The Case for Renewable Energy

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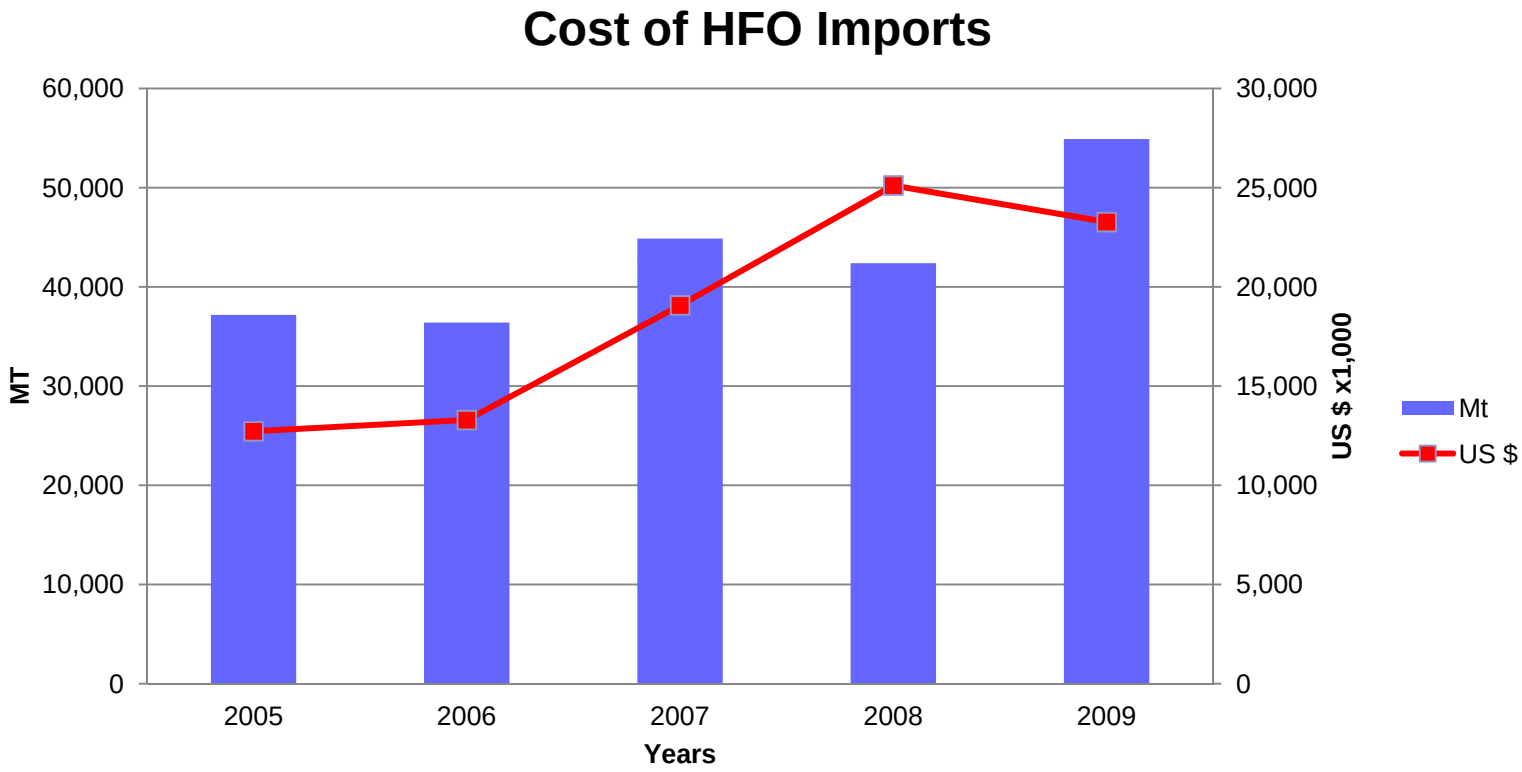
Presentation

- Mode of Power Generation
- Resource Assessment
- Case Stories: RE in the Gambia
- Future development

Power Generation

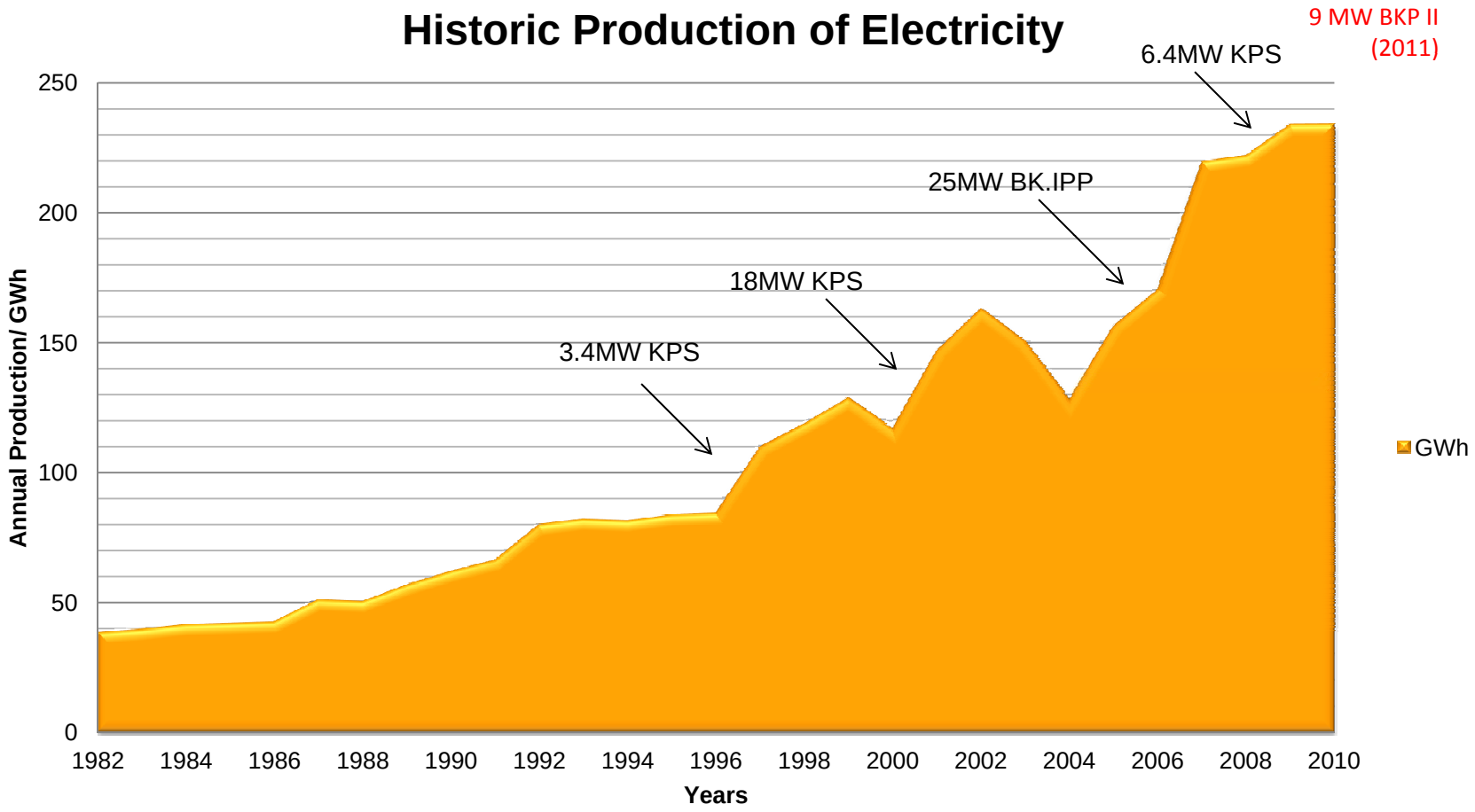
- Rising demand for power
  - 6MW/ yr need to be installed just to meet demand
  - Installation costs rising $1.6m/MW!
- Most of electricity produced from IC engines
  - HFO for main power plants
    - Kotu & Brikama
- Diesel mainly in the Provincial power stations

Cost of Oil imports

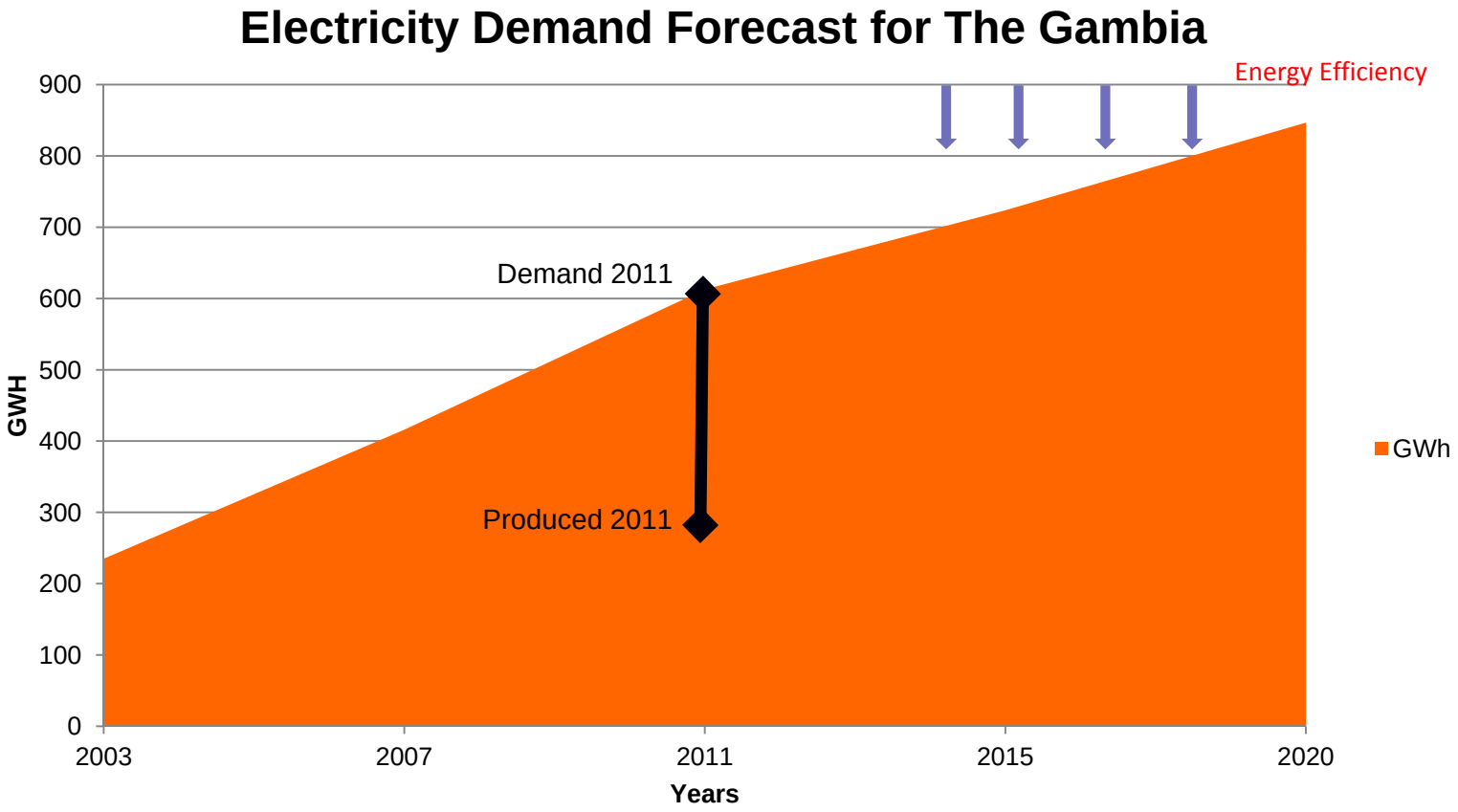


Total fuel Bill was US $75m in 2009

Long Term Production / Investment



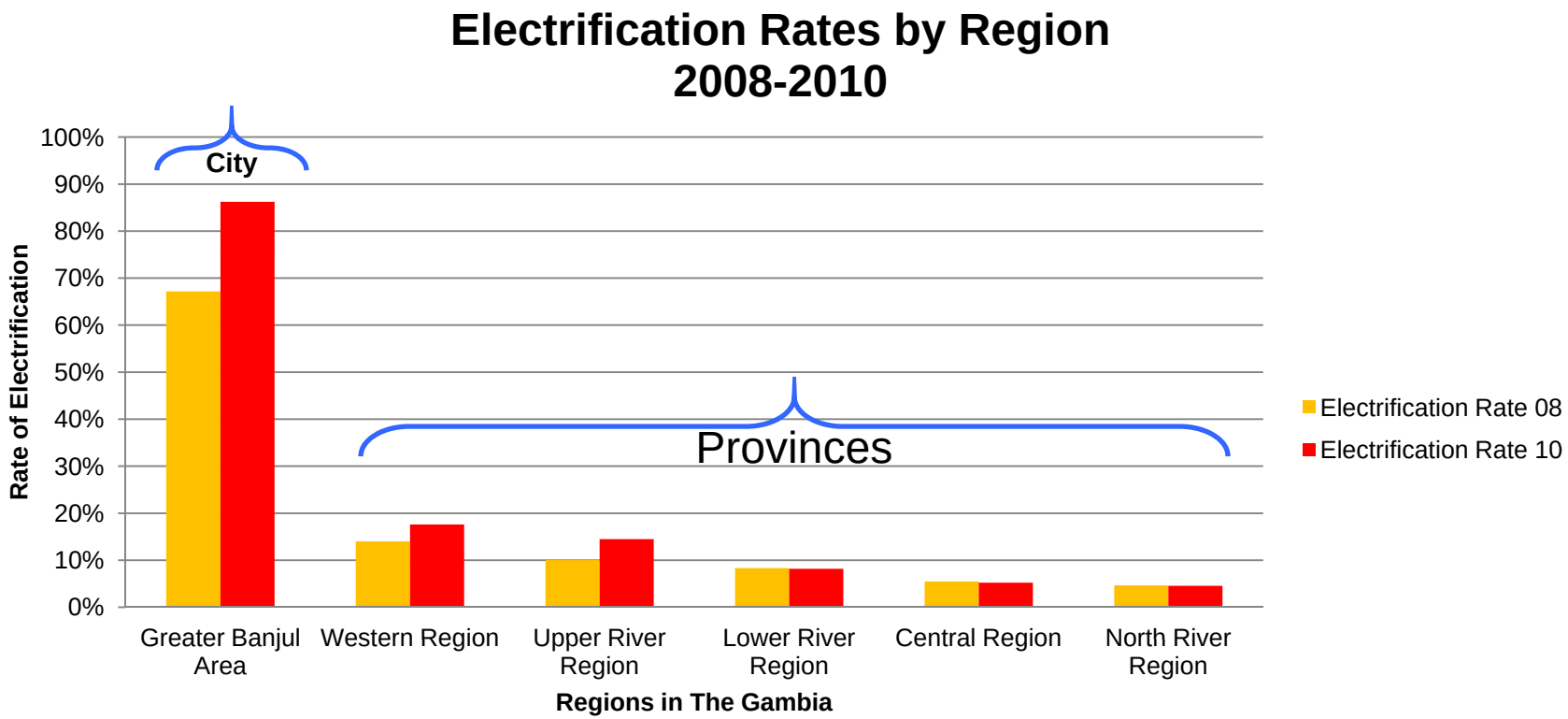
Demand Forecast



613 GWh (2011) WAPP
590 GWh (2010) E. Flores/ Lahmayer GmBH

Source: WAPP Masterplan

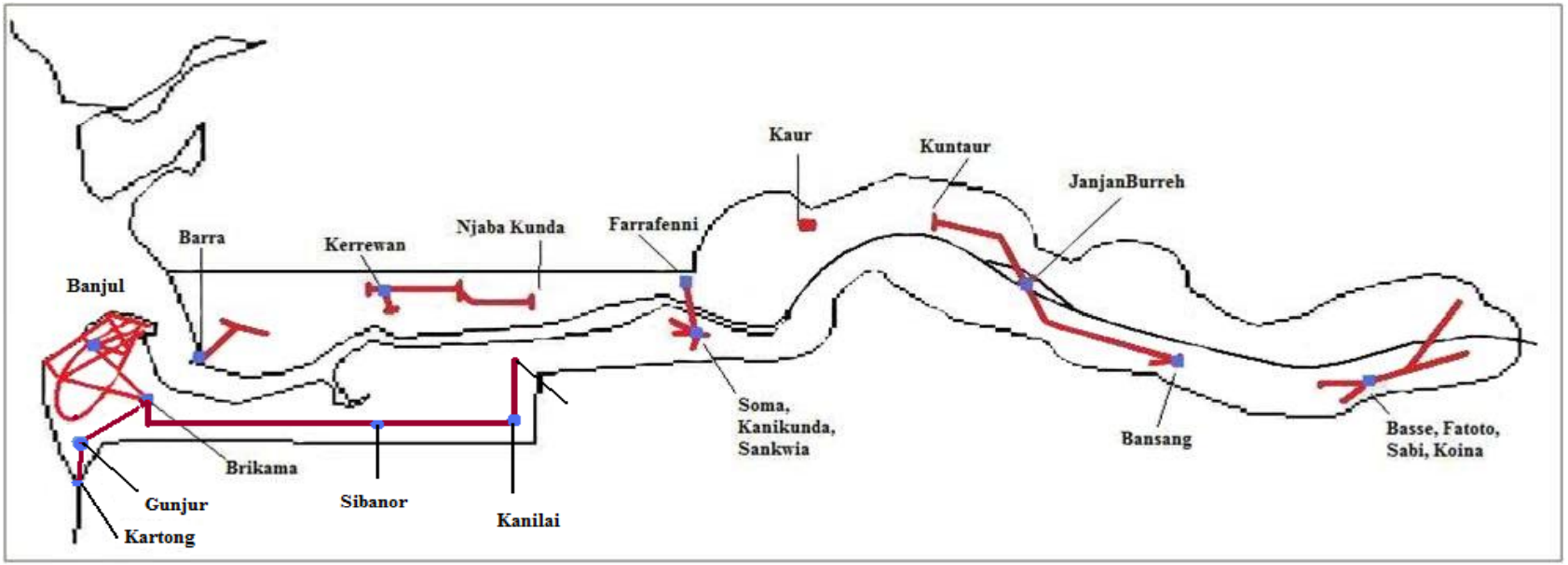
National Electrification



GBOS/NAWEC

National Electrification rate: 35% (2010)

National Electrification



- Network more developed along the coast
- Some Rural Stations:
  - Only 180kW (Kaur)
    - Strong Potential for RE hybrid solutions

Price Parity

Are Renewables Competitive?

Description	Consumption Range	Tariff /kWh (Dalasi)	Tariff /kWh (US $)
Domestic (Residential)	0 - 40 kWh	2.24	0.07
	41 - 600 kWh	7.20	0.24
	601 -1000 kWh	7.75	0.26
	Balance	8.40	0.28
Commercial		8.60	0.29
Hotal/Club/Industries		8.95	0.30
Agriculture		8.00	0.27
Area Councils		8.70	0.29
Central Government		8.70	0.29
Prepayment (Residential)		7.20	0.24

Can we have a FIT more than US $ 0.30 / kWh?

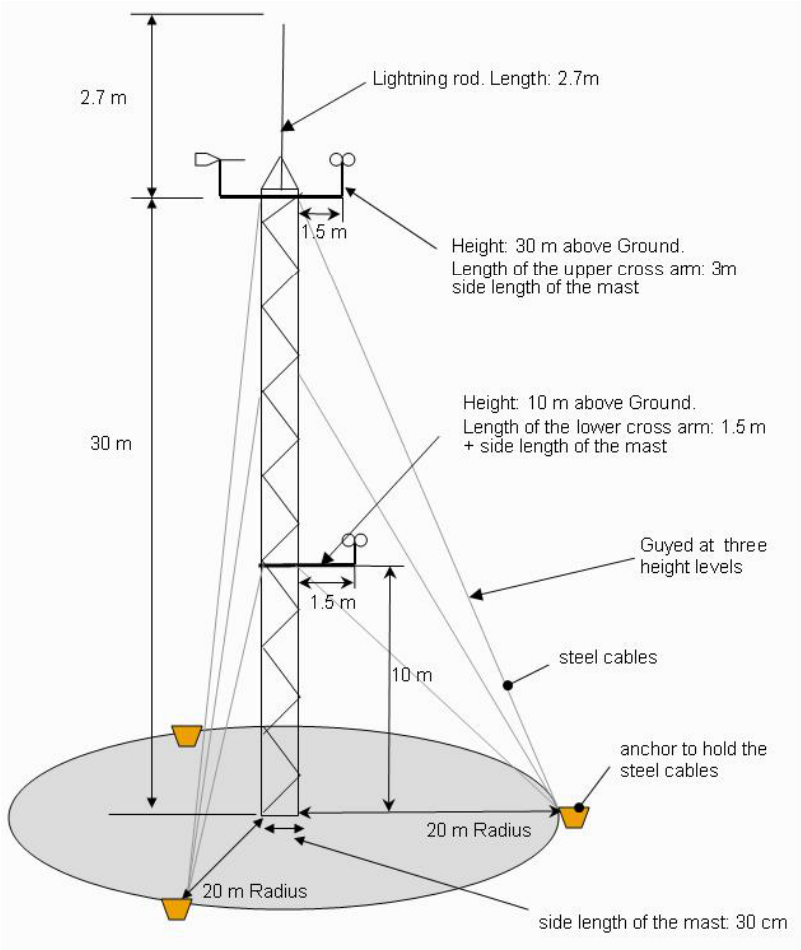
Challenges with fossil fuel

- Price volatility
  - Inability to pass through all costs directly
    - Poverty levels/ affordability
- Rising costs
  - Depletion of FOREX resources
- Logistical costs
  - Transporting diesel to rural power stations
    - Added costs and logistical challenge
- External Costs
  - Environmental etc

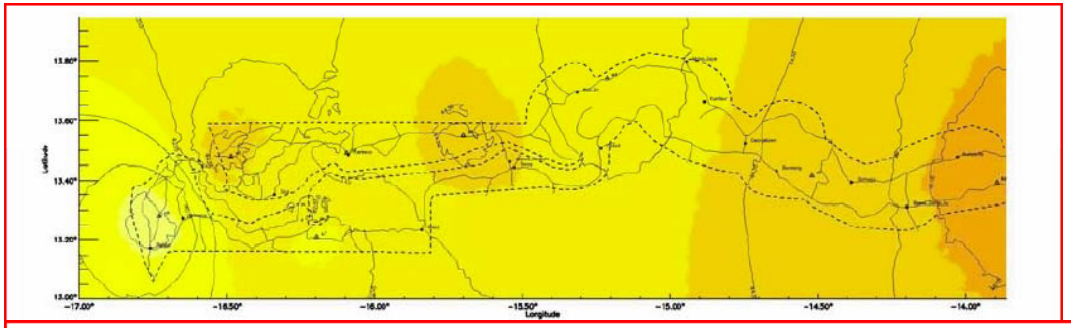
RE in the Gambia

- Long history with Solar PV
- Mainly for rural water supply
  - Cost effective and durable
  - High access to clean water
- Solar PV in residential accommodation
  - Not grid tied.
- Solar water heating
  - Residential
  - Industrial

Resource Assessment 2006

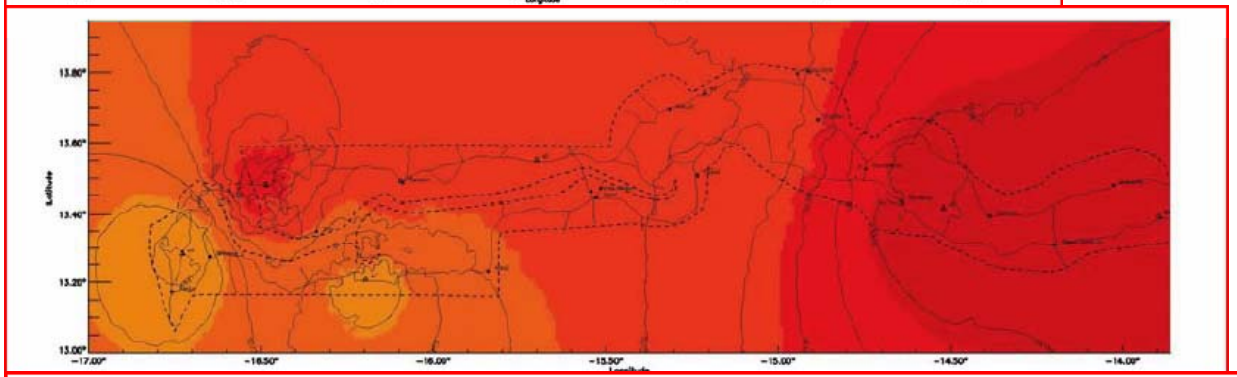


Do we have the Resource?



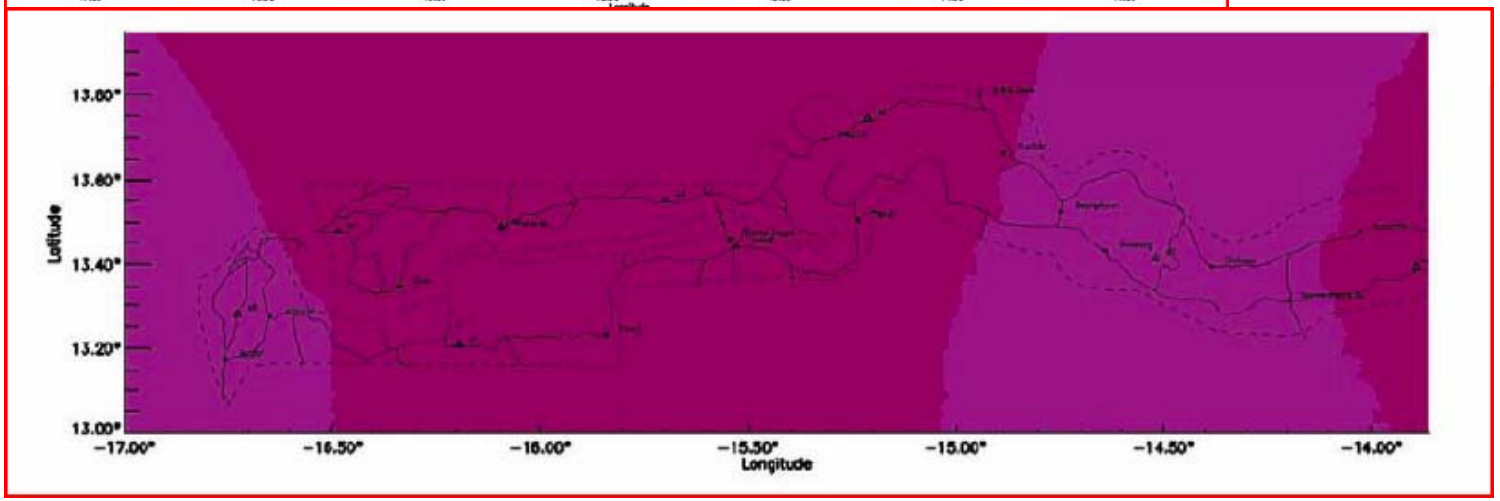
December ’06

4200 Wh/m^2d



February ’06

5800 Wh/m^2d

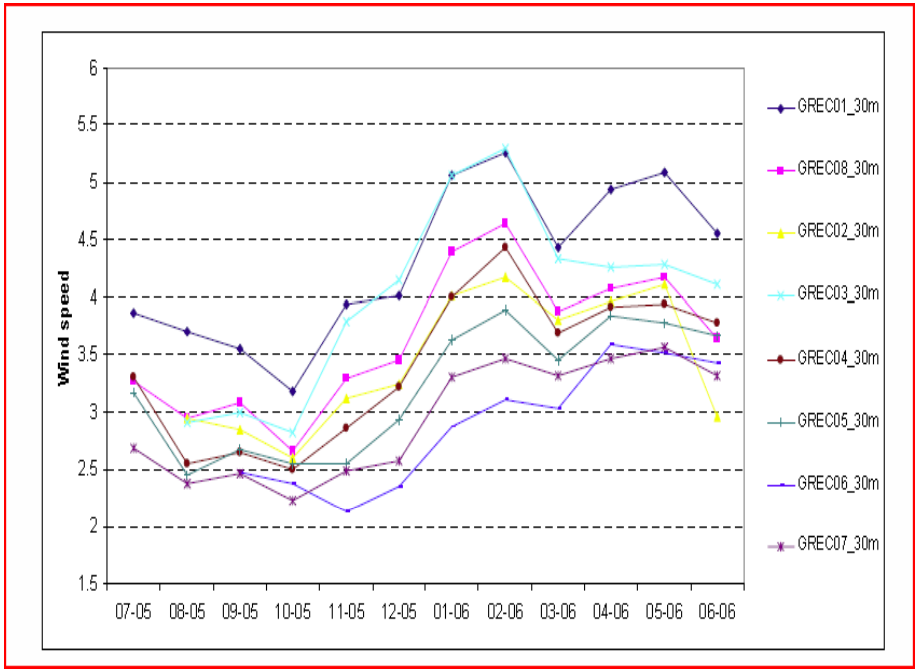


May ’06

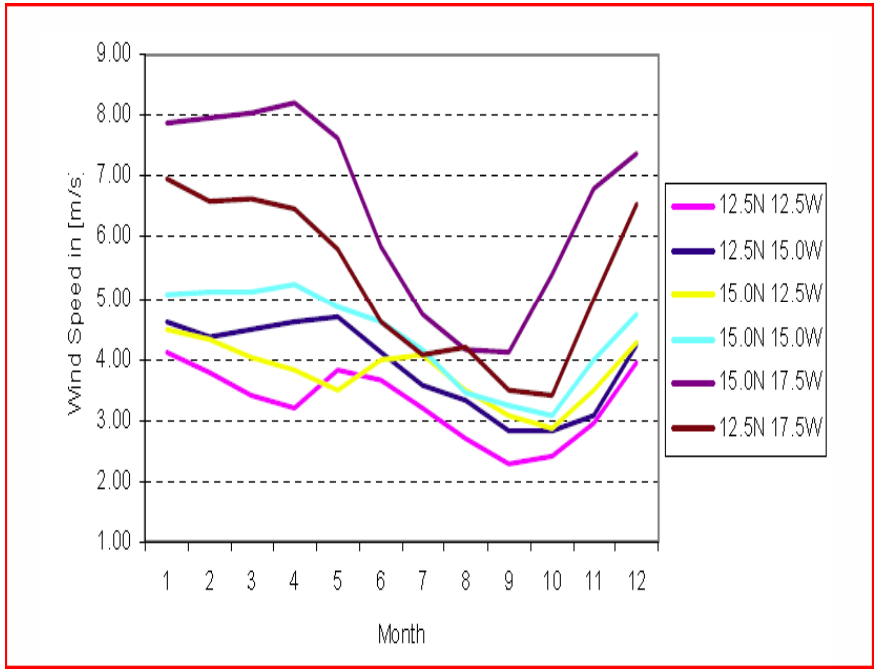
6500 Wh/m^2d

Wind Energy

Measured Wind Data 30m



Projected for 50m



Source: RE Study for The Gambia , MOE / Lahmayer Int'l, E.Flores

Case Study

Batakunku Wind Energy

- 150kVA
- Electrification of a whole village
- Lower tariff
- Lessons learnt
  - Regulatory perspective
    - Light handed regulation
    - Need to streamlining
- Can it be replicated?

Energy Efficiency & Conservation

From Electric/Diesel to Solar

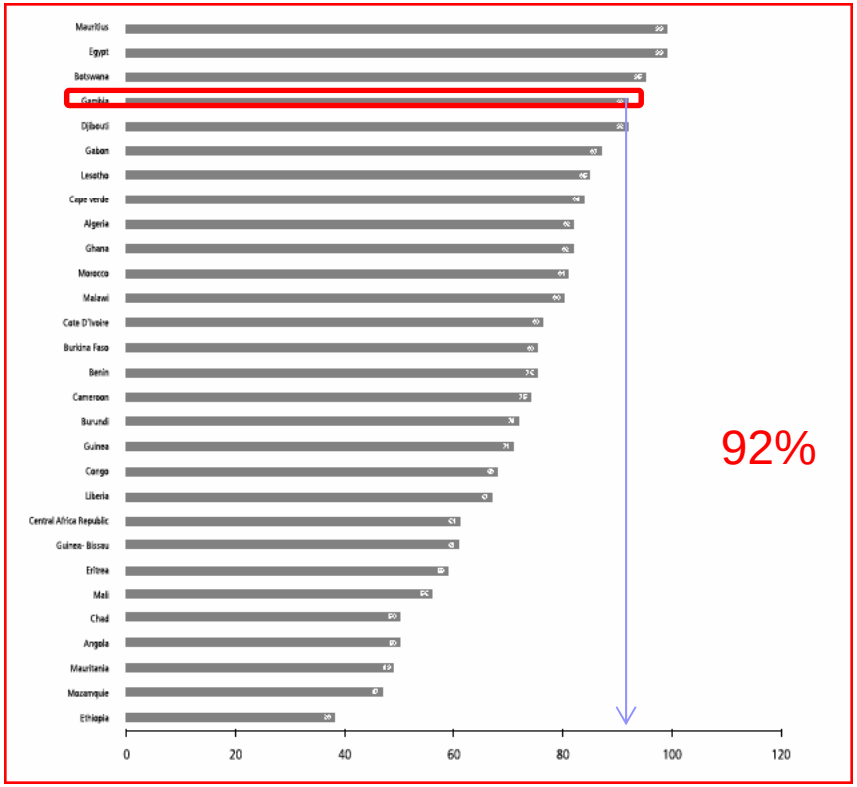
- Installation costs
  - US $ 60,000
- Annual saving
  - US $ 18,000
  - Payback 3 years
- Can be integrated with ECO-Tourism marketing etc
  - Free up a lot of energy

Solar Water system at Kombo Beach Hotel

Impact of Solar PV so far

- Water Pumping

Population with Access to Improved Water Sources



UN-Habitat: Infrastructure Africa Report 2011

IF WE CAN DO IT WITH WATER WHY NOT ELECTRICITY SERVICES?

Future Development

- Wind Energy potential
  - From Batakunku → Wind Farms
- Solar Parks
  - Last five IPP proposal have been on solar PV
    - > 5MW – 10MV
      - Rural hybrid stations
- Develop Policy and Regulatory framework

Way Forward

- Policy Issues
  - RE Law
- Incentives & fast track licensing for RE
- Grid Tied systems coming up
    - Metering and tariff issues
      - Net Metering & Interconnection Guidelines?
        - Grid tied inverters
- Is the utility prepared
  - Technical & interconnection issues
  - What system size qualify for grid connection
- Access to land etc

Thank you