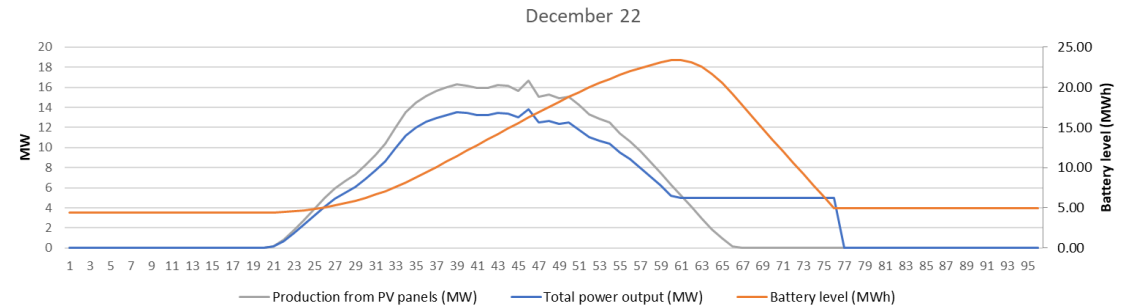
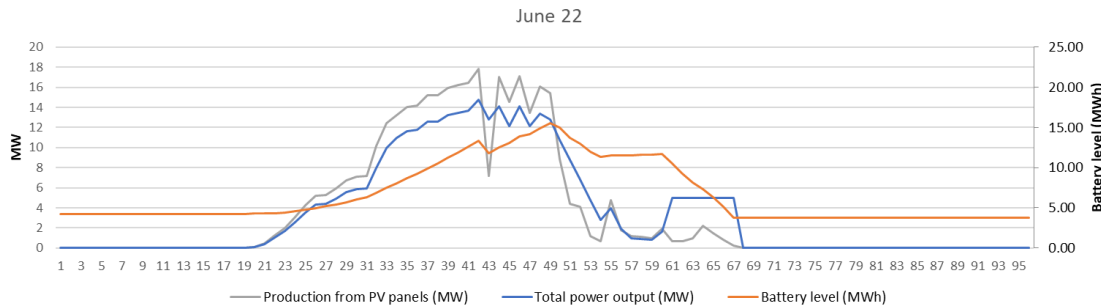
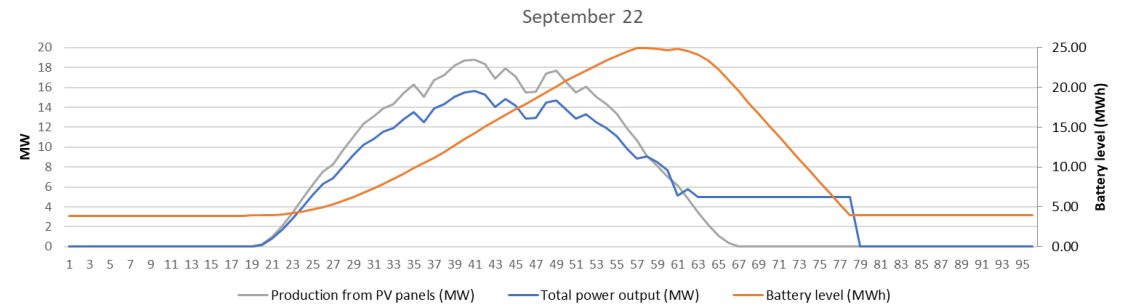
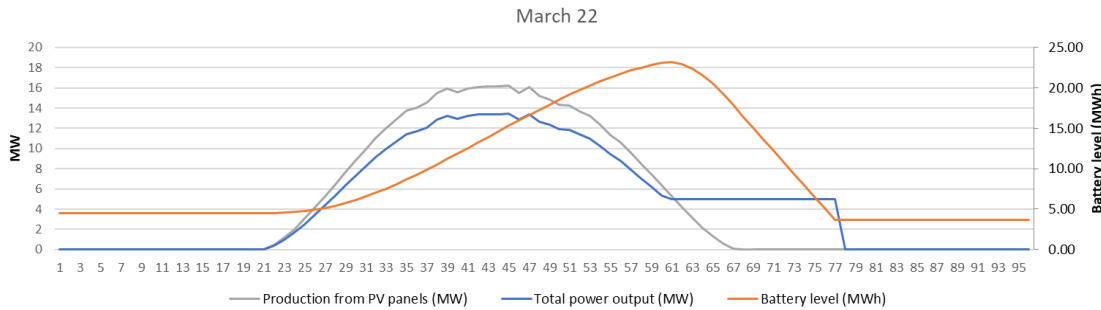
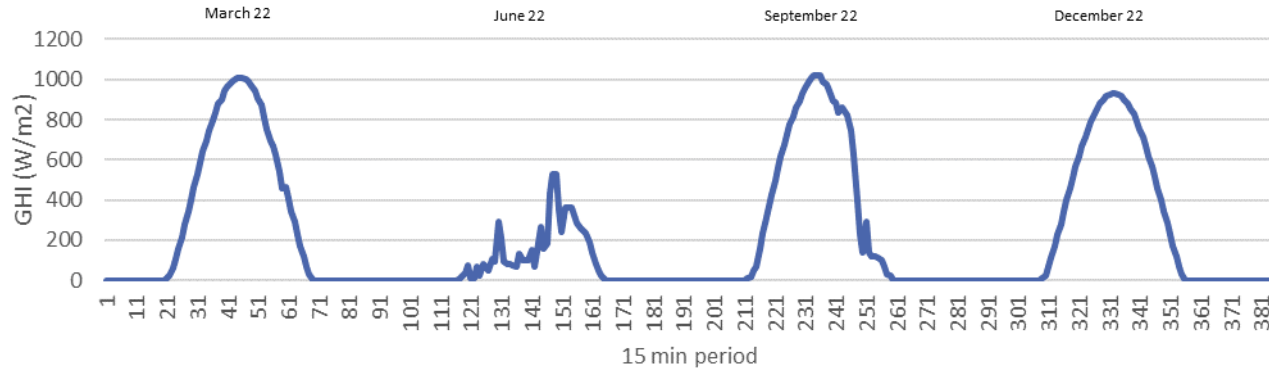


Why PV+Batteries are a suitable solution

- ✓ Solar resource is good
- ✓ Generation can be shifted to be used when is more needed
- ✓ Provides its own reserve capacity
- ✓ Provides stable generation
- ✓ May differs some T&D investments
- ✓ Reduce the needs for O&M (no fuel, modular, low maintenance)
- ✓ Plant control system can reasonably mitigate the absence of network control (?)
- ✓ May work in “island mode”
- ✓ Finally, it is a clean energy



Impact of BESS in PV generation





Cases of The Gambia, CAR and Guinea-Bissau

	The Gambia	CAR	Guinea-Bissau
Supply	100 MW (HFO)	18 MW (hydro)	30 MW rentals (HFO)
Interconnection	OMVG in 2022	None	OMVG in 2022
Reserve capacity	Limited HFO capacity	Hydro baseload	No
System control	None	None	None
	Projects		
PV project	20 MWp	20 MWp	15-20 MWp
BESS requirement	Low thanks to interconnection	High due to lack of interconnection	Low thanks to interconnection
T&D investments	Reinforcement	Reinforcement	Reinforcement
System control	New SCADA	New SCADA	TBD
Status	Procurement	Procurement	Feasibility