

Renewable Readiness Assessment in Kiribati

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Presentation Outline

- ▶ Energy Systems in Kiribati
- ▶ Challenges in Kiribati
- ▶ RRA in Kiribati
- ▶ RRA Outcome
- ▶ RRA Output
- ▶ What next???

Energy Systems in Kiribati

- Diesel power generation systems
 - 5.45 MW – South Tarawa
 - 1.540 MW – Kiritimati Island

- Solar Power generation systems
 - Small solar systems in Outer Islands
 - 18 kWp – Grid connect system (Kiritimati Island) – WB

- Solar Pumping Systems
 - Communities in Outer Islands

- Bio mass
 - Coconut husk, waste of copra production, etc

Energy Systems – Con't

- Bio fuel
 - Various tests and trials have been conducted
 - Feasibility study result for Kiritimati Island is positive
- Wind Energy
 - Wind resource assessment is currently underway in Tarawa and Abaiang.
 - Feasibility study result for Kiritimati Island is positive
- Ocean Energy – a resource for the future
 - Should be monitored and if show promise, a resource survey should be carried out

Key Challenges

- ▶ Limited capacity
 - Business management, planning, record keeping
 - Project development
 - Operation, maintenance
 - Quality control, testing and processing of CNO
- ▶ Emerging Challenges
 - Standards and guideline needs to be developed
 - Sustainability of the system
 - Incentives to up-scale use and investment in RE
 - Funding

Key Challenges – Con't

▶ Other Challenges

- Efficient use of electricity produced.
- Reliable shipments of Copra
- Enabling policies and legislation for RE
- others

RRA in Kiribati

- ▶ RRA workshop is conducted on 1–3 Oct, 2012
- ▶ Involve regional bodies (SPC/GIZ), development partners (ADB, WB), international biofuel experts, stakeholders & private companies in Kiribati
- ▶ Identify main service–resource and compile issues with recommended actions
- ▶ Develop a fuel reduction target by 2025

6 main service-resources

- I. Grid-Connected Solar PVs
- II. CNO Biofuels for PUB Power Generation
- III. Off-Grid Solar PVs
- IV. Off-Grid CNO-Based Biofuels for Power Generation
- V. CNO-Based Biofuels for Transportation
- VI. Legislation and Policy

I. Grid-Connected Solar PVs

Issues and status:

- ▶ 900kWp PV-grid completed by PEC and UAE to Tarawa grid.
- ▶ 500kWp PV-grid installation by WB to Tarawa grid underway.
- ▶ Grid- stability will be a major concern for increasing the PV penetration to the grid.
- ▶ No Net-metering policy in place if private sector is to be involved. (e.g ANZ Kiritmati, KSEC and USP Kiribati installed PV systems).
- ▶ Limited experience in large-scale on grid-connected systems

I. Grid-Connected Solar PVs

Recommended actions:

- ▶ Initiatives to maintain grid stability
- ▶ Developing net-metering regulations or legislation
- ▶ Capacity building
- ▶ Developing standards and regulations for grid-connected solar systems
- ▶ Donor co-ordination

II. CNO Biofuels for PUB Power Generation

Issues:

- ▶ Engine risk is a big concern for the Utility
- ▶ Price variability of CNO
- ▶ Shipping constraint
- ▶ Large surplus of husks and shells if copra production increased for CNO biofuels production
- ▶ Proper oil quality need

II. CNO Biofuels for PUB Power Generation

Recommended actions:

- ▶ Prepare a CNO implementation plan (pg 44).
- ▶ Include a CNO-capable base load engine at the PUB.
- ▶ Establish a testing facility for CNO for fuel use.
- ▶ Establish small mobile mills to avoid shipping problems.

III. Off-Grid Solar PVs

Issues:

- ▶ Rehabilitation of the outer island solar installations and regaining the confidence of outer island solar customers
- ▶ No proper design, operation and management process for small Islands grid developments.
- ▶ What off-grid project concepts make sense for Kiribati at this time? Is it for residences? For businesses? For schools? For health centres?
- ▶ Current status for rural off-grid:
 - ▶ Residences & businesses – 100% covered by EU EDF10 and Taiwan.
 - ▶ 11 Boarding schools – 100% EU-EDF10 and remaining EU-ACSE (2), Italy (1), IUCN (1).

III. Off-Grid Solar PVs

Recommended actions:

- ▶ Rural Electrification Implementation Plan.
- ▶ Combine solar maintenance under one agency (central coordination).

IV. Off-Grid CNO-Based Biofuels for Power Generation

Issues:

- ▶ CNO is likely to be more expensive for outer island generation, compared to solar.
- ▶ Should CNO be the fuel of choice for back up generation during the extended periods of cloudy weather?

IV. Off-Grid CNO-Based Biofuels for Power Generation

Recommended actions:

- ▶ Solar versus CNO for the outer island mini-grids
- ▶ Solar versus CNO for Kiritimati grid.

V. CNO-Based Biofuels for Transportation

Issues:

- ▶ Unlike diesel generators on the grid , ship engines may be operated for extended periods at low power levels, such as while manoeuvring into port or while anchored
- ▶ A biofuel quality standard for shipping
- ▶ A need to establish biofuel dispensing sites for land transport following approval of biofuel standards

V. CNO-Based Biofuels for Transportation

Recommended actions:

- ▶ Testing facility for CNO as a transport fuel.
- ▶ Shipping trial with CNO

VI. Legislation and Policy

Issues:

- ▶ What legislation, policies, incentives and regulation are needed for private sector development?
- ▶ What are the policy and legislation gaps that may cause problems for the future as the use of renewable energy increases /
- ▶ What additional institutional structures or changes in existing ones are needed to best support renewable energy in Kiribati?
- ▶ What renewable energy standards and design guidelines are needed to assure that all installations can be sustained by Kiribati institutions? How will training to meet standards be delivered and to whom? Who should enforce the installation and design standards?

VI. Legislation and Policy

Recommended actions:

- ▶ Establish a stakeholder-based coordinating committee for energy development coordination.
- ▶ Review of the existing regulatory and policy situation.
- ▶ Review the KSEC business model review.
- ▶ Establish standards and guidelines for renewable energy development.
- ▶ Create a more comprehensive omnibus act for energy.

RRA Outcome

Fuel use reduction target (electricity) by 2025
(RE:EE)

- South Tarawa to 45% (22:23)
- Kiritimati Island to 60% (40:20)
- Rural public infrastructure 60% (40:20)
- Rural public and private institutions 100% (RE)

What next?

Plan implementation

- Funding assistance
- Technical assistance
- etc

THANK YOU

