

AFRETEP 3rd REGIONAL WORKSHOP
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***IMPACT ON POVERTY REDUCTION OF MINI OFF GRID SOLAR
PHOTOVOLTAIC SYSTEM***

Case study : Ankaranana, remote village in middle region of Madagascar

**Presented by : - VANOMARO Joelinet
- RAZAFINOME Tahiana**
Rural Electrification Agency of Madagascar



CONTENT

- Overview of Power sector in Madagascar
- Description of the infrastructure
- Impact on poverty of the Project

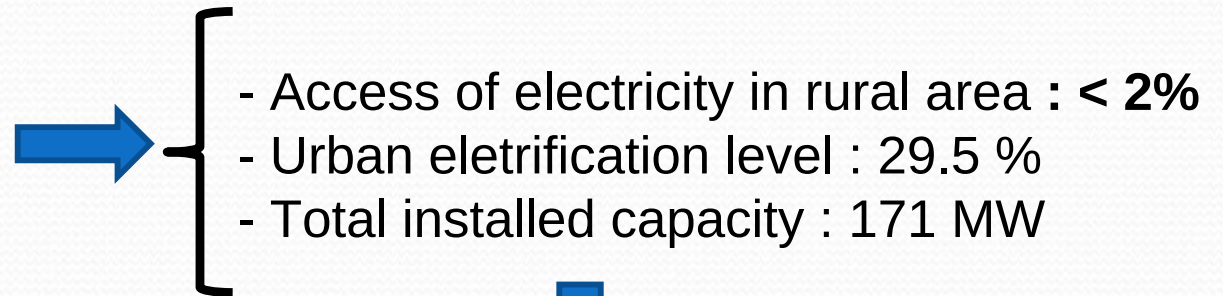


OVERVIEW OF POWER SECTOR IN MADAGASCAR



PHASE I (BEFORE 1999)

- Regime : monopole
- Authority : Ministry of Energy
- Public Company : 01 (JIRAMA)
- Private Company : 0



- Reform of Power Sector : Law n°98 -032
- Liberalization
- PPP
- Creation of **Rural Electrification Agency (ADER)** and Regulation Authority
- National Electricity Fund

PHASE II (2000 - 2010)

- Access of electricity in rural area : **7.8%**
- Urban electrification level : 55.12 %
- Total installed capacity : 434 MW

- Public Company : 01 (JIRAMA)
- Private Company : 27

DESCRIPTION OF THE INFRASTRUCTURE IN OUR CASE STUDY: village of Ankaranana

Localisation

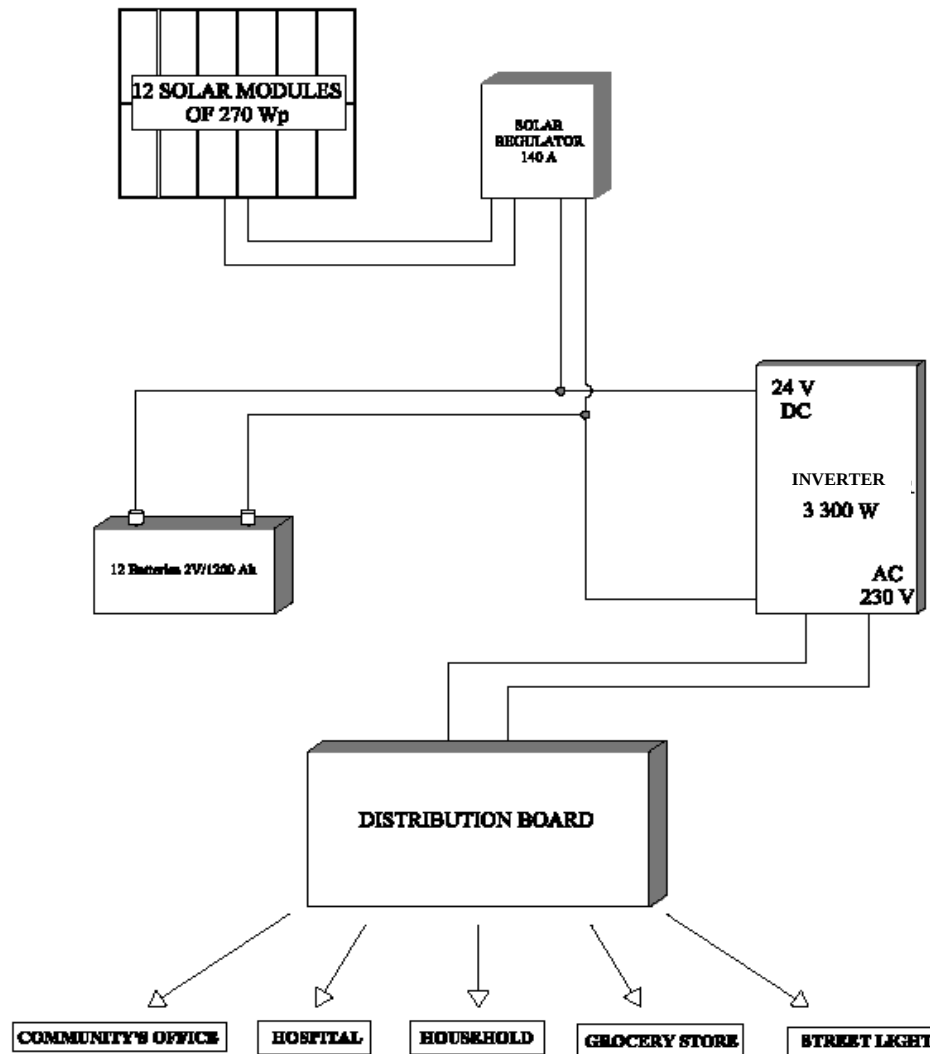


Daily average solar radiation of the site : 6 kWh/m²



DESCRIPTION OF THE INFRASTRUCTURE IN OUR CASE STUDY: village of Ankaranana

Principles of the installation



Equipement

- 01 power house in storage container type LC8 9m3 : 2.44 m x 2.2 m
- 12 solar modules of 270 Wp : **3240 Wp**
- 01 solar regulator of 140 A
- 12 batteries Exide A600 Solar 2V/1200 Ah
- 01 Inverter of 3300 W, 24 V/ 230 V
- 01 distribution board 230 V with main meter and circuit breaker
- 1700 m of distribution line : wire 2x16 mm²
- 12 streets lights



DESCRIPTION OF THE INFRASTRUCTURE IN OUR CASE STUDY: village of Ankaranana

Users :

- 01 Church using 03 bulbs + 01 socket
- 01 Hospital : 06 bulbs + 03 sockets
- 01 community's office : 03 bulbs + 02 sockets
- 03 groceries stores using each 02 bulbs
- 48 households using each 02 bulbs

Nota : power of 01 bulb : 11 W

Financial scheme :

- Investment : 73 122 euros : 86 % Switzeland's NGO
14% government's subsidy
- Without meter, inclusive tariff per month : 0. 393 euro per bulb
1.429 euros per socket

Operator :

Association FAHAZAVANA, with 02 local technicians trained by the Switzeland's NGO for the maintenance



DESCRIPTION OF THE INFRASTRUCTURE IN OUR CASE STUDY: village of Ankaranana

Illustration's photo



Power house and solar module



Regulator – Inverter– Distribution board



Batteries



Street light

IMPACT ON POVERTY OF THE PROJECT

Criteria	Before	After (2011)
Respiratory diseases (per year)	16	10
Distance for charging cellphone's	30 km	< 500 m
Rate of exam success (medium school)	70 %	85%
Lighting's budget allocated per household (monthly)	6.50 euros	0.800 euro
Act of banditry (per year)	8	6
Community's office can use electronic equipment (desktop, printer , etc...)	NO	YES

CONCLUSION

- Contribution in development of the project is significant
 - Health
 - Security
 - Education
 - Money saving
- This project is among of pilot mini off-grid solar PV in my country, but the final assessment needs more time (01 year isn't enough).
- As a pilot, its assessment's result is very usefull to design in social scheme our futur solar PV projetc included in our regional planification.



THANK YOU FOR YOUR KIND ATTENTION