

Republic of Palau

ENERGY POLICY (A)

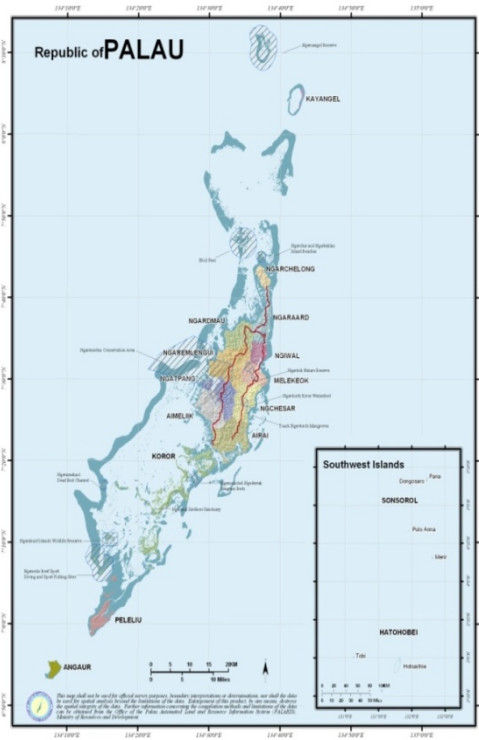
JICA

TRAINING COURSE 2010



Outline

- ◎ Palau – National Circumstance
- ◎ Current Energy Policy & measures
- ◎ Energy Demand & Supply (Stats)
- ◎ Gaps & Constraints
- ◎ Policy Difficulties
- ◎ Q & A



Palau - National Circumstance

- Palau consist of 386 islands, of which 9 are inhabited;
- Land area: 535 sq. km/ 25 % is below sea level;
- Made up of 5 geological island types: volcanic, high limestone, low limestone, atolls, and a combination of volcanic and limestone;
- Climate: Tropical rainy climate;
- Temperature: mean is 82°F;
- Rainfall: 150 inches per year;
- Population: 20,273 (median projections)
- Main industry: Tourism Industry





Current Energy Policy & Measures

VISION: “GREEN ENERGY MICRONESIA” (GEM)

GOAL: 20-30-20

- ✓20% Renewable Energy
- ✓30% EE & EC
- ✓Year 2020

- I. Provide clear direction on the future of Palau’s Energy sector
- II. Appropriate regulation to securely deliver energy services at competitive prices.
- III. Maximize cost-effective EE , EC & RE resources while safeguarding our environment
- IV. Promoting environmentally sustainable energy technologies with the aim to substitute fossil fuels
- V. Supporting consumers through the transition towards a new energy sector.



Policy & Measures continued

1. Improved Institutional Arrangements for Energy Sector Management
 - Upgrade to a Division or Bureau
2. Energy Efficiency (EE) & Energy Conservation (EC)
 - 30% improvement by year 2020
3. Renewable Energy
 - 20% by year 2020
4. Imported Fuel & Hydro carbons
 - Pursue opportunities / mechanisms for obtaining competitive fuel prices
 - Legal framework
1. Electric Power
 - Laws & Regulations that will ensure Security, Reliability & efficiency of power supply by the Utility.
 - Private sector participation (IPP)



Energy Supply

- ❖ Palau Public Utility Corporation
 - Sole power producer (by legislation)
 - Installed Capacity – 36MW
 - Current available output – 20MW
 - 95% of energy consumers supplied by central grid consisting of two power plants
 - Rest are independent plants on 3 isolated outer islands.
 - All are Diesel based generators

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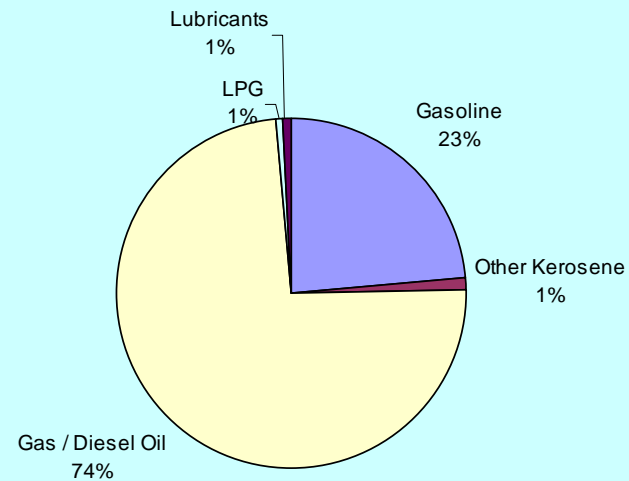


- 99.3% of electricity is produced by diesel based generators.
- Estimated at 12 million gallons per annum of diesel import.

FUEL BREAKDOWN

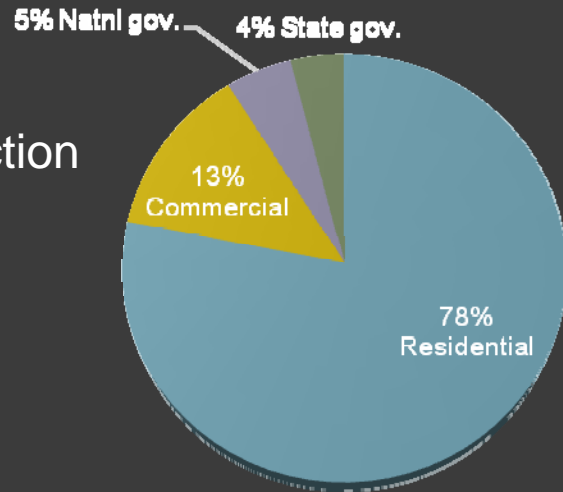
| Fuel Type | Consumption (TJ) |
|------------------|------------------|
| Gasoline | 267.26 |
| Other Kerosene | 14.16 |
| Gas / Diesel Oil | 840.07 |
| LPG | 6.18 |
| Lubricants | 10.73 |
| Total | 1,138.41 |

Consumption (TJ)

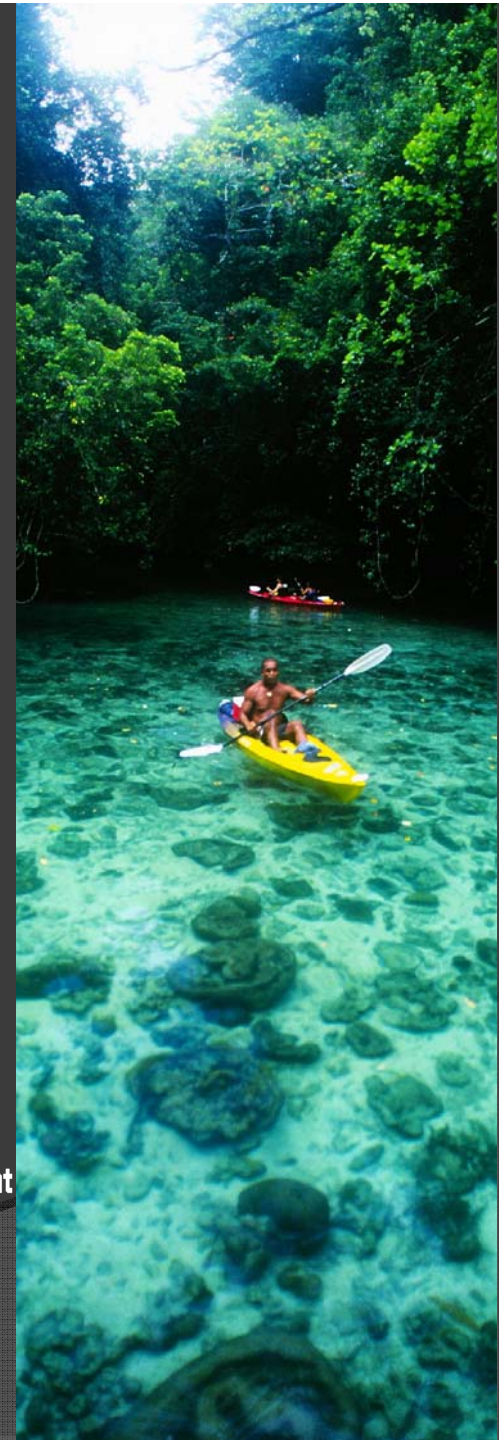
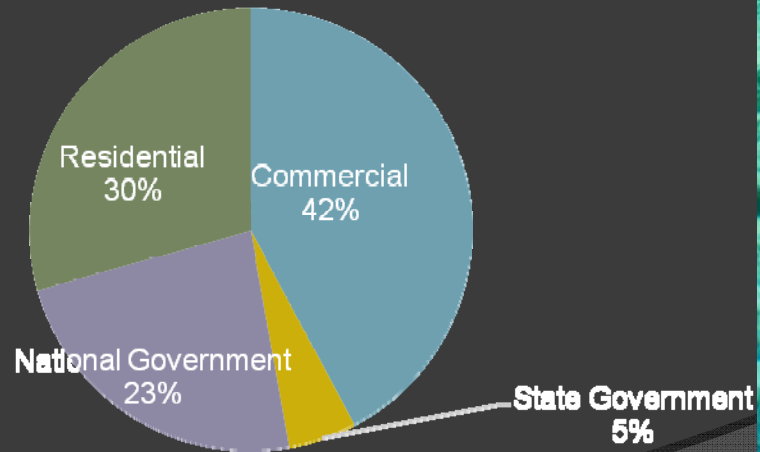


Energy Demand

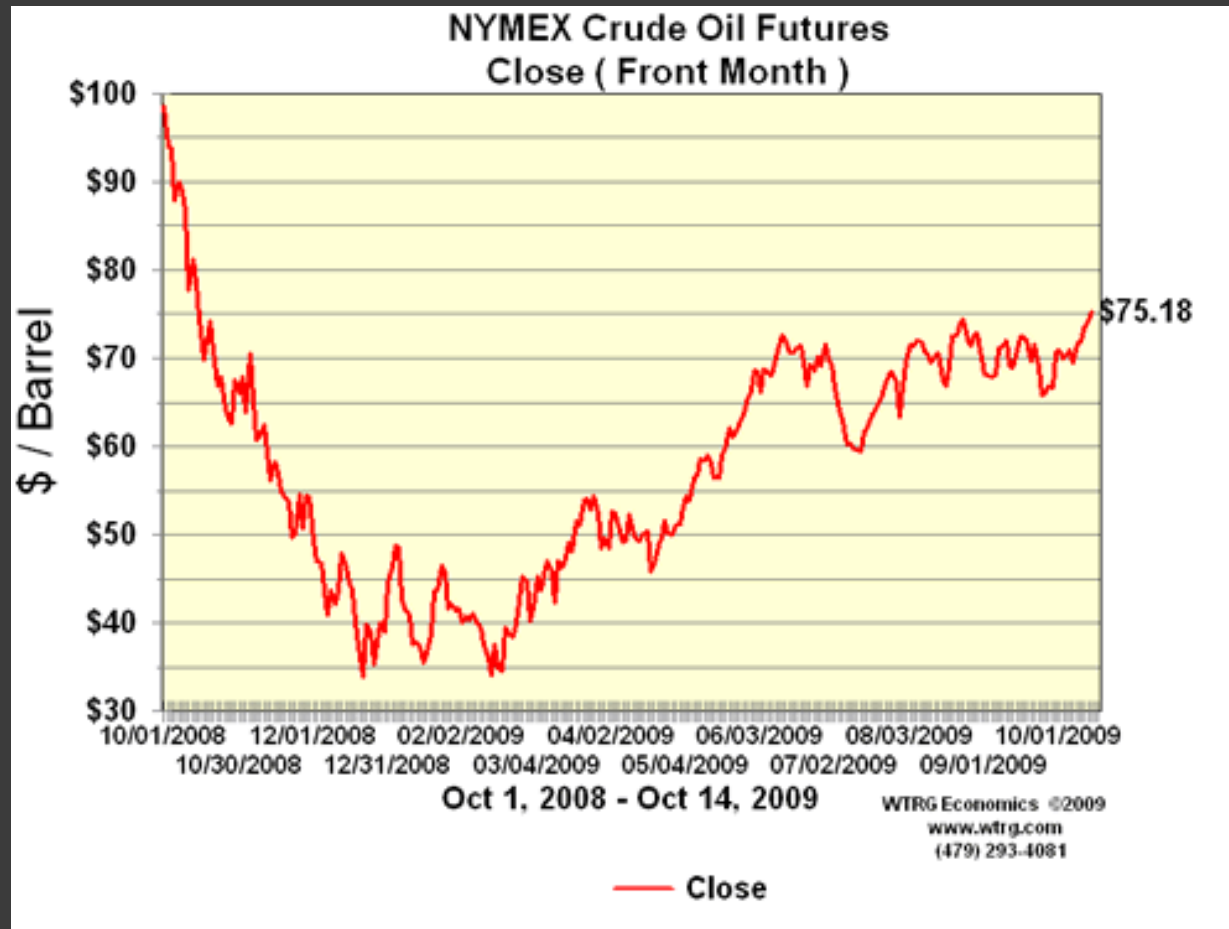
Percentage of connection base



Percentage of consumption base



Vulnerability to price fluctuations





Solar PV Technology

- 100kw Grid connected Solar PV – Capitol Building
 - Installed & producing since December 2008
 - 153kw Grid connected Solar PV – National Hospital
 - Installed & producing since December 2008
 - 180kw Grid connected Solar PV – International Airport
 - To be installed by mid 2011
 - Funded Cool Earth Japan
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- ✓ Technology has a proven track record
 - ✓ Proven to be successful in PIC
 - ✓ World Market prices are becoming economically viable.

Untapped Energy Sources

| RE Resource | Present Information | Data Gaps/Remarks |
|---------------------------|--|---|
| Solar | Estimated 5.5 – 5.9 kW/m ² /day solar radiation | <i>Need to be verified by further data gathering in specific sites. Relevant in existing sites.</i> |
| Wind | Estimated 2.5 m/s | <i>Limited information, may not be useful for power generation Need to be validated using wind data gathering system in specific sites at the desired hub height. Available meteorological data can be used for correlation</i> |
| Biomass | Estimated 75% forest cover, 15% coastal mangroves, 6% swamps, 60% of land area is densely forested | <i>No statistics Need to conduct a survey on biomass intended for fuel use</i> |
| Microhydro | Some small streams in Babeldaob | <i>Need for survey of potential areas</i> |
| Ocean Thermal/Wave energy | No available estimate on potential and possible sites | <i>Need for survey Appear good for development, but not yet economical</i> |

Gaps and Constraints

- ⊙ There is currently no official energy policy to coordinate energy-related activities
- ⊙ Grid electricity is heavily reliant on diesel, making Palau vulnerable to fluctuations in the price of oil.
- ⊙ Lack of consistent statistical data for the energy sector.
- ⊙ Untapped potential RE sources
- ⊙ Lack of Capacity building at the Local Level

Policy Difficulties

There are several policy issues that need to be addressed in the formulating an energy policy for Palau. These issues include:

- Institutional arrangements
 - Regulatory agency to enforce and implement energy policy (Energy Office)
 - Implementing agency to carry out energy strategic action plan
 - Strategic power sector planning
- Regulation
 - Government administrative endorsement
 - Legal framework
- Renewable Energies
 - how to promote RE in the absence of financial viability
- Operation of PPUC
 - Capacity building into the maintenance and operation of RE technology into the overall operations
 - Future operational forecast (conventional diesel generation vs. RE/clean energy)
- Net metering program
 - Adoption through parliament
 - Integration into operational implementation with local utility company
- Tariff setting
 - Utility company's cost recovery vs. Demand side customer base hardships
 - Integration of RE base tariff (grid connected solar systems)
- Pre-paid meters
 - Mandatory for delinquent utility customers
- How to manage oil and gas exploration
- Interface with donors
 - Maximize Palau's benefits from aid and donor contributions
- Environmental impacts of energy operations & Exploration
 - Further detailed environmental impact assessments on potential energy sources
- Energy Conservation and Efficiency
 - Development of local market in energy efficient technology products
 - Strengthening of education and awareness

Kom kmal mesulang
(thank you very much)



"No Island left behind"