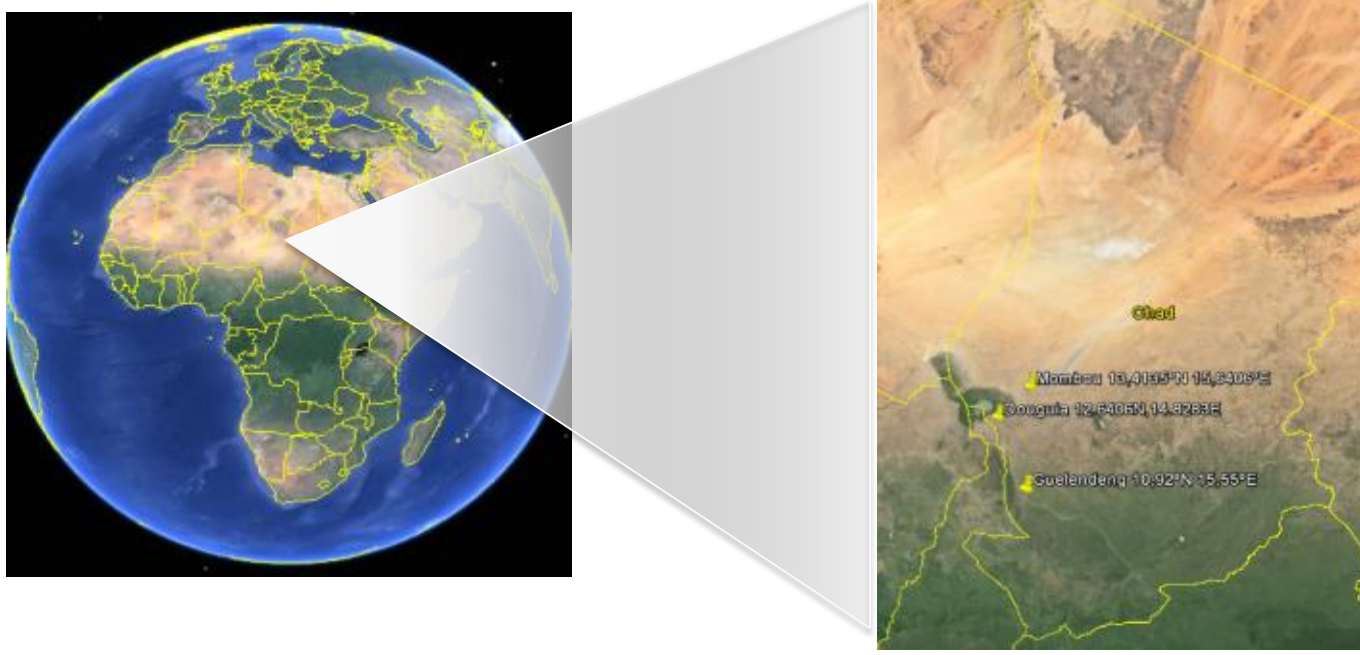


PV rural micro grids in villages of Chad

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SCOPE

Project objectives: To demonstrate and develop enabling conditions for deployment of rural renewable energy based microgrids in Chad
Improve access to **MODERN** electrical service through **SUSTAINABLE** and **REPLICABLE** solar micro grid model.

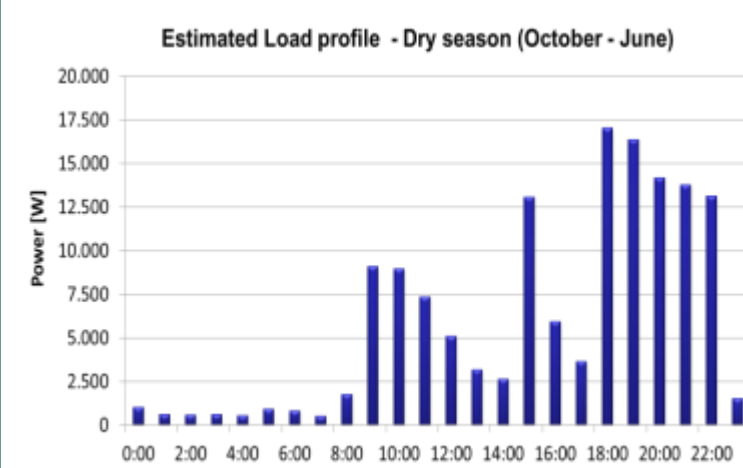


Source: Google Earth

	2014	2015
Installation of Mombou's solar microgrid		
Installation of Douguia's solar microgrid		
Establishment of management model of electrical services in Mombou and Douguia		
Installation of Guelendeng's solar microgrid		
Establishment of management model of electrical services in Guelendeng		



1. NEEDS ASSESSMENT & LOAD PROFILE



6. PROCUREMENT



2. TARIFF SCHEME & QUALITY

EDA Concept: Energy Daily Allowance

Service: 24/7 230V AC

Monthly flat rate service fee by tiers

Tariffs and Quality regulation by agreement with the community

Selected tariffs				
Tier	Monthly fee (kWh/day)	Power (kW)		
T11	4.100	550	0,5	
T21	11.200	1.100	0,5	
T41	22.000	2.200	0,5	
T72	38.600	3.850	1,0	
T82	43.900	4.400	1,0	

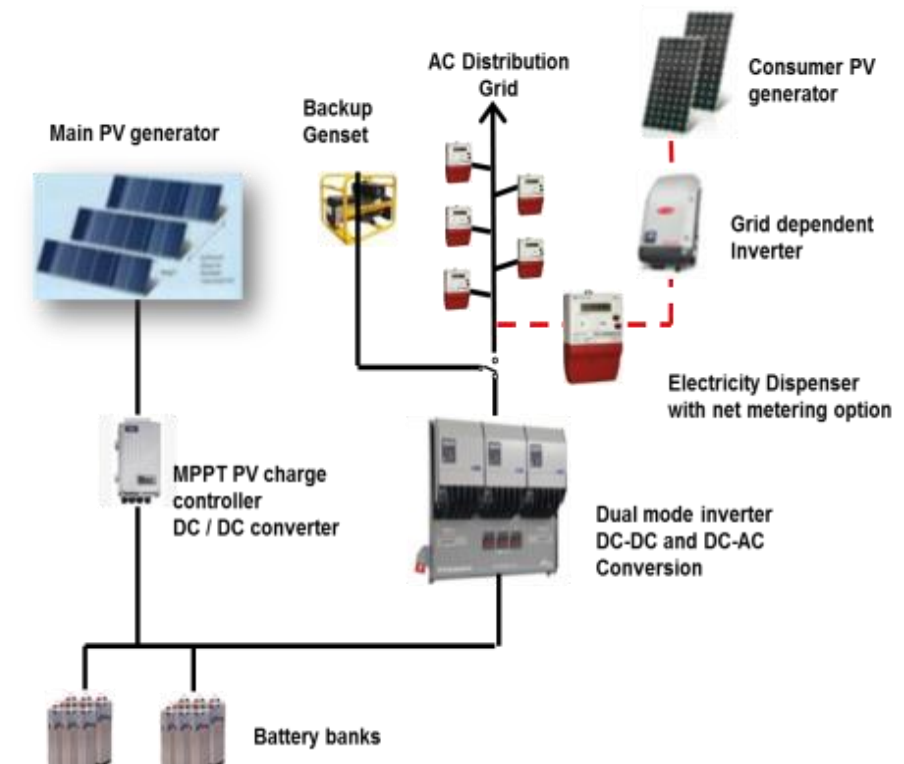
3. ENGINEERING

DC coupled micro power plant with storage

High PV penetration with diesel genset back up

3 phase LV standard 230V – 50Hz electricity supply

Underground distribution grid

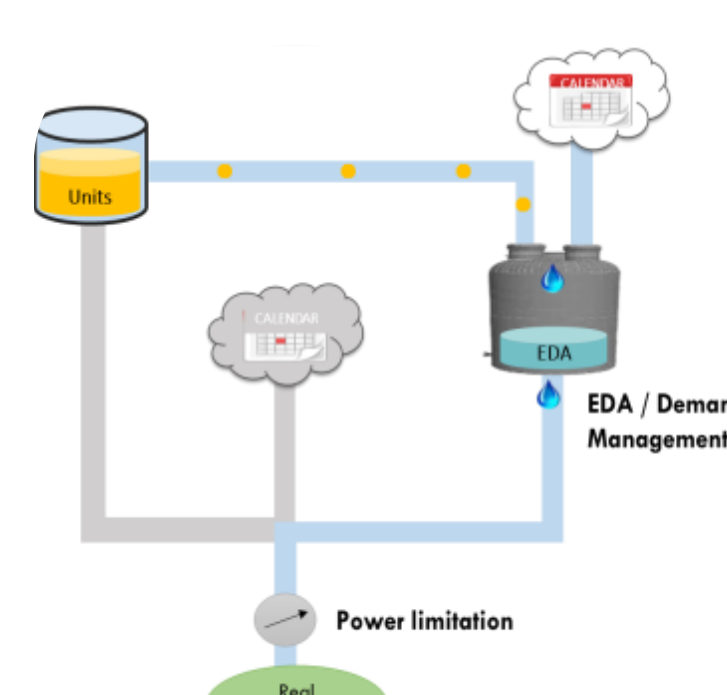


	DOUGUIA	MOMBOU	GUELENDENG
PV Capacity (kWp)	45,4	39,6	36,7
Inverter power (kVA)	6x6	6x6	6x6
Battery capacity (kWh)	440	440	160
LV distribution line (km)	2,7	9,7	5,9
Public lighting (poles)	11	11	30
Objective (connections)	54	138	27
Electrification rate	50%	98%	13%

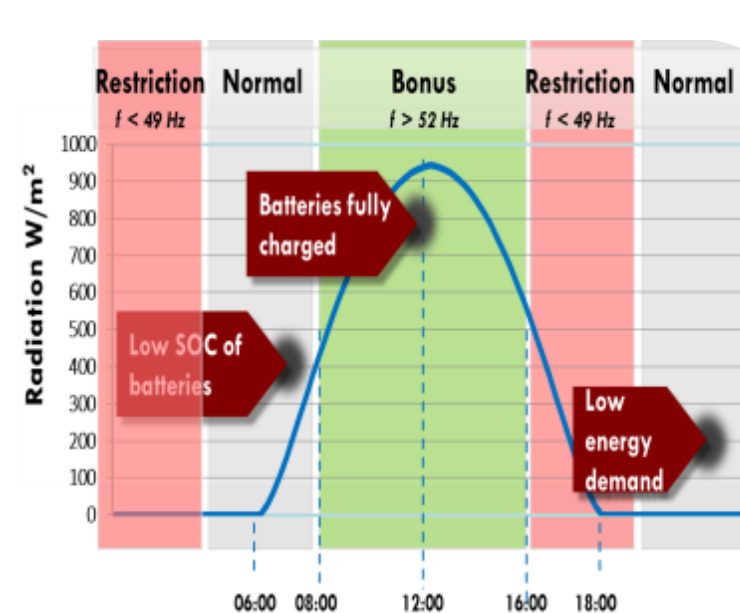
7. CONSTRUCTION & COMMISSIONING



4. ELECTRICITY DISPENSER & EDA



Real time price signal

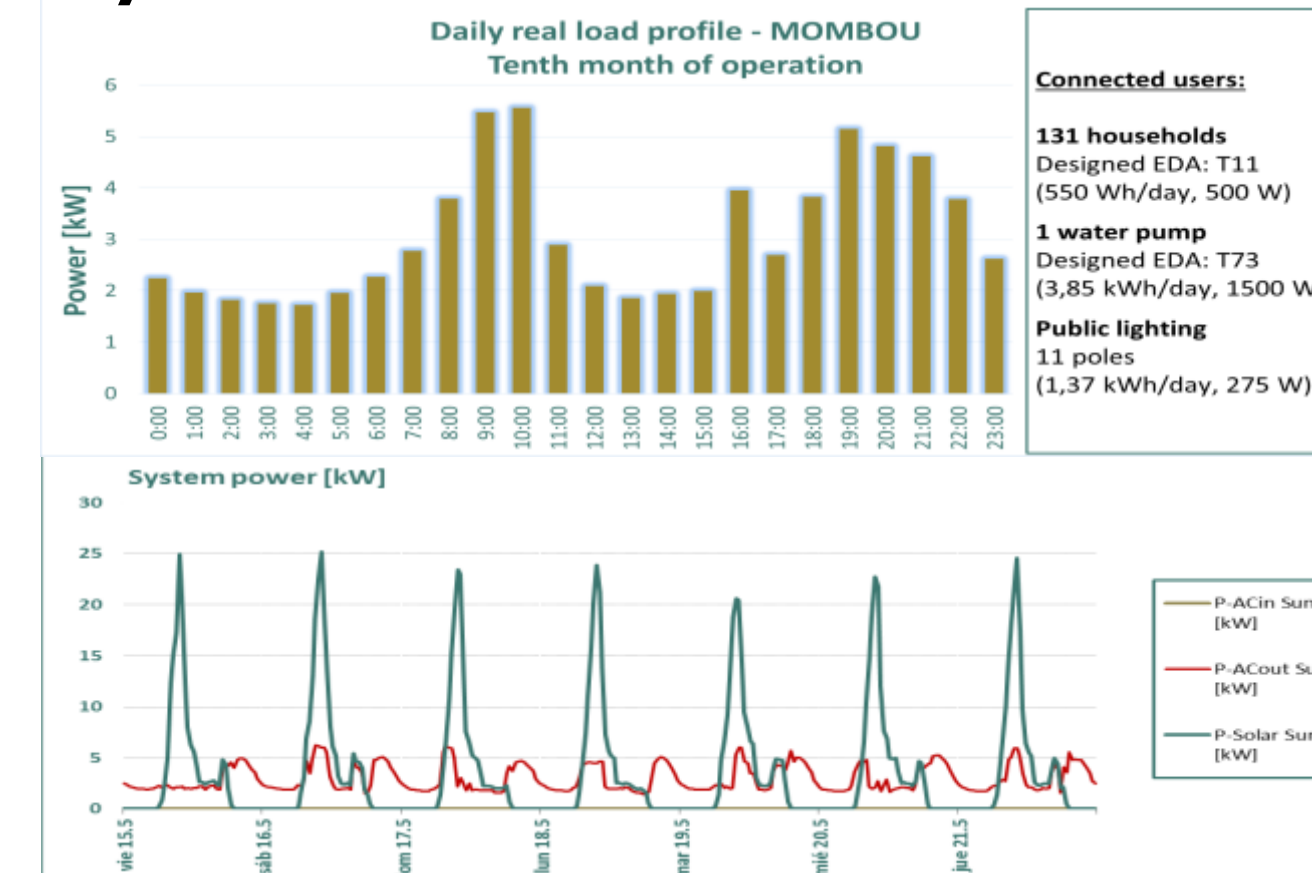


8. ON-SITE CAPACITY BUILDING



9. OPERATION OF THE SERVICE

May 2015



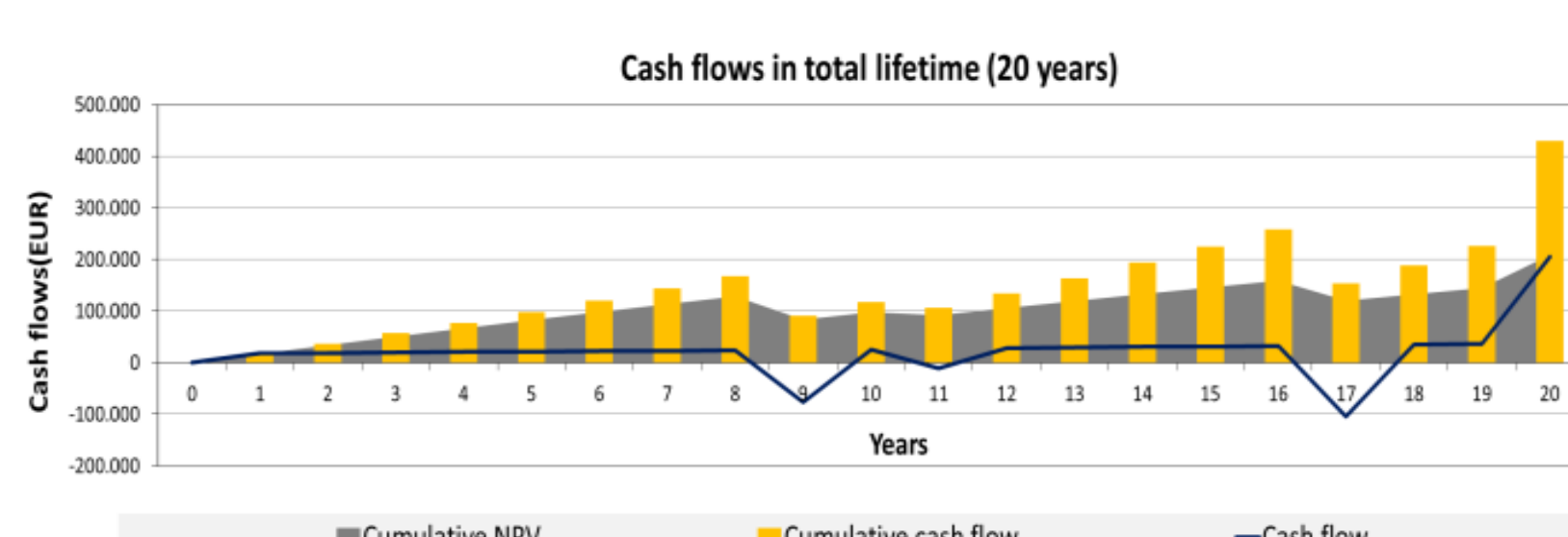
5. BUSINESS MODEL

CAPEX is a public investment

OPEX from tariff revenue real costs based

TTA as concessionaire of the microgrid's operation and maintenance

Light handed regulatory framework based on "agreement with the community"



10. CONCLUSIONS

Technical Solution has surpassed initial expectations, is well adapted to the requirements and has added value features

Management Model first attempt of RE concessionaire model tested but further efforts needed to overcome multiple institutional challenges

Impact to users very positive but limited in 2 villages by available budget

VILLAGE	Nº DOMESTIC	Nº INSTITUTIONAL	Nº PRODUCTIVE
MOMBOU	125	6	3
DOUGUIA	10	9	35
GUELENDENG	0	24	3