# SREP Investment Plan

Republic of Maldives

Ministry of Environment & Energy

# Country Overview

**1192** islands

**194** inhabited

**105** self-contained tourist resorts

**4** islands have a population <5,000

**1/4** of islands <500

**114,686** residents in Greater Malé region

**330,652** population

# Country Overview

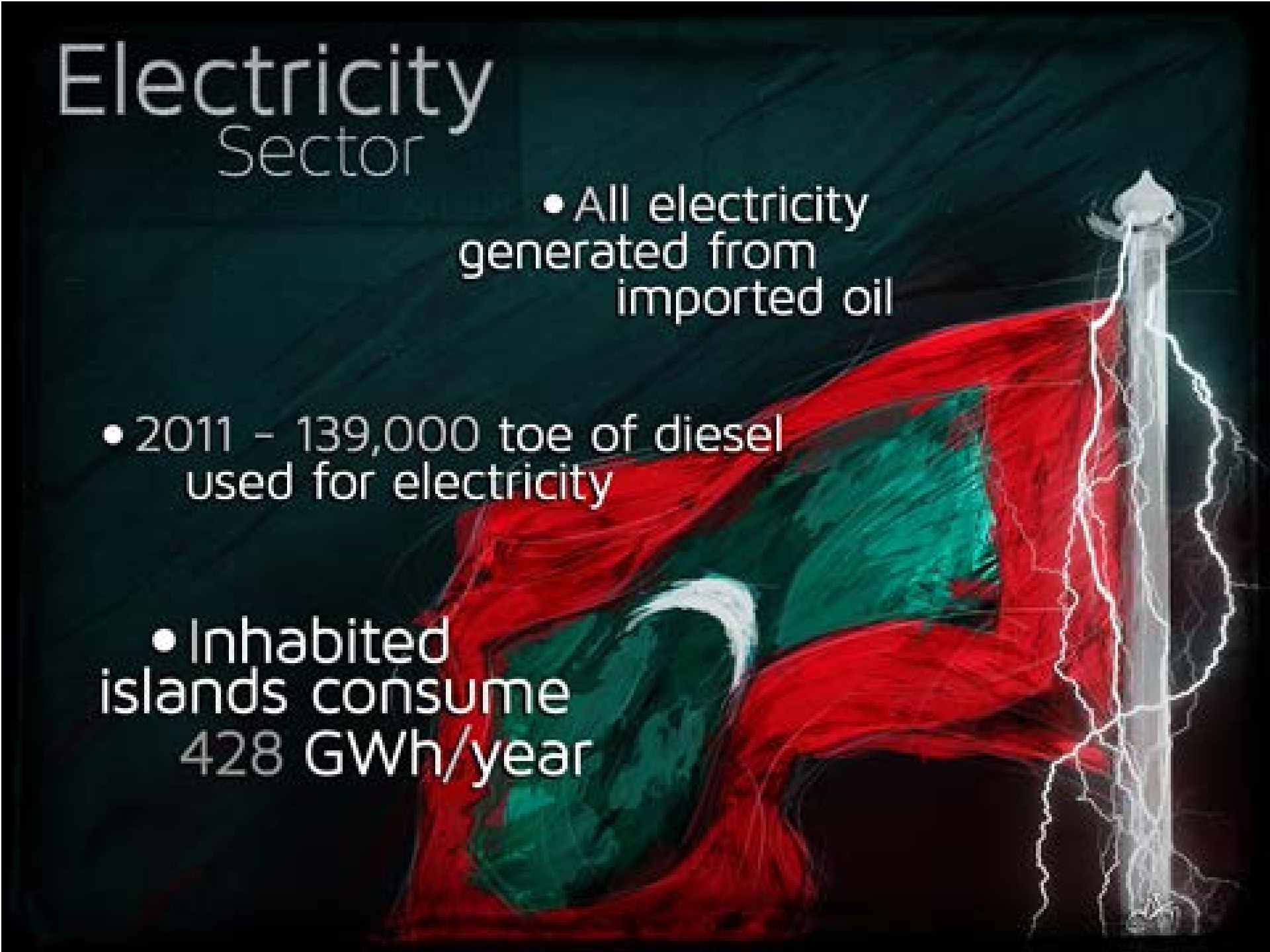
One of the lowest lying countries

Highly threatened by climate change

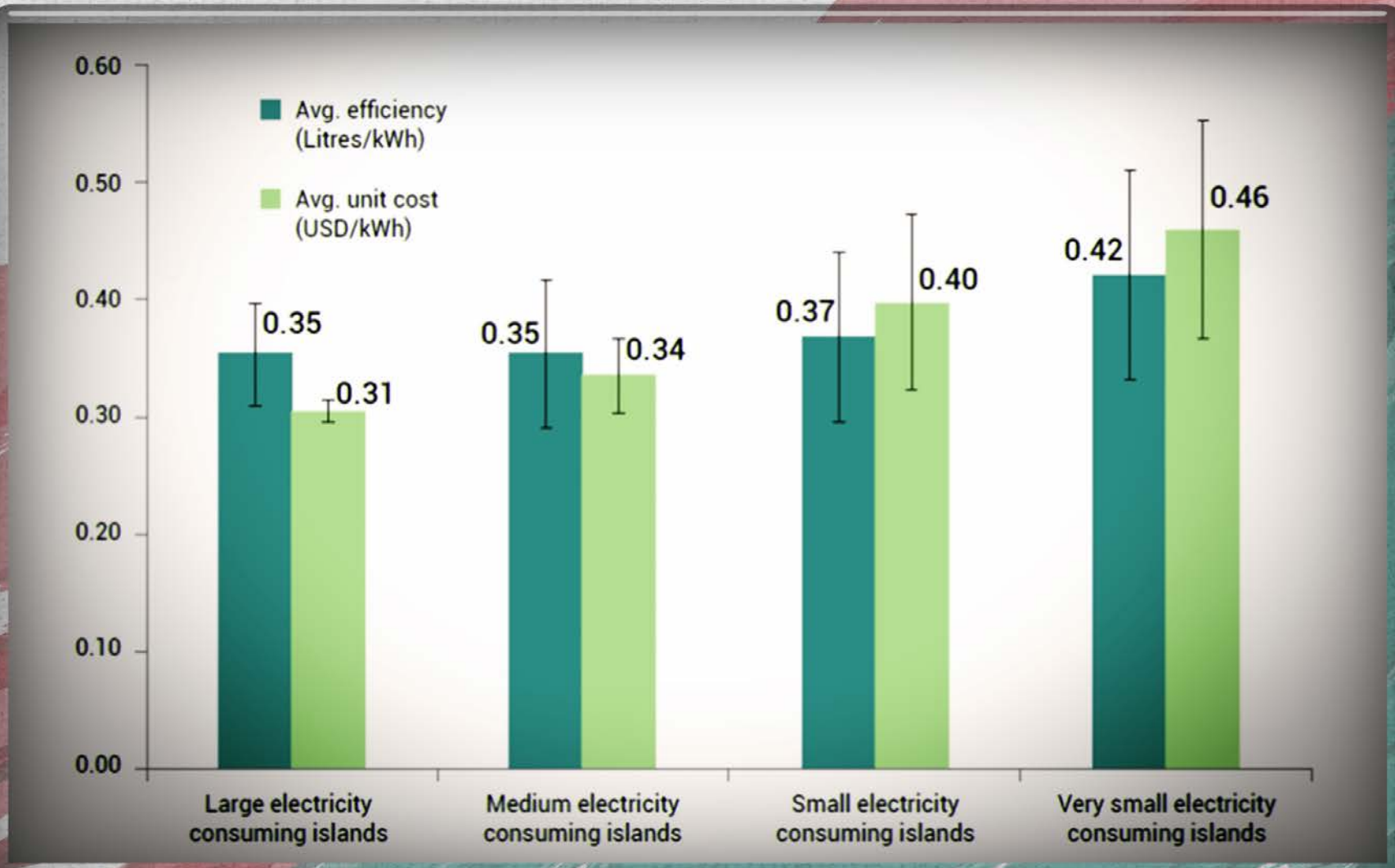
Declared to become carbon neutral by 2020

# Electricity Sector

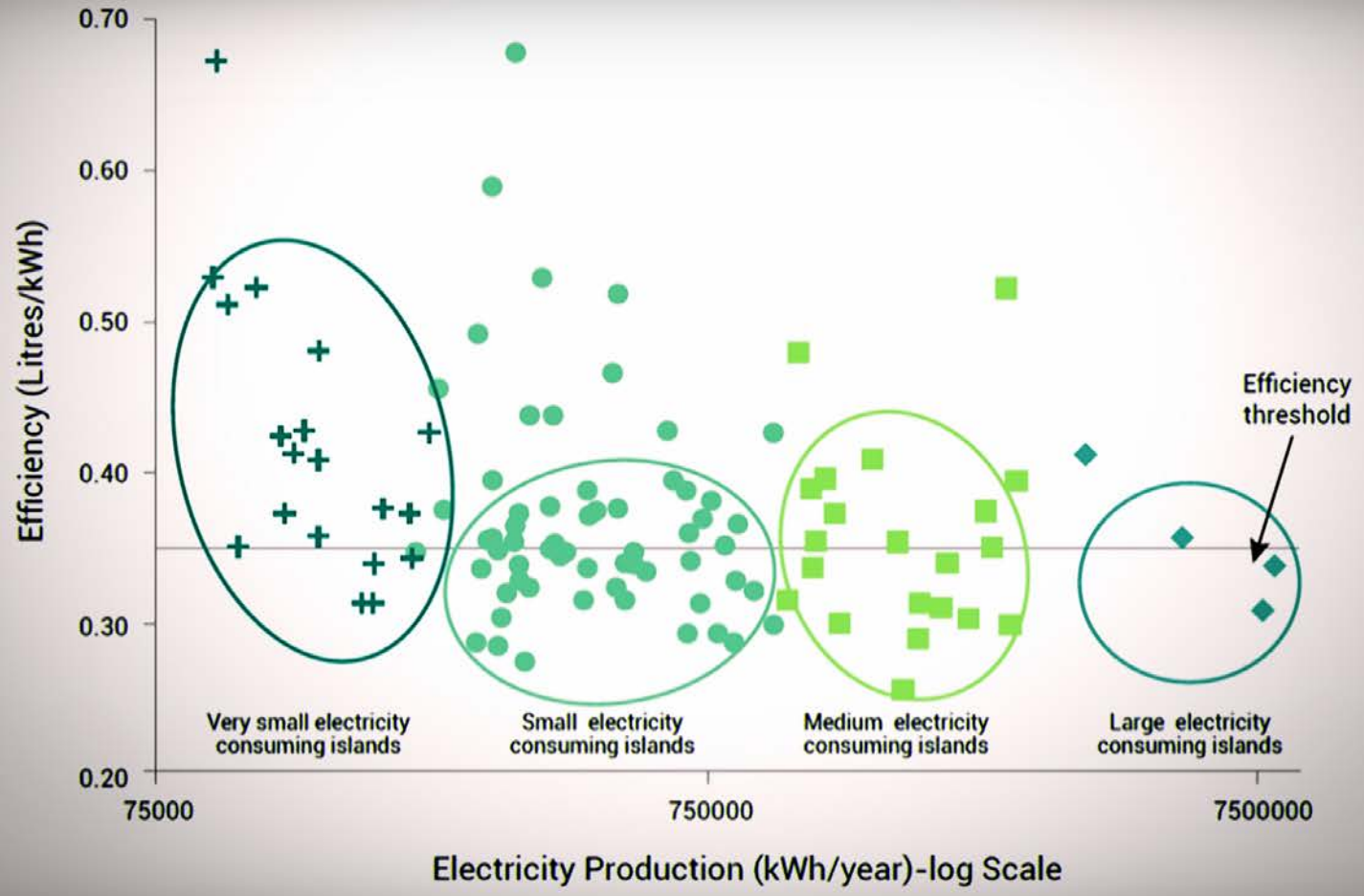
- All electricity generated from imported oil
- 2011 - 139,000 toe of diesel used for electricity
- Inhabited islands consume 428 GWh/year



# Most **expensive** in the region & highly **inefficient**

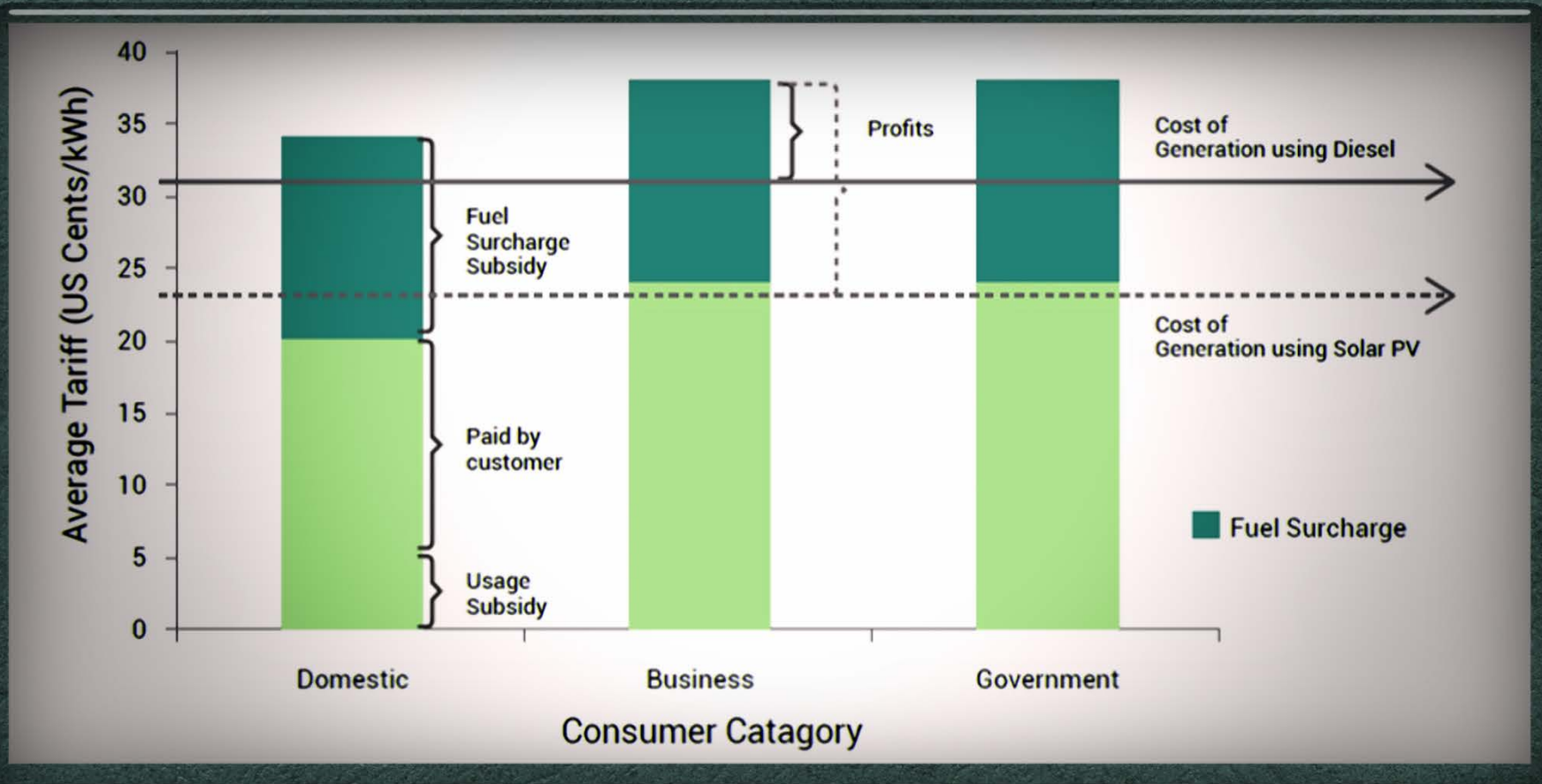


# energy generation in most islands are highly **unsustainable**



# Resulting high subsidies

## US 25M/year fuel subsidy to electricity 2011



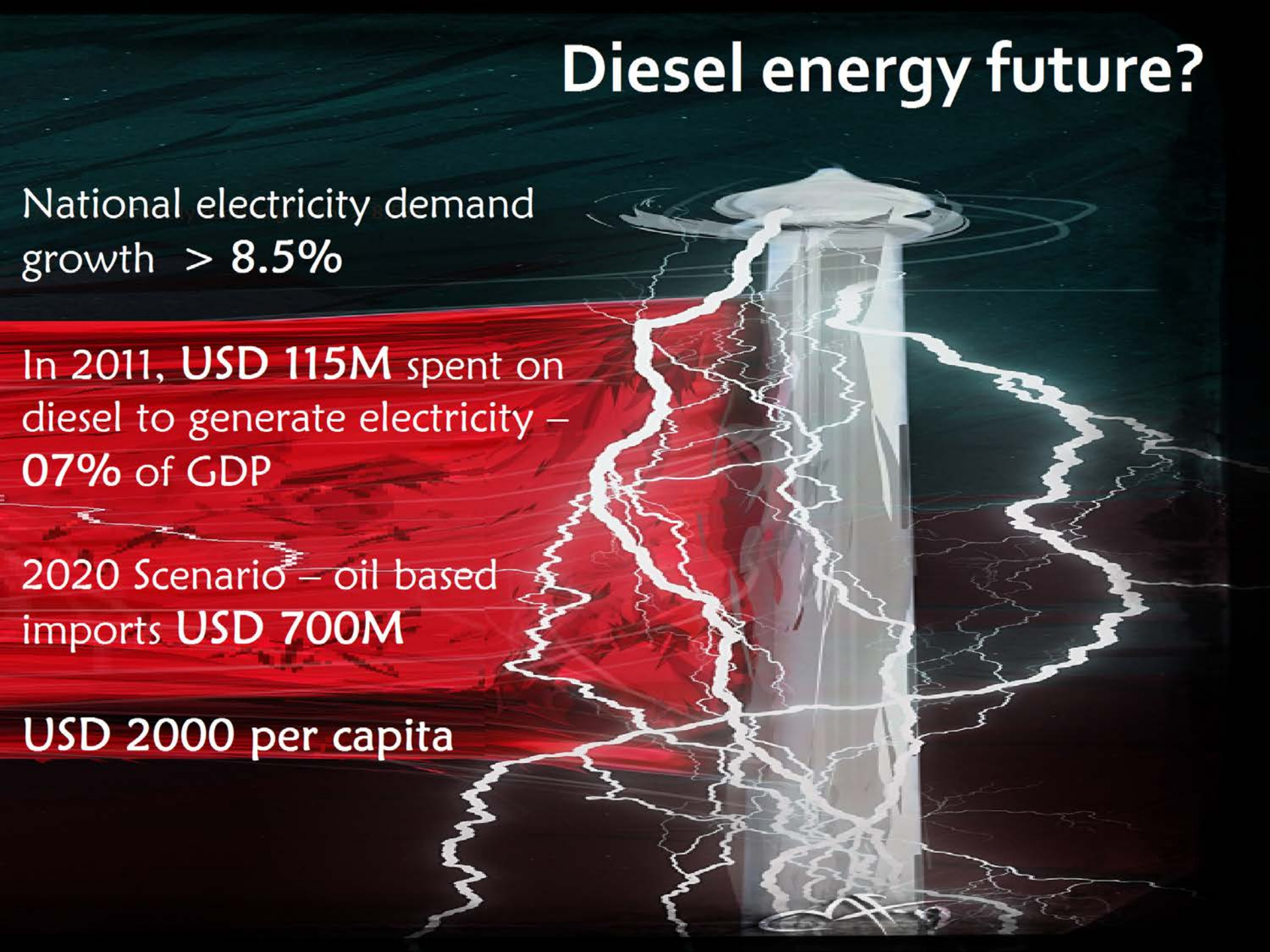
# Diesel energy future?

National electricity demand growth > **8.5%**

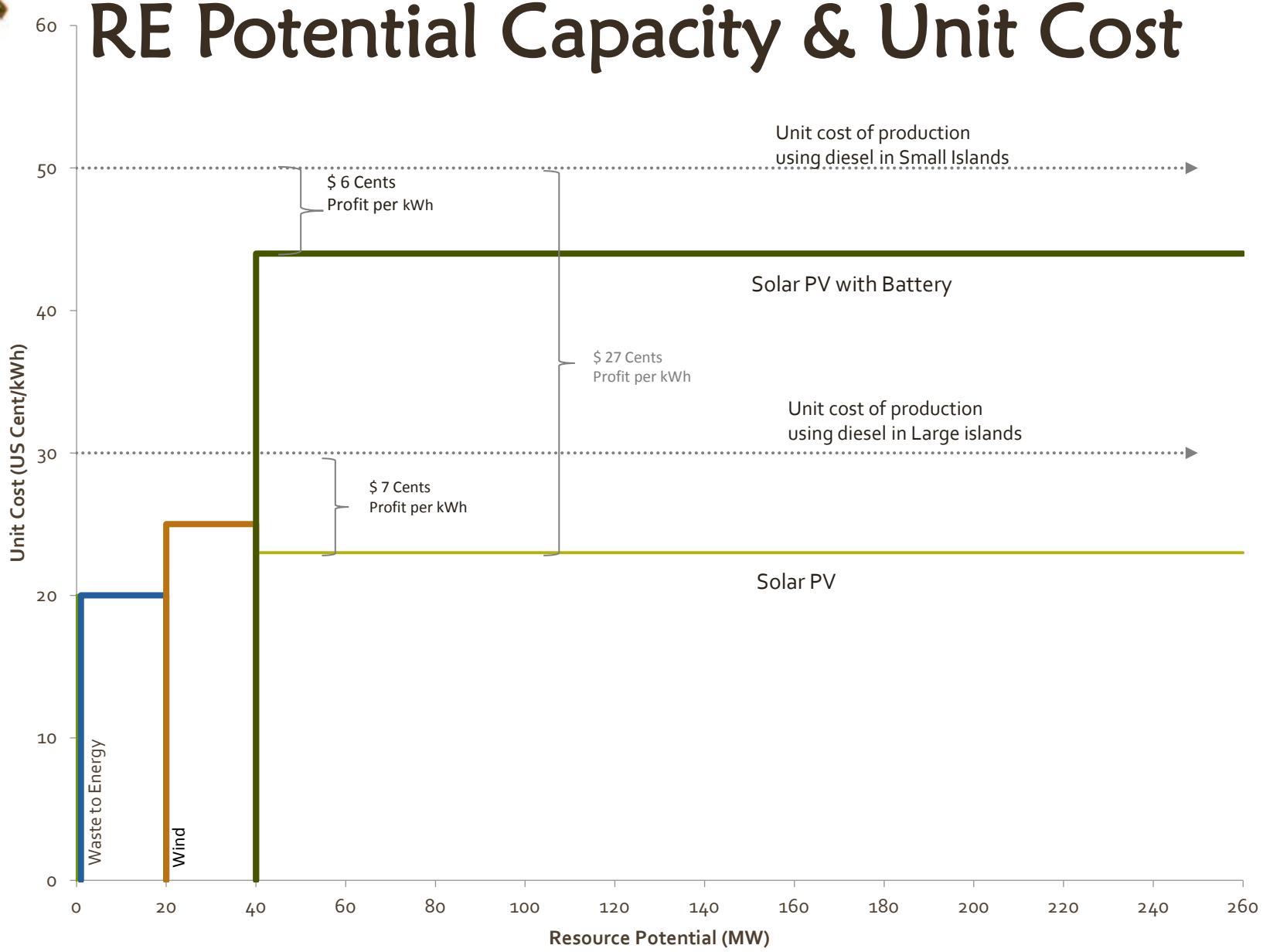
In 2011, **USD 115M** spent on diesel to generate electricity – **07%** of GDP

2020 Scenario – oil based imports **USD 700M**

**USD 2000 per capita**



# RE Potential Capacity & Unit Cost



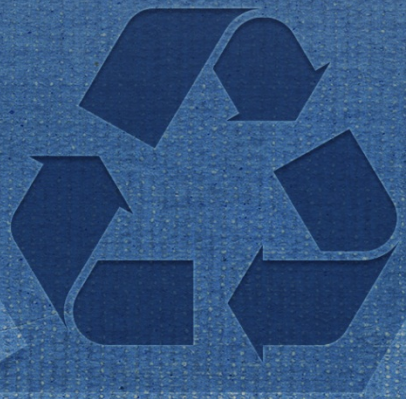
# IP Objectives

- Transformation of electricity sector
- Large scale RE development
- Increase national energy security
- Creating a strong RE industry
- Attract foriegn RE investors
- Emerge as model for other SIDS

# Stategic Development of SREP IP

# SREP as Srategic Tool

## Carbon Neutral Goal



Part of a larger program tackling the climate change agenda.

Targeting of electric sector which contributes 19% of the total $CO_2$ emissions

Significant demonstrative effect to the tourism sector, one of the largest emitters of $CO_2$


The Investments
Renewable Energy For Greater Malé Region
Greater Malé Region Solar PV investments
Waste-To-Energy (Thilafushi)
Greater Malé Region Renewable Power System Integration
Total Investment: USD 69.5 million

# Renewable Energy For Outer Islands

## The Investments

Small Power Station RE

RE readiness - Power system rehabilitation

Outer Island Solar/Wind investments

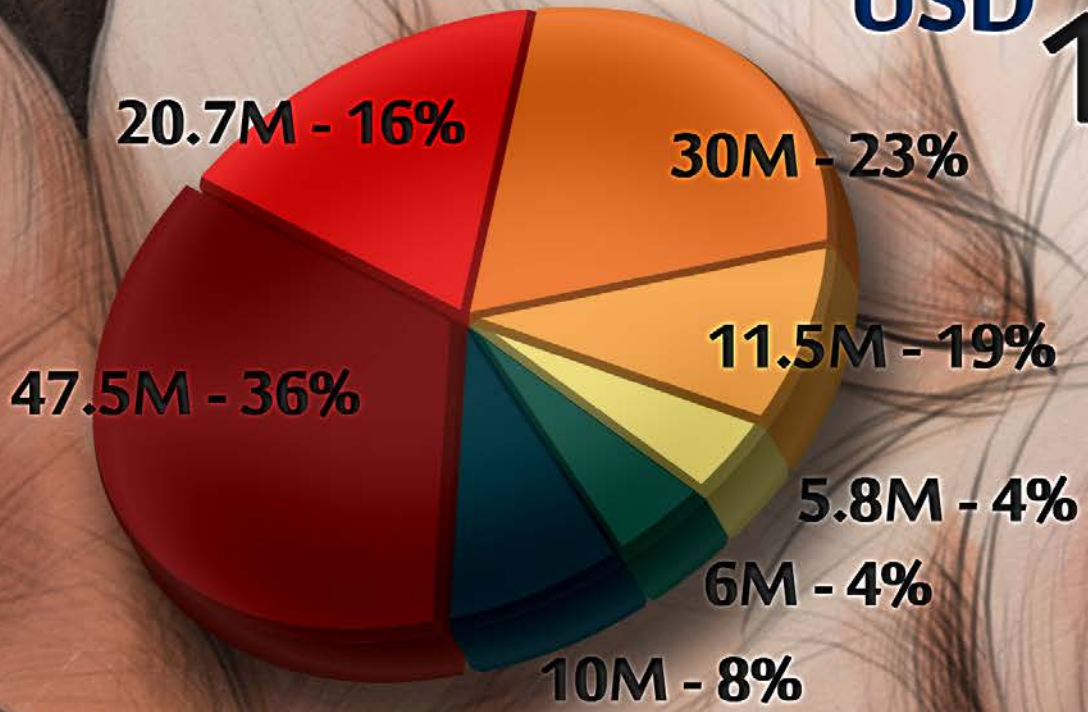
Outer Island Waste-To-Energy investments

**Total Investment: USD 62 million**


Technical & Assistance Capacity Building
The Investments
Creating an enabling environment
Human Capacity Building
Project Preparation & Feasibility Studies
Improved access to quality data
Total Investment: USD 7 million

# SREP IP Investments

## Total Investment: USD 139 million



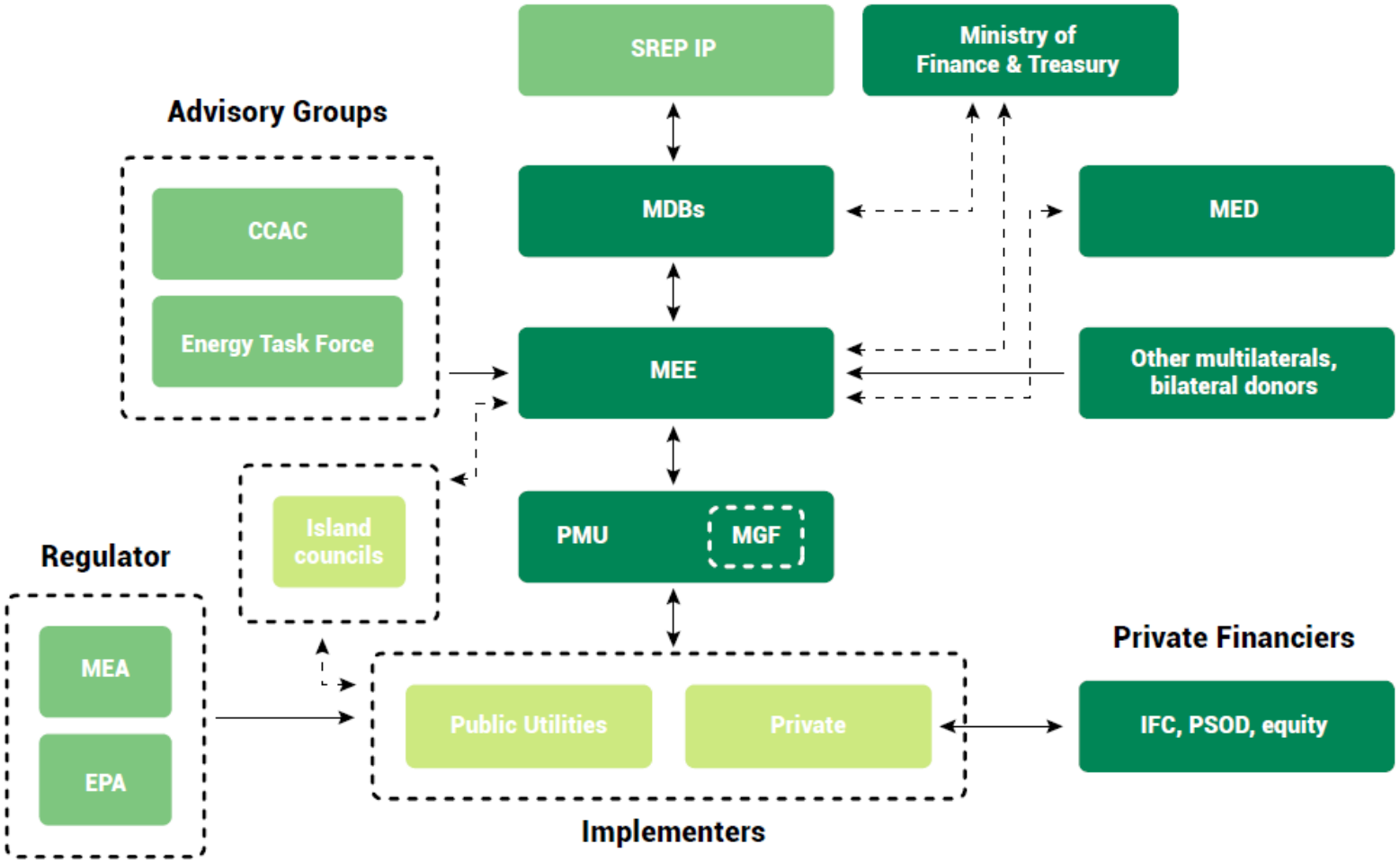
# Financial Mechanisms and Instruments

| Guarantee Facility |
| --- |
| Covers payment, currency depreciation and related risks that are of concerns to potential investors. |
| **US$ 20M** in PRG from WBG. |

| Policy interventions |
| --- |
| FIT<br>Feed-in Tariff is expected to form the core of RE development in the Maldives. |
| Robust regulatory framework |
| Import duty exemptions |

→ FIT combined with incentives and guarantee facilities and strong regulatory framework is envisaged to encourage private investors

# Institutional Framework



# Risks

## TECHNICAL RISKS

Poor technical capacity at national level.

Strong emphasis on capacity building under SREP.

## COMMERCIAL RISKS

Insufficient interest by developers.

High lending rates for Maldives.

Marketing strategy will be developed, FIT being strengthened, New PPA being formulated, Strong Guarantee Facility will be in place.

Financing from SREP to blend with private finance.

## INSTITUTIONAL RISKS

Regulatory frameworks for RE investments are inadequate.

SREP resources to strengthen MEE, MEA, Utilities & MGF to be established.

# SREP IP Programmes

## Accelerating Private Investments in Renewable Energy (ASPIRE)

- Renewable Energy Investments under Feed-in Tariff
- Greater Malé Region Solar PV investments
- Outer island solar & wind investments
- Utilization of Waste-to-Energy Technologies in Outer Islands
- Implementation Support & Institutional Development

# SREP IP Programmes

## Accelerating Private Investments in Renewable Energy (ASPIRE)

- **Transformative Outcomes and Outputs**
- 20MW of RE generation installed (~ 15MW Solar PV in the greater Male' region, 5MW (3MW Solar PV/ Wind & 2MW WTE) in the outer islands)
- USD 72 Million

# PREPARING OUTER ISLANDS FOR SUSTAINABLE DEVELOPMENT PROGRAMME (POISED)

**100%** RE in **10** small islands
Power system rehabilitation in **15** islands
Implementation support & capacity building

USD 40.2
**million**

# PREPARING OUTER ISLANDS FOR SUSTAINABLE ENERGY DEVELOPMENT (POISED)

**2MW of RE generation** installed with storage on **10 islands**

reduction in **GHG emissions** by about **5,000 tCO2 /year**

about **2 million litres of diesel avoided/year**

power systems on **15 islands** upgraded to reduce the generation & distribution losses

power systems on **15 islands** assessed & made ready to accept about **30% RE**

# THILAFUSHI WTE PROGRAMME

Up to **4 MW** of the generation capacity

reduction of $CO_2$ emissions by 20,000 tons of $CO_2$/year

**about** 7.5 million litres of diesel avoided/year

safe disposal of 200 tons of waste/day

USD 20 million

# TECHNICAL ASSISTANCE

Greater Male' Area Renewable Power System Integration

Improved Access to Quality Data

Creating an Enabling Environment

Human Capacity Building

USD 5.5 million

# Transformational Achievements

**53 islands benefited**

**74% of the total population**