Maldives: Towards Low-Carbon Growth

Presented by:
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Country background

- Estimated 1192 islands, 26 natural atolls
  - 188 Inhabited islands
  - 111 resort islands
- Key economic activities: Fisheries and tourism
- Population - 338,434
- Temperature 24 – 33 degs Celcius
- GDP per head - USD 5,036 (current prices)

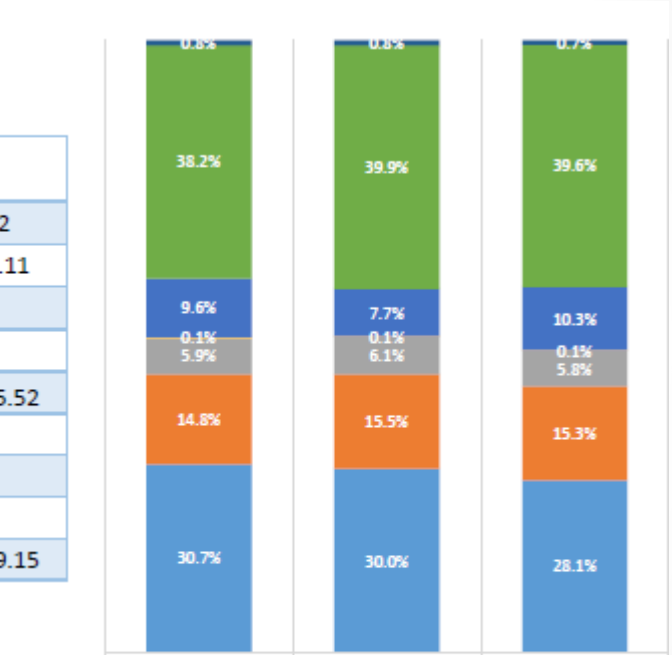
Source: National Bureau of Statistics, Maldives (2014 data)

Energy Use Overview

Table 33: Key indicators for Maldives.

Selected indicators	2010	2011	2012
Population	319738	325135	330652
Total Primary Energy Supply	354,052.93	375,999.34	426,921.11
TPES/Capita	1.11	1.16	1.29
TPES/1000 GDP$	0.13	0.13	0.15
CO2emissions (tCO2eq)	1,078,561.45	1,138,851.89	1,229,615.52
tCO2eq/capita	3.35	3.47	3.69
kgCO2eq/GDP$ (PPP)	0.50	0.48	0.53
tCO2eq/TPES	3.02	3.00	2.86
Electricity Consumption (MWh)	930,457.21	983,311.22	1,052,619.15

- *Energy Supply and Demand Study 2010-2012*



	2010	2011	2012
Heat	0.8%	0.8%	0.7%
Electrical	38.2%	39.9%	39.6%
Jet A1	9.6%	7.7%	10.3%
Kerosene	0.1%	0.1%	0.1%
LPG	5.9%	6.1%	5.8%
Petrol	14.8%	15.5%	15.3%
Diesel	30.7%	30.0%	28.1%

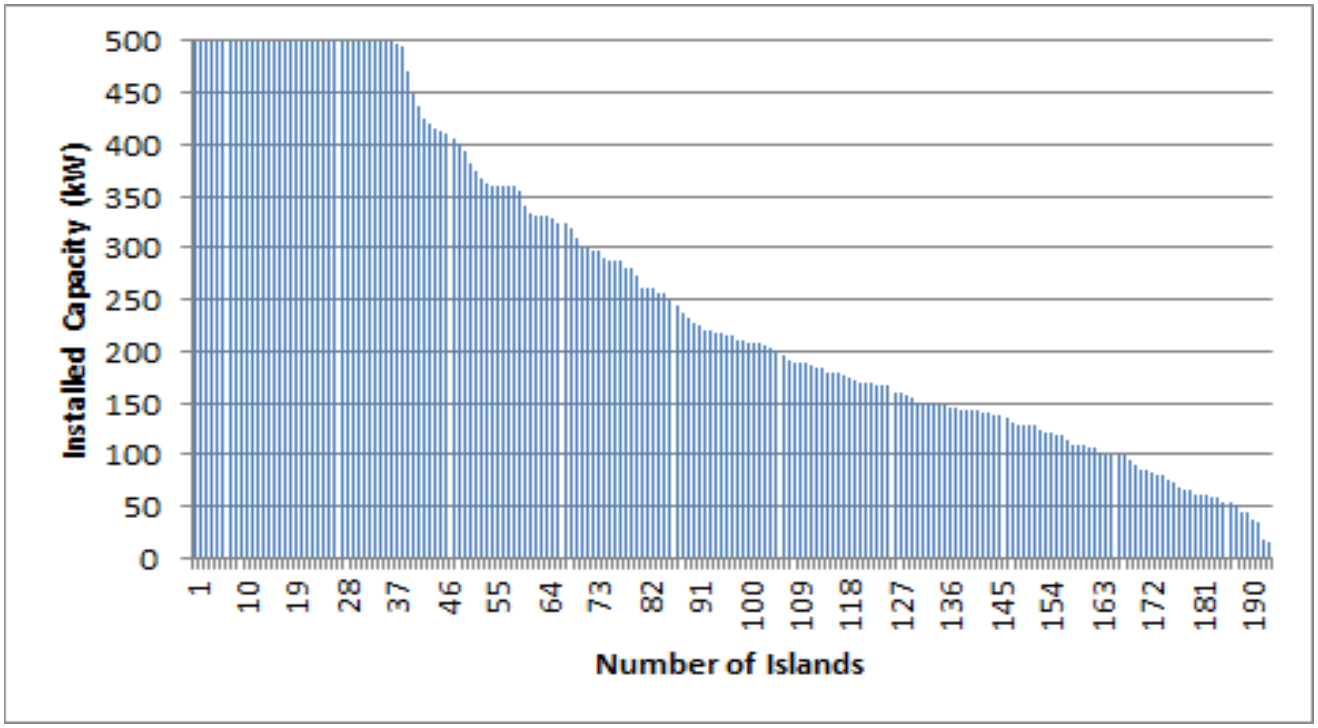
Figure 11: Final energy consumption for 2010-2012.

Power Sector Background

- Power:
  - 100% electrified nation
  - Consist of mini-grids (one per island)
  - Male' region consumption – 239 million kWh (2012)
- Male ' region – approx 65MW installed
- Outer Islands – approx 100 MW installed
- Solar PV installations (as of 2015)
  - Private ~ 2.5 MW
  - Government ~ 1.8MW
- Planned 4MW PV by 2017

Diesel capacity in outer islands

MEE : 2014-2015, diesel generator installation distribution



- This excludes Male' (capital) region
- 190 outer islands , out of which 95% of islands are managed by public utility

Sector challenges

- Energy security
- Price volatility (due to imported fuels)
- High electricity growth rates
- High cost of production
- Limited technical capacity in rural islands
- Data availability and accuracy
- Financing mechanims

Institutional framework

- **Ministry of Environment and Energy (MEE):** Policy, Planning and Project implementation.
- **Maldives Energy Authority (MEA):** Regulator for the Energy Sector, aligns with policies
- **Utilities:** Electricity Utility services, companies (State owned or with shares)

Legal framework

- Regulatory framework under development (since 2014)
  - Licensing (service providers)
  - Licensing (professionals)
  - Technical regulations
  - Fee regulations
  - Investment approvals for utilities
  - Tariff methodology and approval
  - Installation standards
  - Energy Performance Standards and energy efficiency labelling
- Energy Bill under development (2016)

Policy aspects and targets

- National Energy Policy being reviewed. Based on key concepts of energy security, reliability, affordability, conservation and alternative sources

- Maldives' Intended National (Sept. 2015), reduction of GHG, BAU scenario
  - Unconditional commitment –10% by 2030
  - Conditional – 24%

- Some key interventions as of today:
  - Duty exemption for renewables (since 2014)
  - Establishment of Green Fund through national bank (Dec 2015)
  - Introduction of Net metering regulation (Dec 2015)
  - Policy target to achieve 30% of Solar PV energy penetration in all outer islands by 2022 , through Private and Public Sector Projects (2016)

Projects

- Multiple projects with various donor assistance
- Key GoM projects being *Accelerating Sustainable Private Investments in Renewable Energy (ASPIRE)* and *Preparing Outer Islands for Sustainable Energy Development (POISED),* under the Scaling-up of Renewable Energy Program.

Maldives SREP

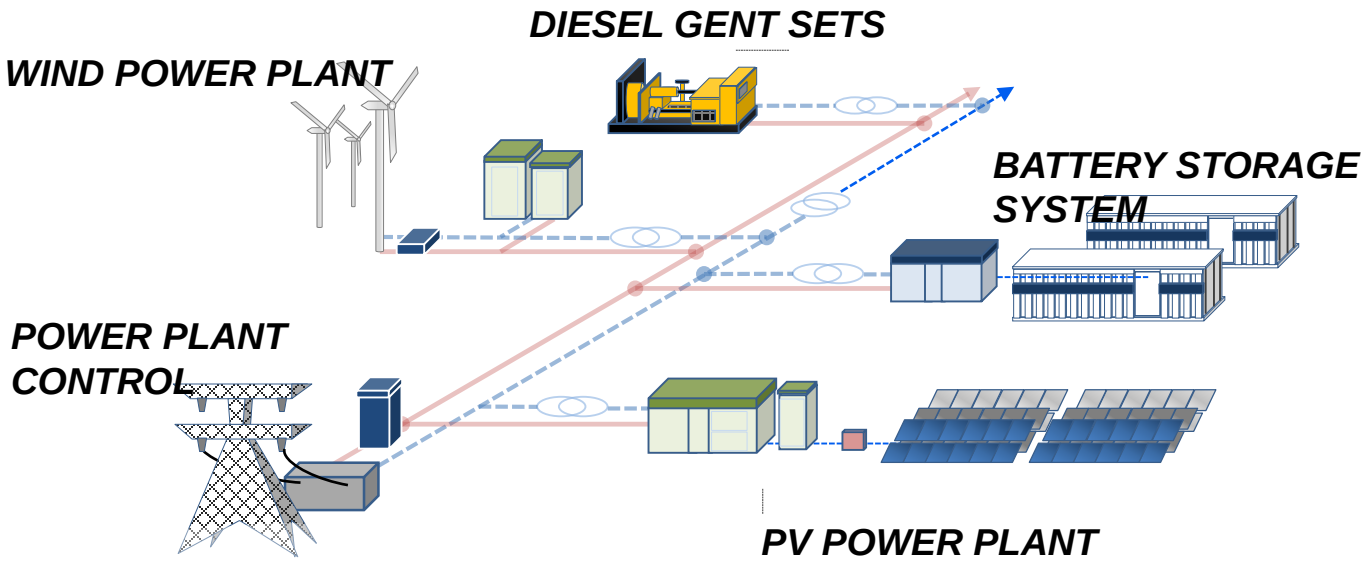
ASPIRE

- World Bank administered
- Private sector investments
- Currently PPA based, backed by risk guarantees
- FIT discovery by tender
- Targeted for Male' and larger islands

POISED

- ADB administered
- Public sector investments (mix of grants and loans)
- Renewables + grid rehabilitation
- Targeted for all outer islands.

POISED: Conceptual hybrid system



POISED: Phase 1

	Hybrid System		
	PV	Battery	Diesel
Island	kW	kWh	Savings
Addu City	1,600	-	17%
Villingili	300	84	22%
Kurendhoo	300	84	63%
Goidhoo	200	84	55%
Buruni	100	42	58%

Social and Gender Aspects

- Ongoing social survey for outer islands
- Key areas analysed for households:
  - Access to utility services
  - Energy use
  - Awareness on renewable energy
  - Interest of partnership with renewable project
  - Economic condition
  - Health
- Gender aspects – Role of Women:
  - Type of work
  - Activities outside households
  - Involvement in social activities
  - Decision making at family level (kinds/types)

Social and Gender Aspects

- Preliminary concepts being considered:
  - Awareness programs on renewable energy and energy efficiency opportunities, for grade 8-12 students (including parents).
  - Encouragement of formulation and management of Women's Development Committees (WDC) at an island level
  - Technical training programs facilitated through utilities and other government institutions
  - Supporting and facilitating women's initiatives for income generating activities

- *Outcomes social surveys will help establish a baseline and help to determine an action plan.*

Questions?

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