



Public Utilities
Regulatory Authority

Equity in development

The Gambia: New Renewable Energy Law and Feed-in-Tariff Rules

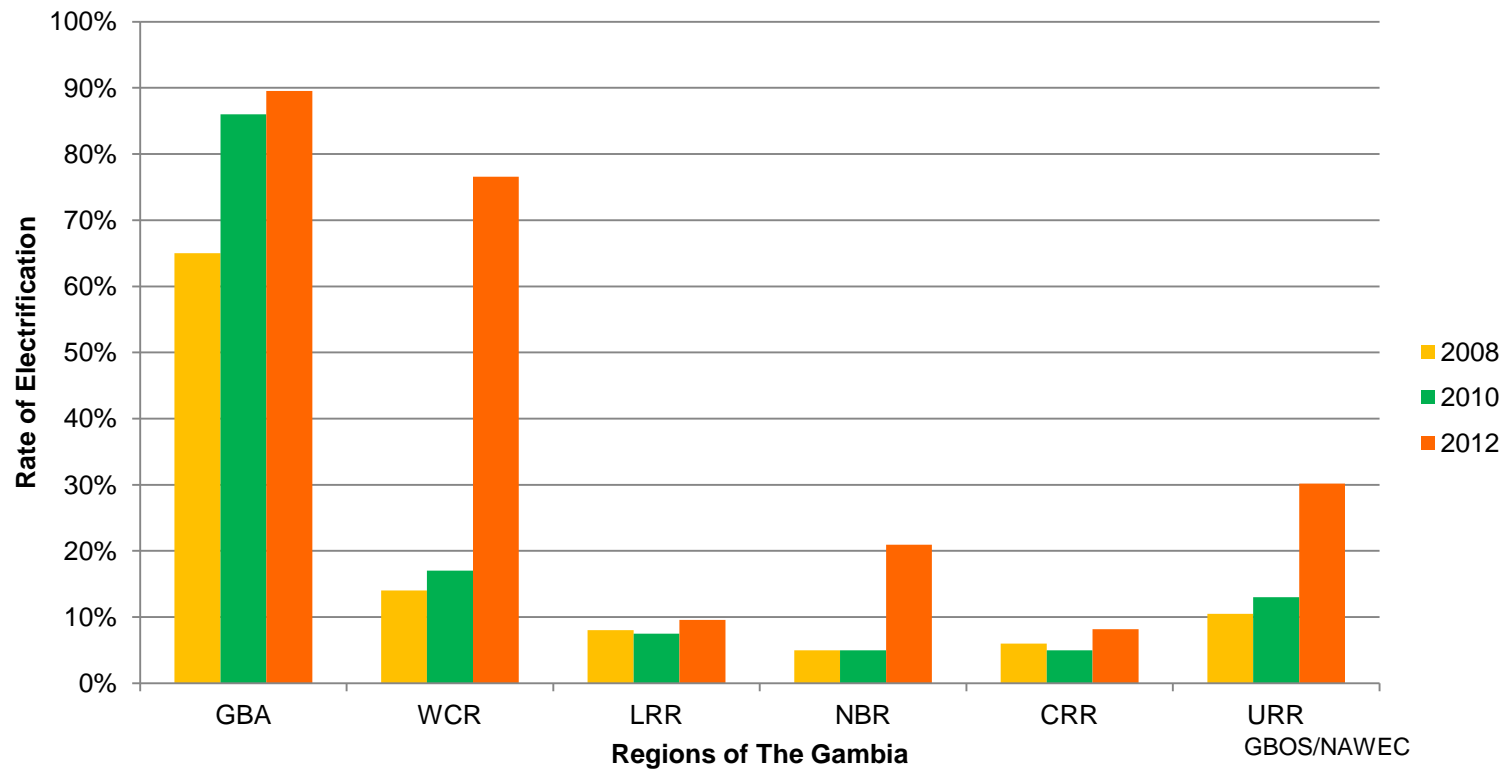
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Presentation

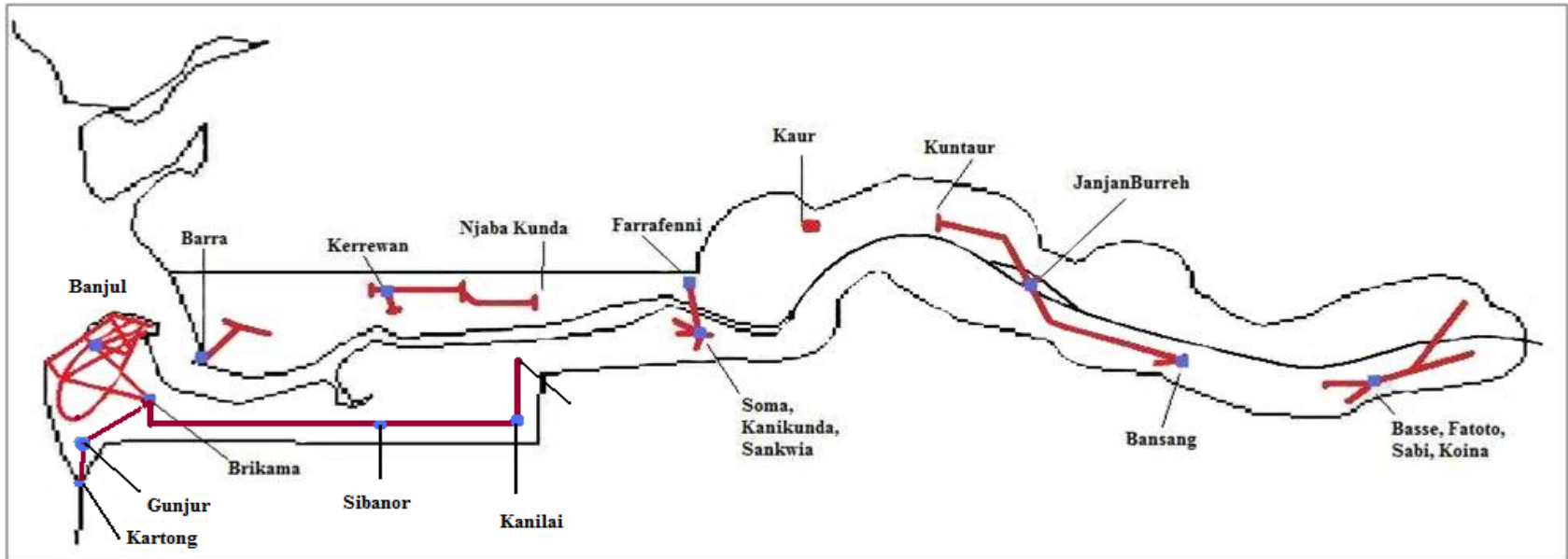
- Electricity sub-Sector in The Gambia
- Promoting RE & Energy Efficiency
- RE Law development
- Feed – in – Tariffs Rules
- Capacity Building

National Electrification

**Electrification Rate by Region
2008 - 2012**



National Electrification



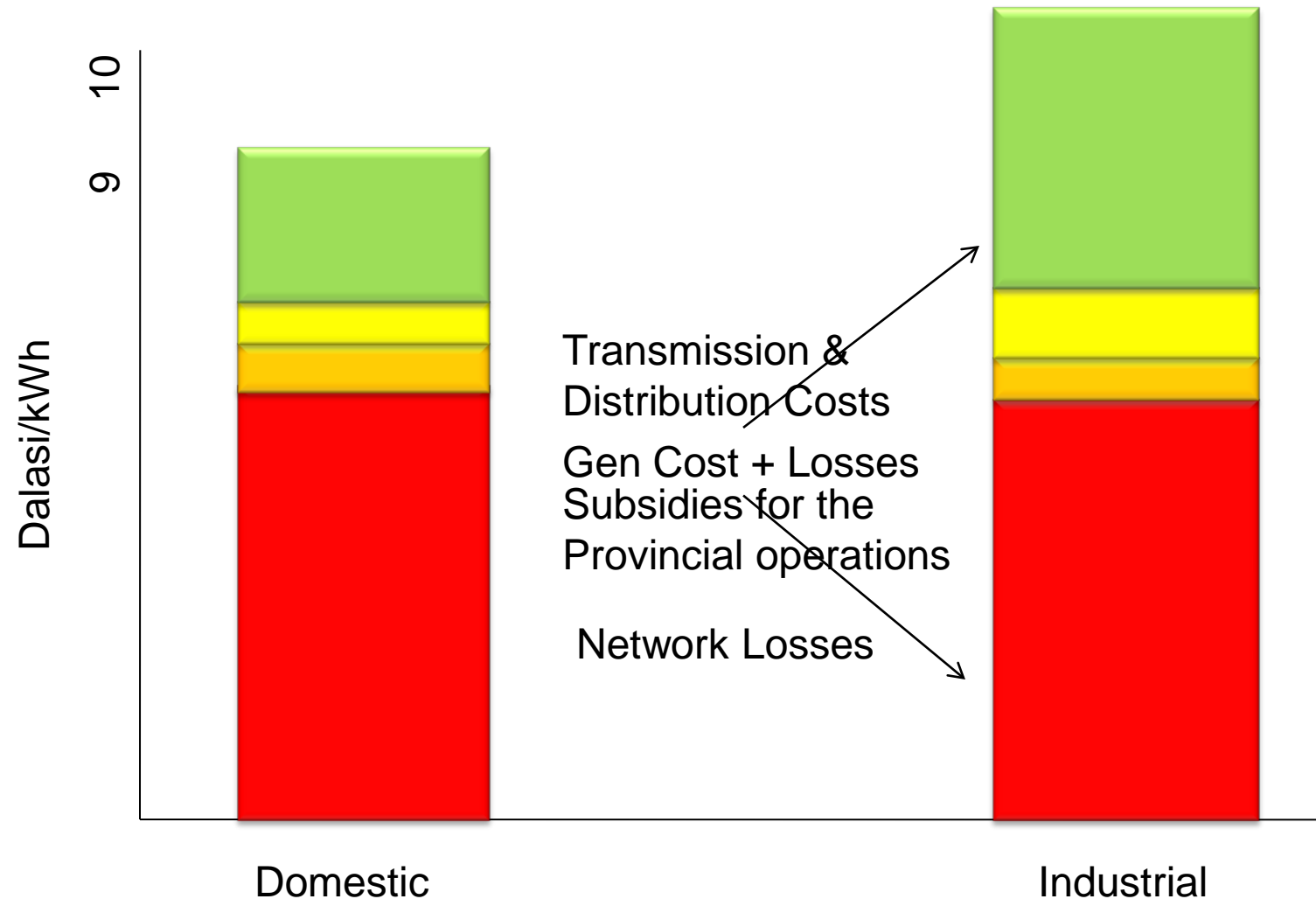
- Network more developed along the coast
- Lack of national transmission backbone
 - Limits large scale RE integration

Tariff increase June 2012

Electricity				
Customer Category	2011 Tariff	New 2012 Tariff	% increase	US ¢ /kWh
	D/kWh	D/kWh		
Domestic (prepayment flat)	7.20	9.10	26%	0.26
Commercial	8.60	9.70	13%	0.28
Hotel / Club / Industries	8.95	10.40	16%	0.34*
Agriculture	8.00	9.10	14%	0.26
Area Councils	8.70	9.70	11%	0.28
Central Government	8.70	9.70	11%	0.28

* VAT included
US \$1 = D35

What are we paying for in each kWh?



Energy Efficiency



- Energy Efficiency Awareness Campaign
 - On Newspapers & Radio Programmes
 - Presentations and Demonstrations
- 2008/2011 CFL Pilot Projects
- Installed 2000 bulbs in Kanifing South
- Installed 1000 bulbs in City of Banjul
 - Switched for free /incandescent bulbs
- Reduce domestic consumption
- Saving for consumers
- Improvement in voltage levels



Grid Connected Renewable Energy

Community Driven Wind Project 2009



GAMWIND Ltd



Net-metering (Renewable)

- Allow small LV producers to be connected
- 2kW Pilot working
- 20kW solar PV installed @ Leo's Hotel
 - www.leos.gm
 - Huge Solar potential



Regulatory Experience: Lessons learnt

- Wind was a new potential energy source

- Domestic / no indexation/ cheaper

- D5/kWh (US ¢ 14 /kWh)

- Solar is now very competitive

- Small scale grid connection has huge potential

- US ¢ 17-19 /kWh

- Grid Access must be made easier

- PPA negotiations should be simplified

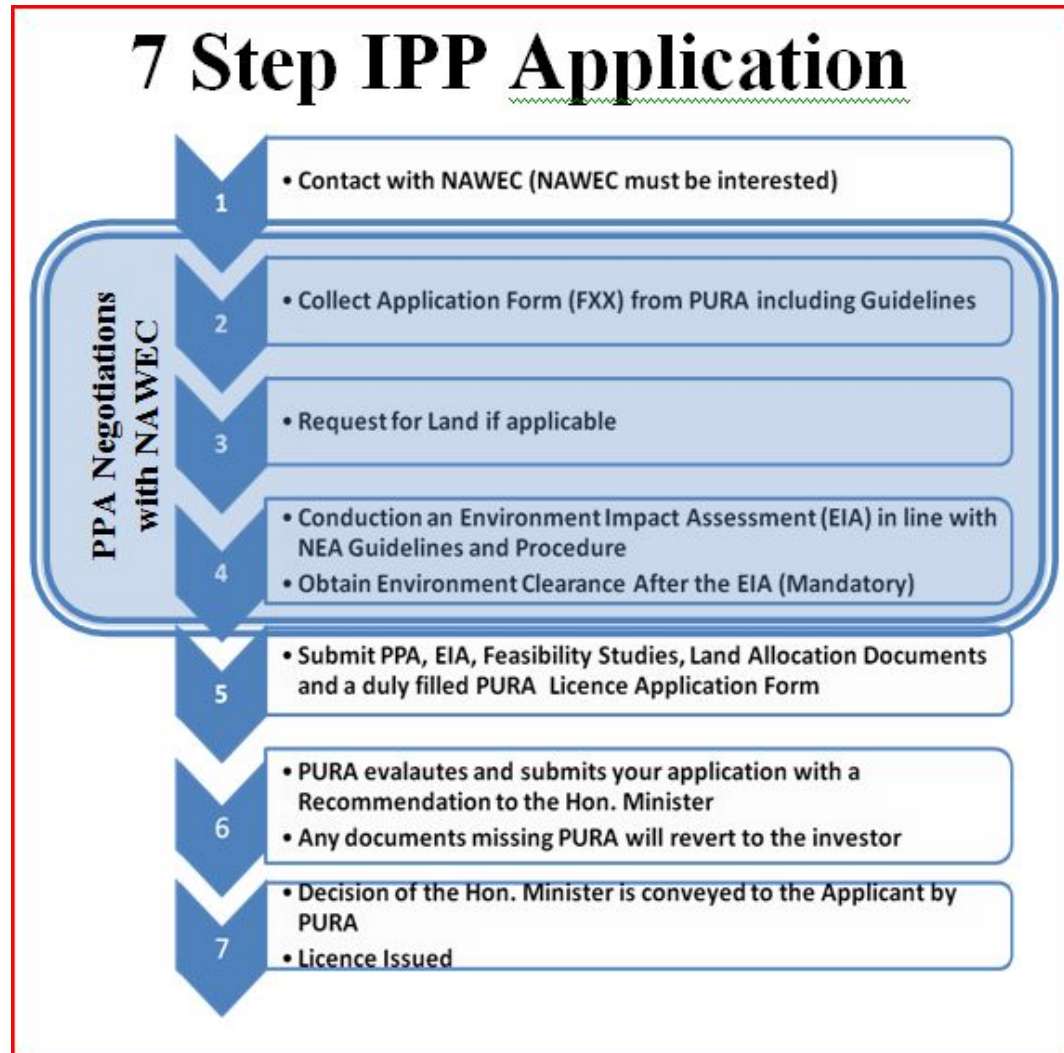
- Monitor Technical issues

- Hz deviations etc

Integrating Renewable

- Develop the RE Interconnection Guideline
 - 4 yrs experience of Batakunku Wind Energy
 - Community owned
- End 2012 - 1MW of grid connected wind
 - GAMWIND Ltd
- Standard PPA just for Renewable
- Developed a Feed-in- Tariff Model
 - Using avoided cost of (HFO plant)
- Allow more Net Metering

Harmonized Licensing Sequence



Challenges for the power sector

- Insufficient transmission and distribution network
- Insufficient generation to meet demand (suppressed Demand)
- Lack of regional interconnection
- Losses
- Insufficient private sector investment
- Relatively high tariffs (**opportunity**)
 - Exposure to international fossil fuel prices

Role of PURA in new RE Law

- Implement the regulatory framework to support renewable energy
- Within the legal framework, define the rules for pricing renewable electricity
- Calculate FIT each year, including announcing the indexed level of existing PPAs.
- Ensure NAWEC implement the rules in practice
- Check that claiming generators are really renewable
- Monitor progress to ensure (1) costs to consumers are within acceptable levels and (2) investment framework is sufficiently stable and attractive
- Issue generation licences.
- Dispute resolution between NAWEC and generators.
- Check that the cap has not been reached, announce once the cap is reached.

Feed in Tariffs - Main Features

- No extra cost to consumers:
- The initial support level to be determined by the avoided cost methodology (LFO/HFO).
- Eligible technologies: solar PV, wind, biogas,
 - biomass. (Subject to review)
- Eligible scale: 20kW to 1.5MW.
- Above 1.5MW, can negotiate traditional PPA.
- Below 20kW: net metering.

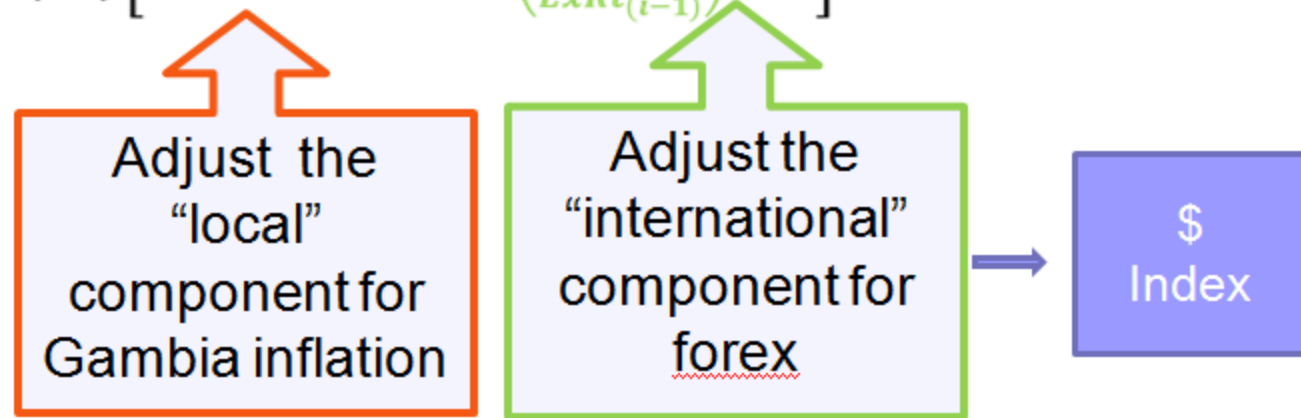
FiT- Rules - Main Features II

- Certainty: PPA for 15 years from plant commissioning. Tariffs published 3 years in advance to give certainty to project developers, and thereafter only adjusted based on indexation.
- Simple benchmarking indexation formula linked to local inflation (for a deemed local component) and foreign exchange rate (US \$, for a deemed international component).

Example of indexation

- The proposed formula will be

$$T_i = T_{(i-1)} \left[(1 + Inf) \cdot LIL + \left(\frac{ExRt_i}{ExRt_{(i-1)}} \right) \cdot FL \right]$$



Where:

T_i Tariff for period "i"

$T_{(i-1)}$ Tariff in previous period (i-1)

Inf = Local inflation in percentage for the year (i.e. 5%)

LIL = Deemed Local Inflation Link (in percentage)

FL = Deemed Foreign Link (in percentage) (LIL + FLC = 1)

$ExRt_i$ = Exchange rate, for period "i"

$ExRt_{(i-1)}$ = Exchange rate, for previous period (i-1)

Feed in Tariff Rules:

- PURA certifies “Eligible Renewable Plant”, that can receive the Feed In Tariffs.
 - Based on an “Eligible Renewable Technology” (Annual Authority Announcement)
 - Capacity is no greater than the “Specified Maximum Capacity” and no lower than the “Specified Minimum Capacity” (Annual Authority Announcement)
 - Operated in compliance with the FiT- Rules, the **Standard Power Purchase Agreement**, the terms of its Generation Licence and all pertinent laws
 - Complies with any “special requirements” which PURA impose.

Feed in Tariff Rules:

- FIT will be set in Dalasi/kWh of delivered electricity.
- Feed In Tariffs calculated in accordance with a methodology set out by the Authority and approved by the Minister of Energy.
- Generator and NAWEC shall enter into a RE Standard PPA.
- Annual Authority Announcement each year, including the adjusted FIT

Tariff Setting Approach

- Renewable technology cost-based approach
 - This approach allows costs to be targeted to technologies, and results in the competitive technologies being favoured.
 - There is a requirement for high levels of regulatory scrutiny at both the initial tariff setting and regular tariff reviews.
 - The cost to consumers is will not increase because more expensive technologies are unlikely to be supported. Government policy is not to allow any additional costs to consumers.

Tariff Setting Approach

- **Private avoided costs methodology** (a single tariff which represents the avoided cost of the alternative form of generation). 10MW HFO/Diesel
 - Simplest approach: single tariff based on existing technologies.
 - Might not be enough to foster the development of some renewable technologies.
 - High cost of current generation means renewables compete more easily

Feed in Tariff Rules:

- Duration

- FIT cover fifteen (15) years from the date of commissioning. After this, if plants continue to operate, future tariffs may be freely negotiated... in compliance with any rules set by PURA.

- Reviewing the Feed In Tariffs for existing projects:

- FIT for existing projects only reviewed based only on an index to inflation for the “Deemed Local Inflation Link” and an index to the dollar Exchange Rate for the “Deemed Foreign Link”, and not for any other reason
 - Announcement of the FIT levels for new projects three fiscal years in advance on a rolling basis, and once announced only reviewed based on indexation

Annual Tariff Announcements

Year Zero

PURA announces prices for years 1,2 and 3 based on current avoided cost.

Year One

PURA adjusts prices for years 1, 2 and 3 for indexation (50% Forex and 50% inflation).

Year Two

PURA adjusts prices for years 2, 3 & Announces new prices for Year 4,5 and 6 based on current avoided cost.

Year Three

PURA adjusts prices for years 3-6 for indexation.

Year Four

PURA adjusts prices for years 4-6 for indexation.

Year Five

PURA adjusts prices for years 5,6 for indexation.
Announces prices for 7,8,9 based on current avoided cost

Projects commissioned in year 1 get the year 1 FIT adjusted for indexation for the full 15 year PPA

Projects commissioned in year 2 get the year 2 FIT adjusted for indexation for the full PPA

Year 3 projects get the year 3 FIT adjusted for index. for the full PPA

Feed in Tariff Rules:

Administration

- **Reporting:** PURA shall consolidate and report on renewable generation (information provided by NAWEC) .

- **Certification:**

- Must apply to PURA to get formal recognition as an Eligible Renewable Plant (rules set out minimum information required)
- PURA will respond on a first come, first serve basis, within two months, based on compliance with the rules and technical suitability.

Settlement

- Paying renewable generators for their power
 - the payments would come from NAWEC as the single transmission company and electricity supplier.
- Frequency of Payments
 - 20kW-100kW paid every 3 months.
 - 100kW to 1.5MW paid every month.
- Auditing the scheme to ensure that it is being followed correctly.
 - Where generation from a particular plant seems unusual or fraud is suspected, PURA will have the right to audit the site and ensure that the generation is from the source claimed.

RE Capacity Building

- Shift towards RE requires acquisition of new skills set (regulators/operators etc)
 - Training through NARUC (Peer Reviews)
 - Lot of exposure to US experience (material etc)
 - US experts in house training in The Gambia
 - Regional Fora
 - AFUR/ ERERA/ ECREEE
 - regional workshops
 - Implement pilots projects
 - Learn from mistakes



Skills Transfer / Know -how

