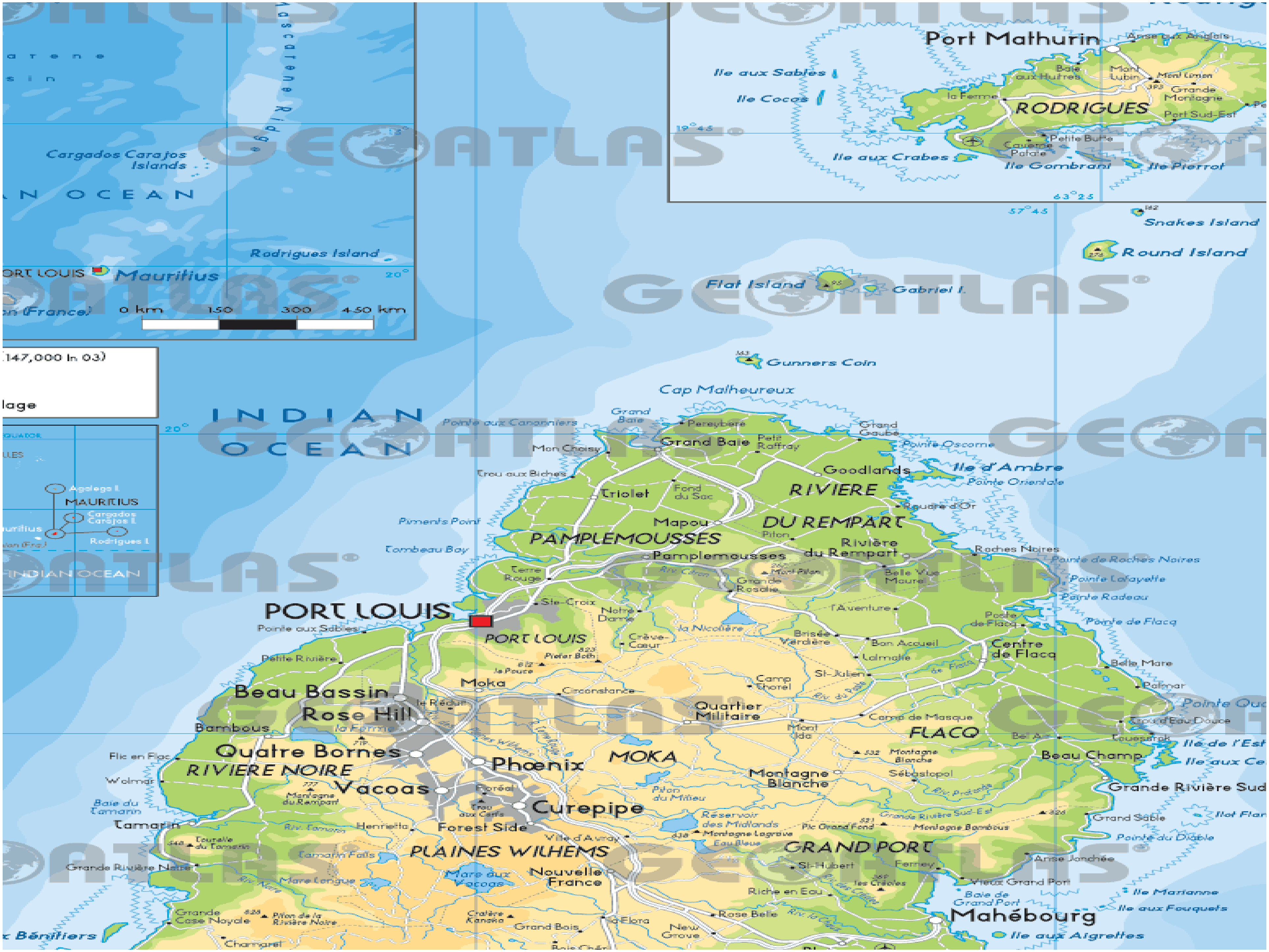
PROMOTION OF CLEAN DEVELOPMENT THROUGH USE OF RETS IN RURAL AREAS IN MAURITIUS

Dr. P.M.K. Soonarane
Ministry of Renewable Energy
&
Public Utilities

Layout of Presentation

- Background
- Analysis of Supply & Demand-Electricity
- Long-term energy strategy 2009-2025
- Useful experience in RETs in rural areas
- Barriers to additional RE use, including in rural & poor areas
- Actions to remove barriers
- 'One size fits all' Green Energy Solution?
- Conclusions



Port Mathurin
Ile aux Sables
Ile Cocos
RODRIGUES
Ile aux Crabes
Ile Gombrani
Ile Pierrot
Cargados Carajos Islands
Rodrigues Island
Mauritius
0 km 150 300 450 km
INDIAN OCEAN
Snakes Island
Round Island
Flat Island
Gabriel I.
Gunners Coin
Cap Malheureux
Grand Baie
Pereybere
Grand Gaube
Goodlands
Ile d'Ambre
RIVIERE DU REMPART
Triolet
Mapou
PAMPLEMOUSSES
Pamplemousses
Rivière du Rempart
Roches Noires
PORT LOUIS
Terre Rouge
Ste-Croix
Beau Bassin
Rose Hill
Moka
Quartier Militaire
Centre de Flacq
FLACQ
Bambous
Quatre Bornes
RIVIERE NOIRE
Vacoas
Phoenix
MOKA
Curepipe
Montagne Blanche
Beau Champ
Grande Rivière Sud
Tamarin
Forest Side
PLAINES WILHEMS
GRAND PORT
Nouvelle France
Mahébourg
Ile aux Aigrettes
Rose Belle
GEOATLAS

ANALYSIS-Supply Sources

- **Imported**
  - **Oil products – 1million tons (includes trans)**
  - **Coal - 600,000 tons**
  - **enegrgy /total bill- Rs 25.5 /Rs 132billion**
- **Local Sources**
  - ***bagasse: 1.6 million tons***
  - ***hydro: 100 GWh/annum***
  - ***solar: 6 kWh/m2***
  - ***wind: 6.5-7.5 m/s***
  - ***ocean: delta 20 oC/sea water cooling***
  - ***geothermal potential***

Analysis-Electricity demand

- **Electricity Demand 2009 (mainland)**
  - *generated* *2300 Gwh*
  - *peak demand* *389 MW*
  - *night load* *200 MW*

- **Electricity Demand 2025 (mainland)**
  - *generated* *4500 GWh*
  - *peak demand* *700 MW*
  - *night load* *350 M*

- **Rodrigues: peak 5 MW**

- **Agalega: peak 60 kW**

Long term energy strategy 2009-2025

Fuel Source		Percentage of Total Electricity Generation			
		2010	2015	2020	2025
Renewable	Bagasse	16%	13%	14%	17%
	Hydro	4%	3%	3%	2%
	Waste to energy	0	5%	4%	4%
	Wind	0	2%	6%	8%
	Solar PV	0	1%	1%	2%
	Geothermal	0	0	0	2%
	Sub-total	20%	24%	28%	35%
Non-Renewable	Fuel Oil	37%	31%	28%	25%
	Coal	43%	45%	44%	40%
	Sub-total	80%	76%	72%	65%
	Total	100%	100%	100%	100%

Useful experience in RETs 1

- Agalega
  - PV for lighting failure
  - no local capacity to maintain system
  - no spare parts, high costs
  - all pv abandoned
  - use of coconut oil in tractors, diesel exorbitant
  - production of coconut oil up 2.5 times
  - coconut husks and shells : gasification/combustion
  - pv re-examined
  - no wind potential
  - technology to be reliable
  - local community to be trained

Useful experience in RETs 2

- Rodrigues
  - previous generation of wind turbines a failure
  - lack of local capacity to maintain system
  - sophisticated electronic wind tracking system
  - not cyclone resistant
  - new generation of wind a success
  - technology cyclone resistant
  - 20-25 local technicians trained

Barriers to additional RE 1

- Lack of comprehensive mapping
  - No wind atlas
  - No solar map
  - No assessment of mini-hydro potential
  - No data on geothermal

- Lack of institutional and legal framework

  - only strategy document
  - no renewable law eg as in china
  - new Ministry of RE, capacity constraint

Barriers 2

- Lack of public awareness
  - fossil technologies shape thinking
  - environmental benefits of RETS not appreciated

- Lack of capacity in implementing and maintaining RETs eg Agalega

- no market chain for technology support
  - chain for commercial fuels well established eg lpg use

- no appetite of banks/RETs risks perceived high

Barriers 3

- lack of norms, standards, code of practice
  - bad experience with SWH subsidy programme
  - absence of standards, market flooded with poor quality equipment
  - installation poorly done
  - public confidence dented
- standards would be introduced for new subsidy scheme
- technical reliability and non-continuous service

Actions to remove barriers

- GEF assistance
  -concept note for $ 2 million approved
  - 4 year project starting in 2011

- EU (EuropeAid) assistance of EUR 1.5 million <u>specifically to address barriers in rural and poor areas</u>
  - concept note approved
  - empowerment of rural communities
  - technicians trained
  - demonstration projects set up

- bilateral aid from JICA
  - complement above
  - demonstration projects
  - scaling up

One size fits all Green Energy Solution ?

- Energy Solutions different within one country
- No universal solution
- Specific to country, with internal specificities
  - level of development
  - type of economic activity
  - cultural eg biogas feedstock
  - market facilities
  - weather/climate
  - type of renewable resource

Conclusions

- Yes, Green Energy Solutions available
- Right choice
- Empowerment of Communities
- State has to remove barriers
- No ‘one size fits all’ solution
- multilateral/bilateral support vital
- start small and scale up


Thank you