Republic of the Marshall Islands

National Energy Policy and Energy Action Plan

April 2016

This is a publication of the Republic of the Marshall Islands.

The 2016 National Energy Policy was prepared by the Energy Planning Division of the Ministry of Resources and Development with the technical assistance of the Energy Programme of the Economic Development Division of the Secretariat of the Pacific Community. This document was developed through extensive consultation within government, development partners and the general public. It expresses the RMI's commitment towards a new energy direction and serves as the foundation for planning and development in the energy sector over the medium term.

A special thanks for their generous assistance in preparing this document goes to Ms. Angeline Heine, Mr. Walter Myazoe, Jr., Ms. Dolores deBrum-Kattil, the Secretariat of the Pacific Community and the ADMIRE Program, as well as the many people and organization listed in Annex 3 of this document.

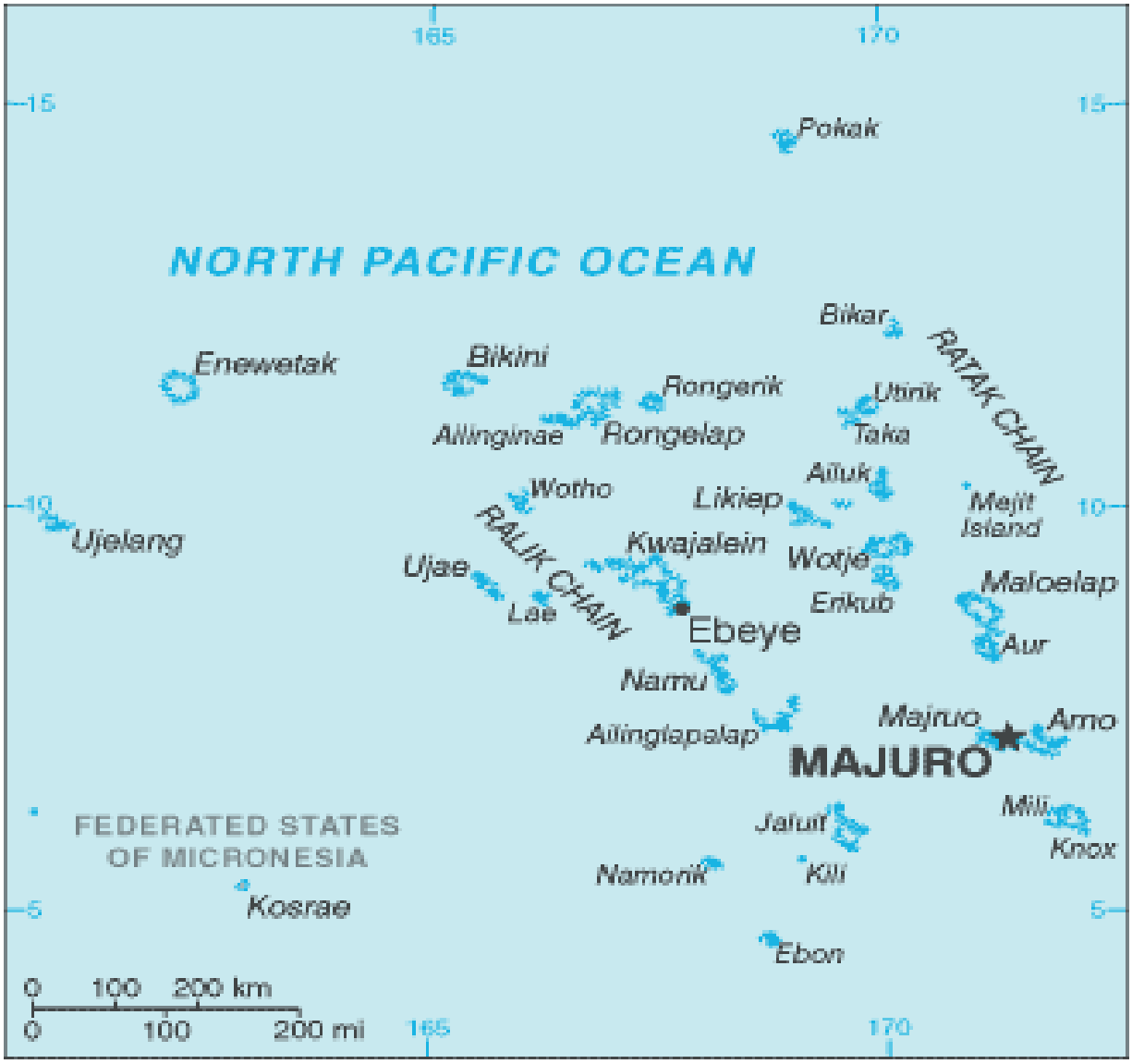
The policy review and national consultations were further supported by the SPC/EU North Pacific ACP Renewable Energy and Energy Efficiency Project (North-REP) and the EU Energy Initiative Partnership Dialogue Facility (EUEI PDF).

Contents

Abbreviations

ADB	Asian Development Bank
ADMIRE	Actions for the Development of Marshall Islands Renewable Energies (GEF/UNDP)
AG	Attorney General
DOI	United States Department of Interior
EAP	Energy Action Plan
EPA	Environmental Protection Authority
EPD	Energy Planning Division
EPPSO	Economic Policy, Planning and Statistics Office
ETF	Energy Task Force
GEF	Global Environment Facility
IUCN	International Union for Conservation of Nature (World Conservation Union)
KAJUR	Kwajalein Atoll Joint Utility Resource
MEC	Marshalls Energy Company
MOFA	Ministry of Foreign Affairs
MOF	Ministry of Finance
MIA	Ministry of Internal Affairs
MIDB	Marshall Islands Development Bank
MIMA	Marshall Islands Mayor Association
MPW	Ministry of Public Works
MRD	Ministry of Resources and Development
MTC	Ministry of Transportation and Communications
NEP	National Energy Policy
OEPPC	Office of Environmental Planning and Policy Coordination
PPA	Pacific Power Association
PPM	Parts Per Million
PSC	Public Service Commission
RE	Renewable Energy
REP	Regional Energy Programme
RMI	Republic of the Marshall Islands
SE4ALL	Sustainable Energy For All
SPC	Secretariat of the Pacific Community
TA	Technical Assistance
UNFCCC	United Nations Framework Convention on Climate Change
UNDP	United Nations Development Programme
USA	United States of America
USD	United State Dollars
USDA	United States Department of Agriculture
WB	World Bank Group
WUTMI	Women United Together Marshall Islands

Map of Republic of the Marshall Islands



Foreword

I am pleased to present this *National Energy Policy and Action Plan* that will guide the development of the country's energy sector in the next five to ten years.

The policy and action plan is an output of the review of the *National Energy Policy and Energy Action Plan 2009* and is aligned to the *Strategic Development Plan Framework 2003–2018: Vision 2018.*

The *National Energy Policy* encompasses government's energy sector priorities, outcomes and goals; it brings to our attention our energy sector situation – where we stand in terms of the energy targets and goals we aim to achieve by 2020. Aligned to the National Energy Policy is a three-year action plan that brings to the forefront urgent actions to be carried out and turn our visions into reality.

We also reflect in this decade on our commitments towards achieving and contributing to the goals of the UN Sustainable Energy for All (SE4ALL) initiative, a global initiative that Marshall Islands is closely aligned to. Our combined policy goals at the national level will take us to meeting our regional commitments, in particular the *Majuro Declaration for Climate Leadership*, the Pacific Regional Energy Minister's Resolution and Communique, the Green Energy Micronesia Initiative and the Intended Nationally Determined Contributions (INDCs) that was communicated and submitted to the United Nations Framework Convention on Climate Change (UNFCCC). Let us not forget our continued efforts to adapt to and mitigate the impact of climate change.

While the government is trying its best to acquire resources to improve access to modern energy services and to reduce our fossil fuel dependence, it can only do so much. I am glad to state that this policy includes enabling frameworks to improve the partnership between government and the private sector, creating financial incentives to foster the participation of the business community to integrate renewable energy with energy efficient technologies and practices.

The contributions from development partners and non-government organizations and the private sector are considered vital to meeting our national goals, and they have done so much over the past years. Our national visions and goals cannot be met without the commitment, the partnerships and the willingness of all the Marshallese people.

I wish to thank the people and organizations that have contributed in one way or another to the completion of the *National Energy Policy* and *Energy Action Plan.*

I trust that the *National Energy Policy* will enhance our efforts to improving the quality of life through securing resources, and improving coordinated efforts towards an efficient and sustainable energy future for the Republic of the Marshall Islands.

Honorable Alfred Alfred, Jr.
Minister of Resources and Development

Executive summary

This *2015 National Energy Policy* of Republic of the Marshall Islands (RMI) integrates the findings and recommendations of the review of the *National Energy Policy and Energy Action Plan 2009*, and the outcomes of two national consultations held in Majuro in January 2014 and in October 2014. In reviewing the 2009 national energy policy (NEP), the issues listed below were considered important and will form part of the 2015 NEP undertakings and commitments. There is a need to:

- Review and update the current 2009 national energy targets and goals for the development of the energy sector.
- Review the current policy vision, outcomes, goals, policy statements/outputs, key thematic areas, strategies and activities to better reflect national, regional and global developments in the energy and climate change areas, including the development of baseline indicators for monitoring progress and impacts.
- Improve policy efficiency to ensure reliability, security and high quality of energy services and energy access.
- Strengthen the overall policy and regulatory framework in the energy sector.
- Put in place and institutionalize the implementation of a sustainable monitoring and evaluation mechanism for the implementation of activities in the energy sector, including financial regimes to promote private sector participation.
- Improve coordination and partnerships between key local stakeholders and development partners.
- Mainstream energy across all sectors and regional and global initiatives, including the Sustainable Energy for All (SE4ALL) initiative.

The *2015 National Energy Policy* is presented as follows:

Chapter 1: A framework for the national energy policy and its implementation

Chapter 2: Linking the policy outcomes, expected outputs to the strategies

Chapter 3: Monitoring and evaluation

A separate report, *Energy sector review,* provides complementary data and information on RMI's physical, social, economic status, including energy sector baseline information and current projects. An energy action plan for 2015 – 2019 is annexed to this policy.

Vision

The vision[1] for energy sector is aligned to the national vision:

> *"an improved quality of life for the people of the Marshall Islands through clean, reliable, affordable, accessible, environmentally appropriate and sustainable energy services*."

Broad goals

Four broad goals from the 2009 NEP remain, and an additional four have been added. The goals are:

- To strengthen financial, policy and legislative frameworks for the energy sector;
- To supply 100% of urban households with electricity by 2015;

[1] 2014 NEP vision is the same as the 2009 NEP vision.

- To provide 95% of rural outer atoll households with off grid electricity by 2015;
- To provide access to modern forms of cooking to 90% of all households by 2020;
- To make households and businesses 50% more energy efficient and government buildings 75% more energy efficient by 2020;
- To achieve a 20% efficiency improvement in transport sector fuel use by 2020;
- To reduce supply side energy losses from MEC by 20% by 2017; and
- To provide 20% of power generation through indigenous renewable resources by 2020.

Priority outcomes[2]

The *2015 National Energy Policy* has four priority outcomes:

- improved enabling frameworks for reducing dependence on imported fossil fuel;
- all Marshallese have equitable access to modern energy services;
- smarter uses of energy in households, businesses, government, transport sector and power utilities; and
- reliable, sustainable and affordable energy supply.

The National Energy Policy lays out the strategies and activities in six thematic or key result areas of energy policy administration and coordination, petroleum, electric power, energy efficiency and conservation, transport energy use and renewable energy.

The strategies and estimate costing for the energy action plan for three years 2016 – 2019 are given in the table below.

Key Result Area	Strategies	Estimated budget /USD
Energy policy administration and coordination	A new energy law, (Energy Sector Management Act) will be considered as appropriate to clarify powers and responsibilities within government for energy	88,000
	Annual work plan developed for MRD's Energy Planning Division, with clear objectives, priorities and timeframe, to be reviewed quarterly	8,000
	Informal training of EPD staff through attachments, RE/EE training and possible diploma or degree level training in energy	20,000
	EPD coordinates energy database development, production and regular revision with relevant stakeholders	18,000
	The Marshall Islands to engage effectively with national, regional and global stakeholders, including energy service providers, private sectors, non-government organizations and community-based organizations and vulnerable groups to promote energy initiatives	4,000
	MRD participation in the budget reform process, including advocacy of performance-based budgeting within the government, with energy criteria as performance measures for each government ministry and agency	5,000

[2] Outcomes are also called recognized as purpose or immediate objectives

	EPD introduces a communications plan using multiple media and having targeted messaging to address particular interests of local stakeholder and international development partners	10,000
	TOTAL ENERGY POLICY ADMINISTRATION AND COORDINATION	**149,000**
Petroleum	Develop a Petroleum Act with provision of licensing as well as supply of petroleum data and reports	5,633,000
	Conduct an independent study of petroleum pricing on Majuro and outer atolls to determine benefits and costs and a proper pricing mechanism	35,000
	Establish and maintain a system for inspection and certification of storage, handling and safety procedures, and licensing of petroleum storage and distribution facilities	25,000
	TOTAL PETROLEUM SECTOR	**6,008,000**
Electric power	Conduct a comparison of two sustainability models currently in use – through selling of handicrafts and through the local government funds.	8,000
	Establish an effective and sustainable plan to address tariff collection and SHS maintenance	4,000
	Assessment of costs and benefits to the government subsidy to MEC as part of government's efforts to rationalise payments to landowners	500,000
	Promote cleaner fuels and efficient cooking technologies to improve health and environmental protection, particularly the women and children	154,500
	TOTAL ELECTRIC POWER	**668,500**
Energy efficiency and conservation	Effective implementation of the RMI Sustainable Renewable Energy and Energy Efficiency Measures in Micronesia including RMI[3]	189,500
	Effective implementation of the SIDS DOCK project titled Energy Efficiency Loan Schemes (EELS) [4]	24,000
	Revise taxation system to encourage the import of energy efficient air conditioners/major household appliances and introduce mandatory standards and labeling system	8,000
	Develop energy efficiency standards for new buildings and renovations including homes, businesses and government premises, with financing on subsidized terms for designs and construction/renovation meeting the standards	60,000
	Carry out energy audits on the remaining government facilities, business communities and households and implementation of recommended energy efficient measures	1,500,000

[3] RMI SREEM (Sustaining Renewable Energy and Energy Efficiency Measures in Micronesia) Project includes energy efficiency at MEC power plants

[4] The project includes activities to establish the energy efficiency loan schemes (EELS), to be completed by April 2015

	TOTAL ENERGY EFFICIENCY AND CONSERVATION	**1,781,500**
Transport Energy Use	Establish guidelines for the maintenance of government vehicles with adequate budget allocation	48,000
	Promote, increase awareness and create incentives (in the private sector) on efficient mode of transport, e.g. bicycles, sail boats, fuel efficient taxis	50,000
	Investigate the practicality of retrofits to reduce fuel use in sea transport (e.g. more efficient propellers, sail-assist technologies, and other alternate energy sources)	100,000
	TOTAL TRANSPORT ENERGY USE	**198,000**
Renewable Energy	Develop appropriate legislation and regulations with clearly-defined authority, obligations and responsibilities for electric power supply in Majuro and throughout the Marshall Islands	110,000
	Quantify reduction in the national energy import bill for power generation	9,000
	Determine the indigenous energy resources that are available for development through feasibility studies	62,500
	Expand solar electrification for off-grid areas	1,015,000
	Expand the solar PV grid-connected capacity in Majuro, Kwajalein, Jaluit and Wotje	10,355,000
	Increase awareness and provide training to public and private sectors on appropriate renewable energy systems	50,000
	Develop policy regimes including incentives and a marketing plan to increase private sector involvement and facilitate introduction of renewable energy systems	10,000
	Conduct an independent study of the viability of alternatives to diesel fuel for power generation where economically sound (e.g. coconut oil, LNG, grid-connected solar, ocean energy, wind energy, etc.). Implementation of recommended viable alternatives	20,000
	TOTAL RENEWABLE ENERGY	**11,631,500**
	TOTAL COST OF RMI ACTION PLAN 2015 - 2019	**20,316,500.00**

1. A framework for the national energy policy and its implementation

This NEP is intended to be a pragmatic document, guiding the planning, communicating, financing and advancing of the energy sector in RMI through a 'whole of sector' energy development approach. This approach, as defined in a 2012 paper by Charles Feinstein et al. for the Forum Energy Ministers' Meeting, Brisbane, seeks to strike a balance among the following:

- the desire for increased access to secure, reliable, affordable and high quality energy services, in both the urban areas and outer islands and atolls of the country;
- improvement of, and increased efficiency in the use of energy in all sectors, including the residential and commercial sectors, the transport sector, and government buildings and utilities;
- enhancement of the potential for an increased share of renewable energy resources in the overall national energy mix; and
- the potential benefits from adopting more efficient practices in petroleum supply chain management and procurement.

1.1 RMI national development plan vision

This 2015 NEP also aspires to contribute to achieving the vision of the *Strategic Development Plan Framework 2003–2018: Vision 2018,* and therefore all of its broad mission outcomes, strategies and prioritised activities should be effectively mainstreamed into national development budgeting and strategic planning.

The vision of the Marshall Islands, as expressed in *Vision 2018*, *is:*

> *"to become a country within an inter-dependent world, with an enhanced socio-economic self-reliance, and an educated, healthy, productive, law-abiding and God-loving people in which individual freedom and fundamental human rights are protected, and culture and traditions are respected, and development and environmental sustainability are in harmony*."

The Government of the Republic of the Marshall Islands endorsed its three-year National Strategic Plan (NSP) 2015–2017, in June 2014 that was built around the concept of 1-5-3, capturing the importance of **one** clear, concise objective, **five** sectors with development objectives and **three** years' rolling plan. One of the five sectors is Infrastructure Development, and energy is in this sector, along with transportation, water and sanitation, solid and hazardous waste management and information communications technology

The energy sector complements the NSP by a review of its 2009 NEP and aligning its Energy Action Plan (EAP) to the NSP three-year timeframe. The 2015 NEP monitoring plan has been developed as part of this policy, aligning the priorities outcome and goals to the overall vision of the energy sector and the 2018 vision.

1.2 Energy policy logical process

In order to realize the energy sector vision, the energy policy framework includes the following key thematic areas; policy administration and coordination, petroleum sector, electric power sector, energy efficiency and conservation sector, transport energy use and renewable energy. There are 8 broad goals, 4 outcomes and 18 expected outputs or results as shown below.

Thematic/Key Result Areas	Goals	Outcomes
Policy administration and coordination Petroleum Sector	To strengthen financial, policy and legislative frameworks for the energy sector	Improved enabling frameworks for reducing dependence on imported fossil fuel
Expected Outputs	The Energy Planning Division continuously developed its capacity and skills set to enable it to review and manage the energy policy frameworks A national energy database is developed and managed (for analysis and policy development) and maintained Coordination and communication on energy issues at national[5], regional (within Micronesia and wider Pacific) and global levels shall always be strengthened Decision making regarding the importation and consumption and pricing of petroleum products shall be based on reliable data on petroleum imports, sales and end-use The wholesale and retail prices of petroleum products shall be made equitable for urban and rural users through control and regulation Safe storage, handling and distribution shall be ensured for all petroleum products	
Thematic or Key Result Area	**Goals**	**Outcome**
Electric power	To supply 100% of urban households with electricity by 2015; To provide 95% of rural outer atoll households with off grid electricity by 2015; To provide access to modern forms of cooking to 90% of all households by 2020	All Marshallese have equitable [6] access to modern energy services
Expected outputs	The management and financial system for outer islands PV electrification regularly reviewed and enhanced to ensure sustainability, and make certain the recovery of O&M and battery replacement costs, for household and institution systems (e.g. health, fisheries, telecom, and school installations)	

[5] Including national, regional and global energy initiatives and projects

[6] Equitable considers that all people, women and men and children have equal access to modern energy services irrespective of their roles at households, community or in businesses, their locations and social status.

	A transparent tariff structure shall be established for those receiving full electricity supplies that covers the real costs of each island system, with a lifeline tariff that genuinely benefits low-income consumers without adversely affecting MEC income Initiatives on provision of access to clean and efficient fuels and appliances shall ensure the incorporation of interventions that promotes sustainable livelihoods, health and safety and environmental protection	
Thematic or Key Result Areas	**Goals**	**Outcome**
Energy efficiency and conservation Transport and energy use	To make households and businesses 50% more energy efficient and government buildings 75% more energy efficient by 2020; To achieve a 20% efficiency improvement in transport sector fuel use by 2020; To reduce supply side energy losses from MEC by 20% by 2017	Smarter uses of energy in households, businesses, government and transport sector and power utilities
Expected outputs	The reduction of MEC supply-side losses by 20% in 2017, consistent with sound technical and financial criteria should be developed and assessed The number of efficient electric appliances imported into the country through appropriate fiscal incentives for, businesses, households and government sectors increased The energy use consumption is monitored and improved through energy auditing and demand side management Increased the number of energy efficient vehicles into the country through appropriate fiscal incentives for business, private sectors, households and government sectors Government developed a more energy efficient transport network through collaborations with various stakeholders and adopting best practices that are applicable in the RMI	
Thematic or Key Result Areas	**Goals**	**Outcome**
Renewable energy	To provide 20% of power generation through indigenous renewable resources by 2020.	Reliable, sustainable and affordable power supply
Expected Outputs/Results	Private sector participation in the electric power supply in RMI shall be allowed under conditions that are fair to MEC and the supplier (i.e. independent power producer's agreement) Available energy modelling shall be done to ascertain the technical and economic indigenous energy sources where technically practical and economically viable The technical capacities of government (EPD) and MEC to plan, develop, implement and manage renewable energy systems (small and medium-scale rural; large-scale urban) shall be continuously updated and enhanced.	

	Economically feasible alternatives to diesel fuel for power generation shall be utilized

1.3 Guiding principles

The following guiding principles for implementing this policy are aligned to the principles adopted for national, sub-regional, regional and international initiatives, including the SE4All initiative goals, the regional *Framework for Action on Energy Security in the Pacific* (FAESP) and Micronesia's Energy Initiative. These six guiding principles need to be embraced in the implementation of this national energy policy and energy action plan.

a. Whole-of-energy-sector: The government coordinates and fosters partnerships and cooperation between relevant ministries and energy sector institutions, including the Marshalls Energy Company and petroleum oil companies, the private sector, and non-governmental and community-based organizations. A strong leadership of the Energy Planning Division with an appropriate legal mandate should be strengthened to coordinate planning and management of the energy sector. There should be a clear, appropriate and effective definition of roles for government, utilities and the private sector in the planning and management of the energy sector. Comprehensive energy planning should be undertaken, with energy treated as an integrated sector into all development sectors including poverty alleviation, health, education and financial and economic planning. Simultaneously, energy planning should be strongly coordinated with other infrastructure plans that are intensive in the use of energy, such as water and sewerage services, schools, hospitals and health clinics, and commercial and industrial development.

b. Financial sustainability: The following principles should be considered in assessing the financing strategy.

- **Transparency**: effort should be made to calculate the opportunity costs associated with fiscal incentives. The roles of the private sector should be recognized and avenues for private sector participation be defined under a clear and transparent regulatory framework.
- **Consistency**: clear criteria should be set for each incentive and they should be available to all who satisfy the criteria.
- **Accountability**: the government should report regularly to the legislature and the public on implementation of this national energy policy and its energy action plan.
- **Leadership:** the government should continue to show leadership in adopting energy efficiency and facilitating the sharing of data and information on the energy sector, but it should also package and promote as part of its investment policy the types of renewable energy and energy efficiency projects it plans to consider, as opposed to waiting for ad hoc proposals.
- **Time-bound and budgeted**: government investments and initiatives on energy should be guided by a realistic, time bound and wholly-budgeted sector plan that leads to measurable, tangible outcomes.

c. Environmental and social sustainability: Environmental and social sustainability encompasses both minimising local negative social and physical environmental impacts of the energy sector, as

well as aligning with global goals with respect to minimising the impact of climate change. The initiatives on promoting energy efficient biomass stoves for cooking in rural areas should be supported, as they consider the impacts of using biomass for cooking on the health of women and children simultaneously saving the environment.

Emphasis should be placed on the need for environmental, social, cultural and gender analyses in energy plans and projects that would capture the productive and strategic uses of electricity, not just for lighting, but for linking electricity access to the creation of economic opportunities, jobs, delivery of health care, education, telecommunication, access to transport and other vital services.

d. Climate change: The impact of climate change and climate variability in the Marshall Islands is evident and energy sector planning and coordination is mindful of the impacts of fossil fuel usage. Through the *Majuro Declaration for Climate Leadership*, the government has declared a 40% reduction in Co_2 emissions below 2009 levels by 2020 to be implemented through the *Joint National Action Plan for Climate Change Adaptation and Disaster Risk Management,* the Green Energy Micronesia initiative and this 2015 NEP and its energy action plan.

e. Data management and information: The availability, accessibility and quality of data and information for all key strategic areas are critical in order to make informed decisions and policy interventions. Continued efforts are needed across all sub-sectors for effective and efficient data collection and management.

f. Many partners, one team: The guiding principle 'many partners, one team' is used by the Framework for Action on Energy Security in the Pacific. It is relevant and significant in the implementation of this national energy policy and therefore is adopted as one of its guiding principles. The 29 atolls and five islands of the Marshall Islands are scattered, and visiting these islands to implement energy projects is expensive and takes a lot of time and effort, so the 'many partners, one team' approach is required in meeting the RMI national objective of improving livelihoods in the outer islands. This approach was used during the 2013 outer islands energy survey, when the Energy Planning Division (EPD) and the Marshalls Energy Company (MEC) conducted an energy survey in three outer islands and included the NGO, KIO Club, in the distribution of energy-efficient biomass stoves, as well as the Ministry of Internal Affairs and College of the Marshall Islands in conducting water quality testing and training.

1.4 Goals, baseline indicators and targets

The 2009 NEP targets or goals are still relevant. However, they are further strengthened in this policy by including additional targets, baseline indicators, to make progress on achieving the goals. The indicators are provided as a measure of success of the NEP and therefore link to the monitoring and evaluation plan provided in Chapter 3.

Indicators	Baseline	Targets		
	2013	2016	2018	2020
Goal 1: To strengthen financial, policy and legislative frameworks for the energy sector				
Number of policies including budget and annual work-plan developed, reviewed for the energy sector	0	3	4	5
Number of Energy Task Force (ETF) meetings held annually with participation of government, non - government and private sectors	0	4	6	8
Number of financing schemes and applications approved for renewable energy technologies (RETs) and energy-efficient (EE) appliances to increase public and private sector participation[7]	0	5	10	15
Number of endorsed and implemented laws and regulations on the energy sector	1	2	4	**6**
Percentage of verified and processed data sets that are available	42% (2014)	50%	60%	80%
Indicators	**Baseline**	**Targets**		
	2011[8]	**2016**	**2018**	**2020**
Goal 2: To supply 100% of urban households with electricity by 2015				
Percentage of urban households with access to grid-connected electricity	85%	100%		
Goal 3: To provide 95% of rural outer atoll households with off-grid electricity by 2015				
Percentage of outer atoll households' access to off-grid electricity. This increased to 93% in 2014	75%	95%		
Goal 4: To provide access to modern forms of cooking to 90% of all households by 2020				
Percentage of rural and urban households with modern forms of cooking	66%	90%		
Sustainability of energy services: SHS monthly tariff collection rate (%) is improved {Actual collection/target collection}	66% (2014)	80%		

[7] Refer to Annex 1 for Financial Options

[8] Sourced from the 2011 National Census report

Indicators	Baseline	Targets		
	2008	2016	2018	2020
Goal 5: To make households and businesses 50% more energy efficient, and government buildings 75% more energy efficient by 2020				
Percentage decrease in the average monthly electricity consumption of connected households	158 kWh per customer (2008[9])		50% (79 kWh)	
Percentage decrease in the average monthly electricity consumption of commercial customers	3,283 kWh per customer		50% (1,641.5 kWh)	
Percentage decrease in the average monthly electricity consumption of government buildings	10,842 kWh per customer		75% (8,131.5 kWh)	

Indicators	Baseline	Targets		
	2014	2016	2018	2020
Goal 6: To achieve a 20% efficiency improvement in transport sector fuel use by 2020				
Percentage increase in fuel-efficient vehicles imported (engine size) and car seats (increasing load) through adoption of appropriate fiscal incentives	0	5%	10%	20%
Improvement in the diesel quality used in transport (500 ppm sulphur content) – MEC, 10 ppm (Mobil)	500 ppm	10 ppm	10 ppm	
Percentage improvement in the efficiency of fuel use in the transportation sector through use of public buses and government vehicles (Data on fuel for land transport to be available)	0	2%	3%	20%

Indicators	Baseline	Targets		
	2010	2016	2018	2020
Goal 7: To reduce supply side energy losses from MEC by 20% in 2017				
Combined percentage decrease in power generation and distribution losses of the power utilities	26.21%		20.97%	
Station losses - MEC[10]	8.45% [11]		6.76%	

[9] Customer consumption data sourced from http://www.irena.org/DocumentDownloads/Publications/Marshall-Islands.pdf; Customer number data sourced from EPPSO.

[10] MEC is included only due to lack of data for KAJUR and other outstations in the atoll islands

[11] Sourced from the KEMA reports. Note data is specifically for Majuro alone.

Technical losses	6.41%		5.128%	
Non-technical losses	11.35%		9.08%	
Goal 8: To provide 20% of power generation through indigenous renewable resources by 2020				
Indicators	**Baseline**	**Targets**		
	2012	**2016**	**2018**	**2020**
Share of installed electric power generation capacity from indigenous renewable energy. This increased to 5% in 2013	3.46%[12]			20%
Affordability of energy services: 10% decrease in the average household energy expenditure load by 2020	17.6% (2002[13])			15.84%

[12] Energy Office Estimation
[13] 2002 HIES report

1.5 Rationale for revising the National Energy Policy

1.5.1 National

The 2009 NEP and EAP (2009–2012) were developed and endorsed in 2009 as a result of the economic emergency in 2008 that was caused by exorbitant increases in the cost of imported petroleum fuel and food items.

Over the last four to five years, many broad goals of the NEP and activities under the EAP have been realized and government has taken drastic steps in working towards achieving other targets, such as electrification of 95% of rural outer atolls households by 2015. In terms of renewable energy, new and emerging technologies have come into play, such as wind and ocean thermal, which need to be captured in detail, in addition to the proven technologies such as solar power that is being used extensively in the RMI. Various government sectors, such as transport, public works and climate change and environment, have also drafted and/or introduced policies that will complement or add value to the energy sector.

The government has taken steps to reduce its carbon emissions and shift to low carbon development through its commitment to the 2013 *Majuro Declaration on Climate Leadership*. There is an extensive need to strengthen the institutional structure and framework of the energy sector to ensure that the energy policy is planned, coordinated and implemented in a consistent, coordinated and structured manner. There is also a need to have a reliable energy information and database system that will be used extensively in the planning and policy coordination and in ensuring the sustainability of the energy sector. There is also a need to put in place a monitoring and evaluation mechanism for the energy sector to gauge its development and also to highlight the challenges in the energy sector.

1.5.2 Sub-regional

The Green Energy Micronesia (GEM) Initiative of the Northern Pacific was endorsed in 2010 with the aim of promoting a clean energy drive for the three Micronesian islands: Palau, Marshall Islands, and the Federated States of Micronesia. The goal includes a 20% of power generation through renewable energy by 2020 and general improved energy efficiency.

1.5.3 Regional

At the regional level, Forum Leaders met in New Zealand in 2011 for the 42nd Pacific Islands Forum and recognized the need to have secure access to energy for the sustainable economic development of the region. They reaffirmed their commitment to renewable energy and the promotion of energy efficiency and they also recognized the value of energy audits, and the development of credible whole-of-sector plans and structures to improve energy security, reduce dependence on fossil fuels for electricity generation, and improve access to electricity. The Leaders also supported the development of effective management of fuel supply, risks, meeting energy efficiency targets, expanding existing energy efficiency standards and labeling programs for electrical appliances, and facilitating greater private sector participation in the regional energy sector by systematically reducing barriers to the uptake of distributed generation. The Leaders also called on development partners to assist in the implementation of the activities in the national and regional energy sector and strengthen coordination of their financing activities.

In September 2013, RMI joined other Forum Island countries in the *Majuro Declaration on Climate Leadership* and stated that:

> Pursuant to the Republic of the Marshall Islands 2009 National Energy Policy and Energy Action Plan, the 2011 National Climate Change Policy Framework and Joint National Action Plan (for climate change adaptation, energy security and disaster risk reduction), and the Green Energy Micronesia Initiative:
>
> - A 40% reduction in CO_2 emissions below 2009 levels by 2020;
> - Electrification of 100% of urban households and 95% of rural outer atoll households by 2015;
> - The provision of 20% of energy through indigenous renewable resources by 2020;
> - Improved efficiency of energy use in 50% of households and businesses, and 75% of government buildings by 2020;
> - A 20% efficiency improvement in transportation sector fuel use by 2020;
> - Feasibility studies and internationally supported financing plans for innovative 'game-changing' renewable energy and sustainable development opportunities including Majuro atoll waste-to-energy and Kwajalein/Ebeye atoll OTEC (Ocean Tidal Energy Conversion) plants undertaken by 2015
> - 40% reduction of CO_2 emissions below 2009 levels by 2020, pursuant to the 2009 National Energy Policy and Energy Action Plan, and with subject to the provision of adequate international support. [14]

1.5.4 International

At the international level, the General Assembly of the United Nations (UN) in recognising the importance of energy for sustainable development designated the year 2014 as the International year of Sustainable Energy for All (SE4ALL). The SE4ALL initiative aims to mobilize urgent global action to three complementary objectives to be achieved by 2030:

- Ensure universal access to modern energy services
- Double the rate of improvement in energy efficiency
- Double the share of renewable energy in the global energy mix

2014–2024 has been declared the UN's Decade of SE4ALL. This has presented an opportunity to raise awareness about the importance of increasing sustainable access to energy, energy efficiency and renewable energy at the local, national, regional and international levels. Energy services have profound effects on productivity, health, education, climate change, food and water security, and communications services. The post-2015 Sustainable Development Goals will obviously feature a goal on sustainable energy. This 2015 NEP is to capture the links to SE4ALL through targets added to the 2009 NEP.

RMI is a member of the International Renewable Energy Agency (IRENA), which seeks to make an impact on the world of renewable energy by maintaining a clear and independent position, providing a range of reliable and well-understood services that complement those already offered by the renewable energy community and gather existing, but scattered, activities around a central hub. In 2014, IRENA provided technical assistance to the formulation of the Renewable Readiness Assessment, which will also link to this policy targets and activities.

[14] http://www.majurodeclaration.org/commitments

Furthermore, RMI is a member of SIDS DOCK. The RMI current project under the SIDS DOCK program in the Pacific is Sustaining Renewable Energy and Energy Efficiency Measures in Micronesia (SREEM) with two major components: the MEC Power Plant Performance Improvement and the Energy Efficiency Loan Scheme (EELS). The ultimate goal of SIDS Dock is to support the SIDS transition towards a low carbon economy through development and deployment of RE resources and promotion of greater energy efficiency (EE)

1.6 National energy policy areas

The following key thematic areas from the 2009 NEP are still relevant. However, one of the issues discussed during the consultation for this NEP was that the imported petroleum key policy area is to focus only on imported petroleum, while the demonstrations and research on biofuel are categorised under renewable energy. Thus the thematic area in the 2009 NEP was amended to Petroleum instead of Petroleum and alternative liquid fuels. The thematic areas for the 2015 NEP are:

- energy policy administration and coordination;
- petroleum;
- electric power;
- transport and energy use;
- energy efficiency; and
- renewable energy

For each of the thematic areas, key outputs and strategies were identified and listed. All these outputs and strategies lead to the four priority outcomes.

Priority outcomes

- Improved enabling frameworks for reducing dependence on imported fossil fuel
- All Marshallese have access to modern energy services
- Smarter uses of energy in households, businesses, government, transport sector and power utilities
- Reliable, sustainable and affordable energy supply

The following chapter provides a brief explanation of the current status of each thematic policy area, including institutional settings and stakeholders, as well as policy outputs aligning the policy areas to the four outcomes of the NEP.

1.6.1 Energy policy administration and coordination

The Energy Planning Division (EPD) under the Ministry of Resources and Development (MRD) was re-established in 2008 during the energy crisis to formulate a policy that would guide the energy sector during the crisis and, in particular, identify actions that put the government into an energy crisis when the global price of oil increased to above USD 120 a barrel. Since then the EPD has been the focal point for all energy-related activities and initiatives in the Marshall Islands, from managing energy projects including ADMIRE – the Actions for the Development of Marshall Islands Renewable Energies, the Northern Regional Energy Project (North-REP) and other national energy initiatives. Since the endorsement of the 2009 NEP and EAP, the EPD has been responsible for coordinating the implementation of the NEP and the five-year EAP. Foremost and one of the priority needs for MRD and EPD is to put in place a law that governs the establishment of the EPD and its roles and functions.

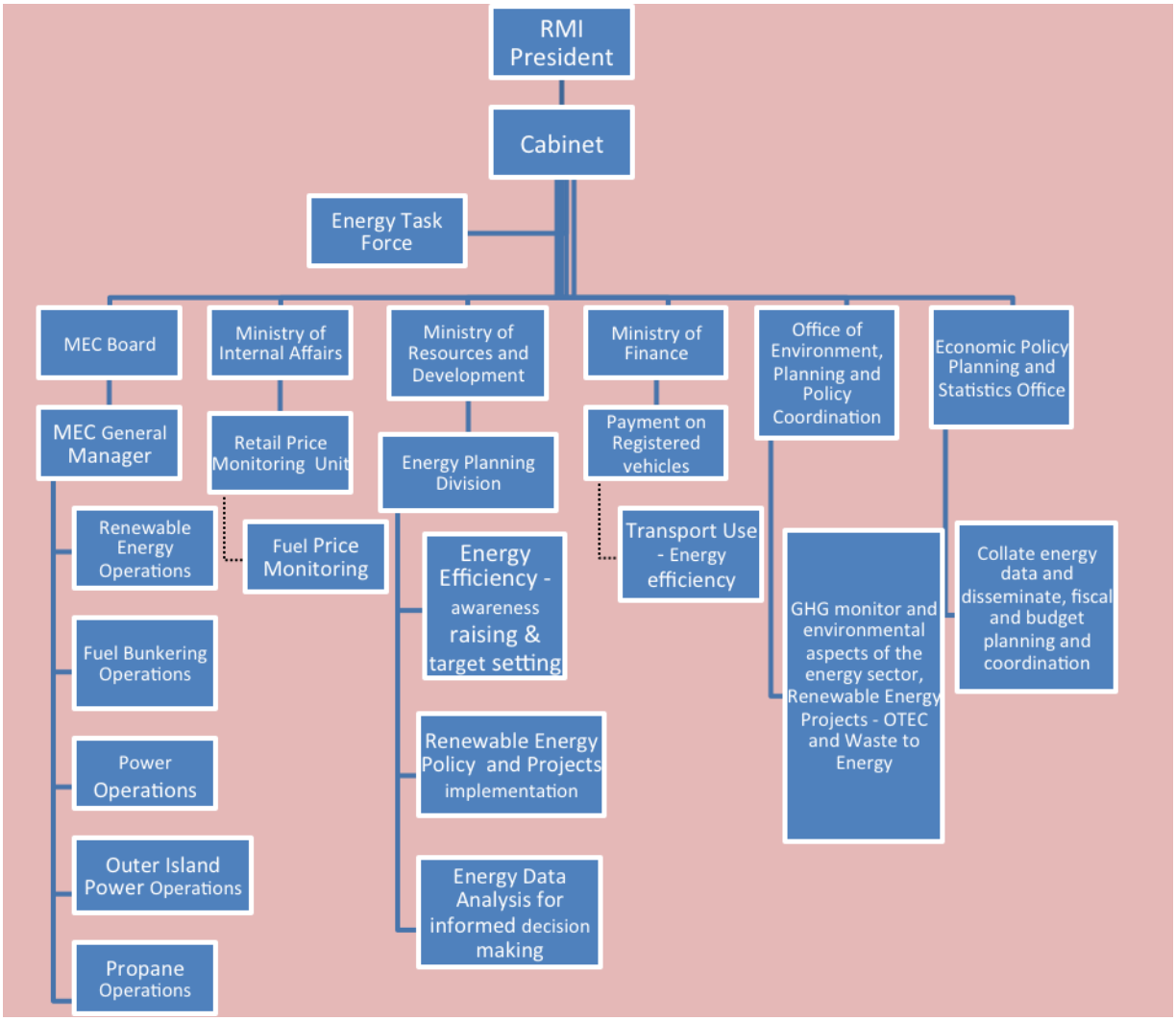
The table below, taken from the 2009 National Energy Policy Framework, is still relevant as it summarizes the main stakeholders and their responsibilities for the energy sector within government, in particular those responsibilities related to policy. This remains reasonably valid in 2015, although there was discussion at the first consultation about a Cabinet paper that had been submitted for housing the EPD under the Office of the President. If this happens, then the EPD will be housed with the Office of Environmental Planning and Policy Coordination and the Economic Policy, Planning and Statistics Office. The formation of the national Energy Task Force (ETF) as a key advisory body reporting directly to Cabinet was one of the achievements of the past years. However, this Energy Task Force and its membership needs a legal mandate to strengthen its powers and coordination role, in particular collating information, and coordinating and delineating its role as a coordinating body for the energy sector. This is another priority activity under the revised EAP.

Once the ETF is formally recognized, and this can be done through endorsement of this policy and its institutional framework, it will have more powers to work with other relevant ministries such as the Ministry of Internal Affairs, which sets maximum retail margins for some products, including outer island petroleum fuels, as well as the Ministry of Finance in the allocation of funds and as the formal link to development agencies active in the energy sector, including the Asian Development Bank and the World Bank. Other government agencies are of course also involved in energy services, including the Attorney General's Office (AG), the Ministry of Public Works (MPW), the Division of Customs, the Ministry of Transportation and Communications (MTC) and other relevant stakeholders. However, for the ETF to have its legal mandate, a proposed energy sector management act (ESMA) should be an option that will provide the legal powers and functions of the ETF. The formulation of ESMA is included as a priority activity in the revised EAP.

Because energy is an input to all government and private development efforts, there is inevitably a range of overlapping, fragmented and sometimes unclear energy sector responsibilities, and these responsibilities will change over time.

Under each policy thematic area, an organization chart showing responsibilities and links among key players is provided. Some of these will be ad hoc, some will change as activities are implemented, and some may be more-or-less permanent.

Although energy matters are important to all sectors of the economy and all agencies of government, the human resources of RMI are modest; it is important that a review and an assessment of all existing legislation be carried out as a first step to determining the extent to which a legal framework may be established. This is a priority in the revised strategic action plan.



Priority outcome: Improved enabling frameworks for reducing dependence on imported fossil fuel

Outputs:

- The Energy Planning Division continuously developed its capacity and skills set to enable it to review and manage the energy policy frameworks
- A national energy database is developed and managed (for analysis and policy development) and maintained
- Coordination and communication on energy issues at national, regional (within Micronesia and wider Pacific) and global levels shall always be strengthened

1.6.2 Petroleum

The Marshall Islands is highly dependent on imported petroleum fuels. It is estimated that about 92% of energy used in 2011 was from petroleum, biomass remaining significant but declining to about 2%, with on-grid and off-grid solar power totalling around 6%. The main petroleum imports are gasoline, diesel fuel, dual-purpose kerosene (used as aviation turbine fuel and household kerosene), and liquefied petroleum gas (LPG). In 2011, the Marshall Islands imported 56 million liters of petroleum fuel. The Marshalls Energy Company (MEC) and Mobil are the main importers, with MEC having very large storage capacity. Based on information for the years 2007 to 2011, 48% of imports were used for transportation and 52% for electricity generation. Kerosene demand for households is almost nil with increasing numbers of people using LPG for cooking and solar energy for lighting. However, in the outer islands and atolls, there is evidence that biomass is still the predominant fuel for cooking.

Despite the lack of price control, fuel prices in Majuro (excluding duties and taxes) are about average for Pacific Island countries, while outer islands fuel prices are notably higher.

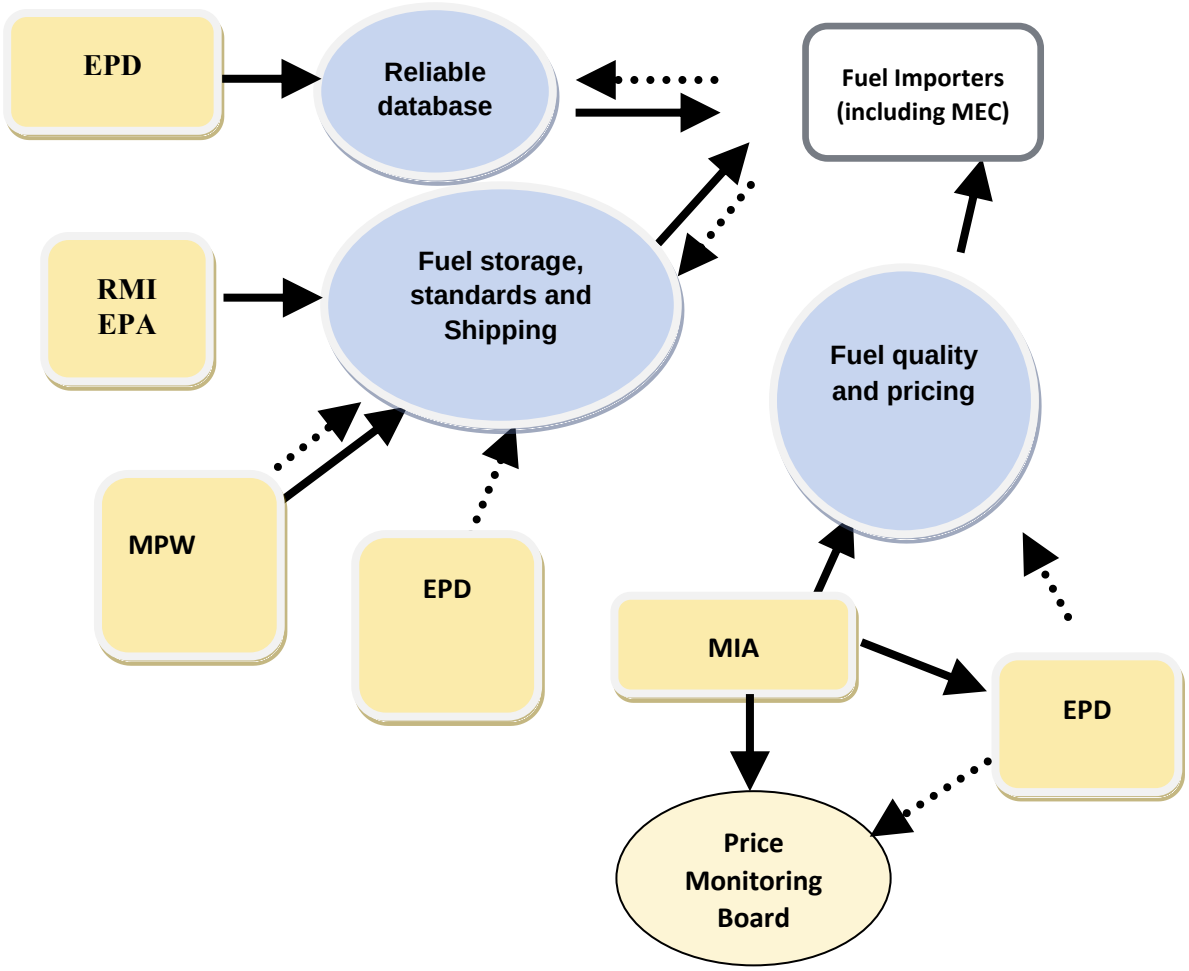
Petroleum will continue to be the dominant fuel that drives the economy and provides social services to the people, in particular the urban areas of Majuro and Ebeye. Environmental considerations were a priority when diesel fuel for power generation was changed from 5,000 parts per million (ppm) sulphur to 500 ppm sulphur in October 2013. For the transport sector, diesel of 10 ppm sulphur has also been imported to the islands by Mobil.

A lack of regulation/legislation to monitor the cost of petroleum fuel is still a challenge in the Marshall Islands, as there is no monitoring of prices in the urban and rural areas. The Retail *Price Monitoring Act 1992* currently monitors food items but not petroleum. The responsibilities regarding petroleum standards and pricing are not as well regulated and there is no legislation that provides for safety, handling, storage and distribution of petroleum products in the Marshall Islands. One of the major suppliers of petroleum products, Mobil, is responsible for the importation of motor gasoline (benzene), dual-purpose kerosene (DPK) for aviation as well as diesel for transport. The diagram below shows an appropriate structure in a real-case scenario and one which is most appropriate for the monitoring of petroleum standards, handling and pricing. The outputs for the petroleum sector are included as part of the energy sector administration and coordination area, whereby it is the responsibility of the EPD to coordinate with the MIA on the review of the *Retail Price Monitoring Act* and also include the licensing of the petroleum suppliers under the proposed ESMA.

In the arrows showing linkages in this and other graphics, the following conventions have been used:

indicates direction of decisions or authority

indicates direction of influence or interest



Priority outcome: Improved enabling frameworks for reducing dependence on imported fossil fuel
Outputs:

- Decision making regarding the importation and consumption and pricing of petroleum products shall be based on reliable data on petroleum imports, sales and end-use
- The wholesale and retail prices of petroleum products shall be made equitable for urban and rural users through control and regulation
- The safe storage, handling and distribution shall be ensured for all petroleum products

1.6.3 Electric power

Getting electricity is one of the criteria for ranking the World Bank Group Doing Business and in 2014, the Marshall Islands was ranked 63 out of 189 economies and the ranking shows a negative change for 2015. In 2011, MEC increased accountability and revenue collection through increased use of prepaid metering, one of the recommendations put forward in the 2010 KEMA report. The report provided an assessment of the power system's total loss of 26.88%, comprising technical and non-technical losses, unbilled usage such as street lighting and power station losses. The power station loss was 8.45%, which is relatively high; a typical station loss is lower than 5%. MEC supplies electricity on Majuro, Jaluit and Wotje and expects to eventually provide power to 28 other atolls with the operation and maintenance of solar PV home systems.

In the fiscal year 2011 (October 2010 through September 2011), MEC generated 62,639 MWh of electricity, used 4,098,283 US gallons (15,513 689 liters) of fuel for an overall fuel efficiency of 15.24 kWh/US gal (4.038 kWh/liter). The peak load during that period was 8.75 MW.

In that same year, MEC installed 2629 standard residential meters and 462 residential pre-paid meters. There were 462 commercial meters and 145 government meters. Average household electricity consumption was 531 KWh/month, with a tariff rate of USD 0.30 per kWh. In April 2012, the tariff rate (lifelines) increased to USD0.43 kWh and this remains the current lifelines tariff rate.

Pre-paid metering was recently introduced and the plan is to convert all residential meters to the pre-paid type as soon as possible. It has been reported that the introduction of pre-paid meters has positively influenced energy conservation. A subsidised amount – 1000 kWh/month – is provided to those persons whose land is used for transmission lines. In 2015, there are more than 600 households receiving this benefit.

The second-largest power system in the Marshall Islands is KAJUR on Ebeye. It has an installed capacity of 4.8 MW and a peak demand of 2 MW. It has about 1,300 metered customers and generates 15.6 GWh of electricity per year, using 4.2 million liters of fuel. The cost of electrical energy is heavily subsidised through duty tax imports exemptions and tax rebates given to MEC.

There is no legislation governing the standards on electrical wiring, licensing of electricians and other electrical work outside MEC operations. In 2010, a two-year comprehensive recovery plan was put forward by the stakeholders: MEC and Board of Directors, ADB, the World Bank, the Pacific Power Association and the RMI EPD.

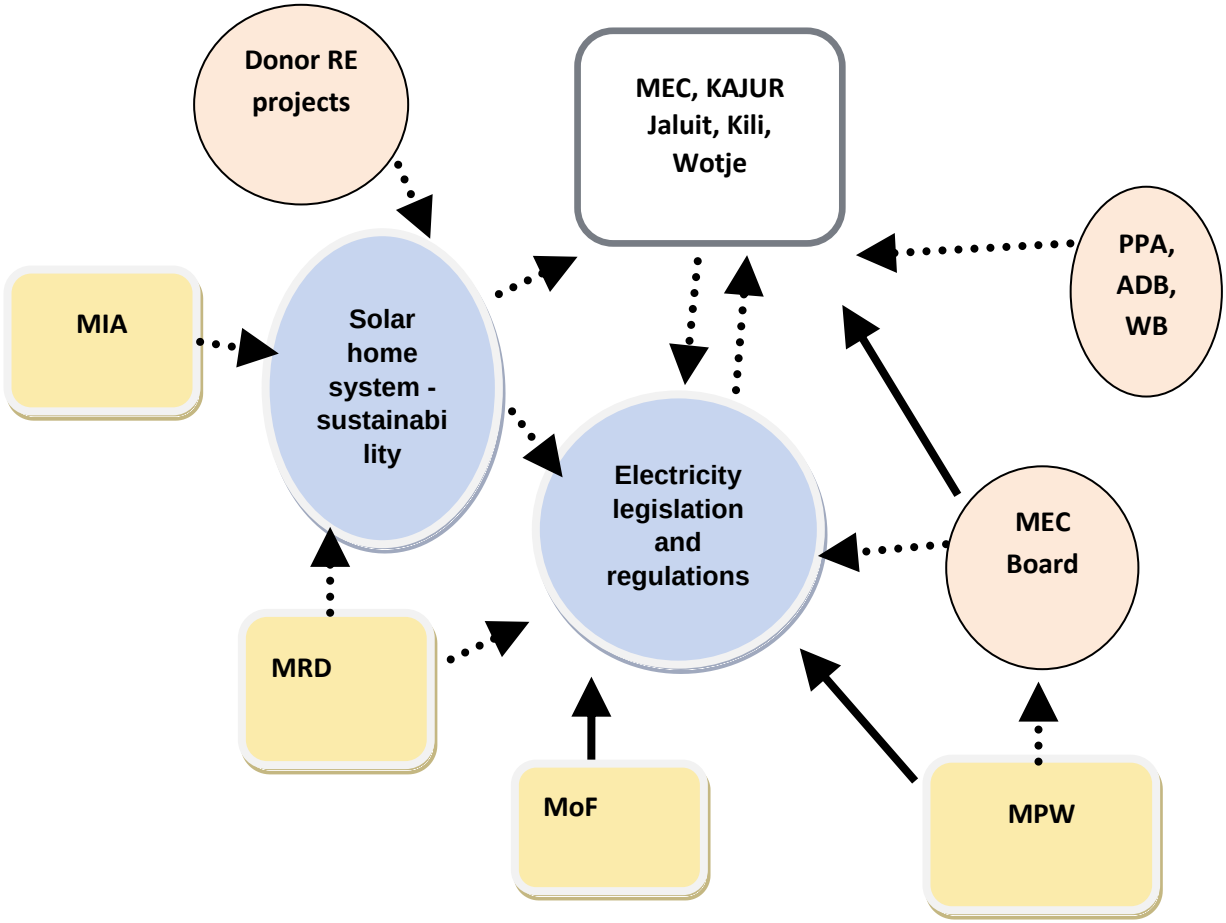
The goals and objectives of the MEC recovery plan are being considered in the development of this policy and action plan. Electricity pricing and monitoring is important if MEC operates in a commercial way. However, MEC is a state-owned enterprise and its role (as is being developed under the Article of Association) is to provide electrical or energy services to the population. The Marshall Islands is the only country in the Pacific that has no electricity act and therefore legal mandates and clear responsibilities and functions of the MEC Board and MEC are not mandated through the Nitijela (Parliament).

The outer islands and atolls are mostly electrified through off-grid solar home systems (SHS) under various projects since 2006. However, the sustainability of these solar home systems with regard to the continuation of maintenance of batteries over the lifespan, as well as replacement at the end of the battery life of five years is questionable.

Some of the root causes of the non-sustainability of these systems relate to low payment (USD 5.00 per month), which does not cover the actual operation and maintenance cost of USD 28.00 per month; limited cash income opportunities in rural households; no proper planning on ownership of the SHS; no actual payment of USD 12.00/month given to MEC); no mandated payment or collection methods and therefore each atoll depends on the national government to pay for the service.

However, it should be noted that government has provided MEC with an electricity subsidy over the last years for the urban areas. It was estimated that, by the end of 2014, and with the completion of the EU/SPC Regional Energy Programme for the Marshall Islands, a total of 3,400 SHSs should be in place, with a government subsidy estimated at USD 530,000 per annum to continually maintain, operate and sustain the SHSs for rural communities.

The following chart illustrates the various stakeholders in the electric sector, with the need for an overarching legislation that governs the sector, including its standards, licensing, and electrical standards for MEC, KAJUR and other producers, as well as SHS provisions and maintenance.



The electric power sector outcomes and outputs are summarized as follows for the purposes of follow-up actions.

Priority outcome: All Marshallese have equitable access to modern energy services

Outputs:

- The management and financial system for outer islands PV electrification regularly reviewed and enhanced to ensure sustainability, and make certain the recovery of O&M and battery replacement costs, for household and institution systems (e.g. health, fisheries, telecom, and school installations)
- A transparent tariff structure established for those receiving full electricity supplies that covers the real costs of each island system, with a lifeline tariff that genuinely benefits low-income consumers without adversely affecting MEC income
- Initiatives on provision of access to clean and efficient fuels and appliances ensured the incorporation of interventions that promotes sustainable livelihoods, health and safety and environmental protection

1.6.4 Energy efficiency (Supply and Demand)

Demand side efficiencies can be improved greatly at relatively low cost. To date there have been no concentrated efforts to improve demand side management (DSM). There are no data available on the savings of electricity since 2009. There has, however, been some effort to reduce government spending on energy efficiency. The remaining challenge is finding the investment cost needed to replace inefficient air-conditioners and lights in all the ministries and the capitol building in Majuro.

The government is the major user of energy in the Marshall Islands, accounting for around 6% of its total general fund expenditure. This policy continues to reiterate the need for government to demonstrate leadership by good energy use stewardship in all its activities. Energy conservation was mandated and energy audits were to be undertaken in government departments but this needs increased capacity, incentives and a positive attitude towards conservation practices.

Government departments were to champion good energy use stewardship, with resultant publicity of good practices and effort. An innovative proposal for the Ministry of Finance to allow departments to retain energy cost savings and spend them on other areas is very noteworthy. It would be good to improve the prospect for full implementation of this proposal. Plans to improve energy efficiency in the government transport fleet by improving maintenance and progressive replacement with more energy-efficient vehicle imports and more public transportation requires enforcement action in the first place to become effective. The phase-out of inefficient incandescent lamps and their replacement with higher efficiency products such as light emitting diodes (LEDS) or compact fluorescent lamps (CFLs) provides one of the most straightforward and cost-effective ways to significantly reduce electricity use and carbon emissions.

Several measures, such as appliance rating and labeling and favorable import duty rates, to encourage the importation of energy-efficient appliances, and special loan programs and training of private contractors in energy auditing to allow construction or retrofitting of new or existing homes to improve energy efficiency have been introduced, with limited success, but they remain relevant for the new planning period. Efforts to change the building code to allow increased energy efficiency needs to be fully implemented in the new planning period. This is an area where government and the private sector can enhance collaboration to pay huge dividends to the Marshall Islands during the new planning period.

The 2010 KEMA report analyzed the MEC power system and determined total losses of 26.88% consisting of:

- 8.45% in power station auxiliaries (station losses) which is relatively high amount of loss; typically, station losses are lower than 5%;
- 0.67% in street lighting (which should be accounted for and billed)[15]
- 6.41% in technical losses; and
- 11.35% in non-technical losses.

The non-technical and technical losses total 17.76%. The 2011 PPA benchmarking report provided indicators, one of which was the transmission losses. The target agreed in 2002 for transmission losses for all participating utilities in the benchmarking report is 5%.

Priority outcome: Smarter uses of energy in households, businesses, government, the transport sector and power utilities
Outputs:

- The reduction of MEC supply-side losses by 20% in 2017, consistent with sound technical and financial criteria should be developed and assessed
- The number of efficient electric appliances imported into the country through appropriate fiscal incentives for, businesses, households and government sectors increased
- The energy use consumption is monitored and improved through energy auditing and demand side management
-

1.6.5 Transport and energy use

The Ministry of Transport and Communication is mandated only to provide policies and standards on safety in sea transport, including infrastructure development but there is no mainstreaming of energy efficiency and conservation in sea transport. The sustainable transport and the use of indigenous energy sources for transport is seemingly considered a very attractive prospect but technical, capacity development and social acceptance are still areas to be seriously considered and explored given advances in innovation in technologies.

Land, sea and domestic air transport is the largest user of imported fuel in the Marshall Islands. The quality of life and the economic survival of outer island residents is tied strongly to the cost of transporting goods and people to and from Majuro, Ebeye and other islands. It is especially important that the fuel efficiency of sea transport be improved, both through technical means and through improved management of the available facilities. In addition there is a need to monitor and control the freight costs to the outer islands in a way that is viable and fair to both the service provider and the end users.

The goal of the energy policy is to lower the amount of fuel imported for transport by 20% by 2020, relative to a 2009 baseline. Two types of efforts will assist to meet this goal: (1) reducing energy intensity of travel by improving average vehicle fuel efficiency in miles per gallon (mpg) of fuel used; (2) reducing the amount of travel (or the need for travel) by improving efficiency of management of

[15] In 2009, IUCN assisted MEC to change 800 inefficient mercury vapour streetlights (175 watts) to LED lights, a saving of 399,055 kWh per year on street lighting.

vehicles through increased average passenger mpg of fuel or, for freight carrying vehicles, increased average ton mpg. While the use of alternative fuels may potentially result in fuel cost savings and reduced GHG emissions, alternative fuels are not considered to be a true energy efficiency strategy. They might deliver significant fuel cost savings for the operator, but an equivalent amount of energy (and sometimes more) is often required to complete the same transport task using conventional fuel. Thus the substitution of one fuel for another rarely results in energy savings.[16]

Some of the improvement can come from better fuel efficiency brought about by improved maintenance of the existing vehicle stock. There are private companies that have vehicle testing and basic car maintenance facilities; however, there is no enabling environment such as regulation or incentive for enforcing standards on fuel efficiency or vehicle worthiness. There is no legislation on restrictions of second hand cars, importation of engine sizes and fiscal incentives for importing larger vehicles with more seats.

Other initiatives are the use of hybrid cars and electric vehicles, which are considered relevant when reducing the fossil fuel consumption for transportation. The Ministry of Foreign Affairs has received a hybrid car by the European Union for demonstration use and the benefits are yet to be documented.

The testing and maintenance process set in 2009 was mandatory for government vehicles, and vehicles owned by government-owned corporations. This action was not, however, kept up or monitored; only the Ministry of Education participated and continues to enforce the maintenance of its fleet. In addition, the replacing of existing vehicles with more fuel efficient models was a slow process and therefore the goal set in 2009 was not met. It was also noted during the first consultation that there is an increased number of vehicles on the road. One of the targets that are included in this policy is to work with Ministry of Finance and Customs Division to monitor and restrict the importation of certain engine sizes and to create incentives for importing larger vehicles (eight or more seats) for public transportation around Majuro.

One of the ongoing challenges in improving efficiency in the land transport sector is the lack of a regulatory body that could establish policies and enforce legislation related to promoting fuel efficient vehicles. The Ministry of Transport and Communication is mandated only to provide policies and standards on safety in sea transport, including infrastructure development, but there is no mainstreaming of energy efficiency and conservation in sea transport. The sustainable transport and the use of indigenous energy sources for transport is seemingly considered a very attractive prospect but technical, capacity development and social acceptance are still grey areas.

Priority outcome: Smarter uses of energy in households, businesses, government, the transport sector and power utilities
Outputs:

- Increased the number of energy efficient vehicles into the country through appropriate fiscal incentives for business, private sectors, households and government sectors.
- Government developed a more energy efficient transport network through collaborations with various stakeholders and adopting best practices that are applicable in the RMI

[16] Rare Consulting (2011) Fuel for Thought – Identifying potential energy efficiency opportunities in the Australian road and rail sectors.

1.6.6 Renewable energy

Renewable energy is the most long-term alternative to imported petroleum products for electricity production in the Marshall Islands; solar photovoltaic systems are considered one of the most appropriate technology for electricity production from renewable energy, and the country has made considerable progress in improving energy production (electrification) using solar energy, mainly in the remote and outer islands and atolls. The use of renewable energy sources is a priority for the government, with its strong commitment to mitigate climate change effects, and also as a way of showing that a small island developing state is gravely concerned about the increase and impact of greenhouse gas emissions produced globally. In 2012, the ADMIRE project provided funding support for the installation of wind monitoring masts in two atolls; Wotje and Jaluits, to collect information on the potential for wind energy in these atolls. The island's first wind turbine was installed in April 2011 by a private firm, Moana Marine LLC. Capacity currently stands at 10 kW. Wind speeds for the island have been recorded in the past by the USA, with averages in the region of 6–7 m/s throughout the islands.

The EDF 9 funding support through the Renewable Energy Programme (REP-5) implemented from 2008 to 2012 installed 420 SHSs of 200 Wp in various island communities and six stand-alone PV systems, each in six primary schools with a system range from 6–13 kWp, thus a contribution of solar PV energy of around 141 kWp. The contribution of the EU/SPC Northern Pacific Regional Energy Project (North-REP) has in total installed 1,500 stand-alone SHSs (300 kWp) in the islands and it is expected that the project will be completed by 2015. It is likely that electrification programs using solar PV will continue in the future with EU funding. The sustainability of these systems is a continued challenge; there is a discussion amongst the key stakeholders, including MRD, MEC, MIA and communities to develop a more sustainable program, where the true costs of maintenance are included. The responsibility for maintenance and collection of the maintenance fee of USD 5.00 a month (a subsidised rate) is currently with MEC.

Ocean energy has long term potential. Technologies to harness ocean energy have been commercialized and more efficient technologies are being developed. Technical assistance is required for conducting a feasibility study, including social and economic viability. During the consultation for the formulation of this 2015 NEP, it was suggested that proper reporting on the feasibility study should be presented to the decision makers, in particular to the government. The wave energy and OTEC are two renewable energy technologies not yet well progressed in the region.

Biomass energy has some potential as well. A proposed project for small-scale mill systems in the outer islands is currently on hold. MEC also plans to refit the Majuro Station One, Engine #3 to utilize biofuels. The Global Sustainable Energy Islands Initiative has conducted a feasibility study on the uptake of coconut/copra biofuels as a source of energy for the Marshall Islands. The Tobolar copra mill is retailing a 50/50 blend of filtered coconut oil and diesel, below the price of regular diesel.

Priority outcome: A reliable, sustainable and affordable energy supply

Outputs:

- Private sector participation in the electric power supply in RMI shall be allowed under

conditions that are fair to MEC and the supplier (i.e. independent power producer's agreement)

- Available energy modelling developed to ascertain the technical and economic indigenous energy sources where technically practical and economically viable
- The technical capacity of government (EPD) and MEC to plan, develop, implement and manage renewable energy systems (small and medium-scale rural; large-scale urban) shall be continuously updated and enhanced.
- Economically feasible alternatives to diesel fuel for power generation shall be utilized

2.0 Linking the policy outcomes, expected outputs to the strategies

The strategies laid out in this chapter provide the links between the policy outcomes, expected outputs to the planned activities. The strategies are ideas that are then linked to the committed plan of action that have been identified to achieve the key priority outcomes, goals and vision. These strategies are provided for each of the policy outputs under the six thematic areas – energy policy administration and coordination, petroleum, electric power, transport and energy use, energy efficiency, and renewable energy. The planned activities or action plan for the three years, 2015 – 2019 is included as part of the policy and attached as Annex 1.

The strategic links to the action plans, when they are effectively implemented, should achieve the four policy outcomes;

- improved enabling frameworks for reducing dependence on imported fossil fuel
- all Marshallese have equitable access to modern energy services
- smarter uses of energy in households, businesses, government, the transport sector, and power utilities
- reliable, sustainable and affordable energy supply

The links of the policy output and the strategies to the policy outcomes is provided in the tables below.

Outcome 1 - Improved enabling frameworks for reducing dependence on imported fossil fuel

Expected Output 1: The Energy Planning Division developed its capacity and skills set to enable it to review and manage the energy legislations and policy frameworks	
Strategy 1.1	A new energy law, (Energy Sector Management Act) will be considered as appropriate to clarify powers and responsibilities within government for energy
Strategy 1.2	Annual work plan developed for MRD's Energy Planning Division, with clear objectives, priorities and timeframe, to be reviewed quarterly
Strategy 1.3	Informal training of EPD staff through attachments, RE/EE training and possible diploma or degree level training in energy
Expected Output 2: A national energy database is developed, managed (for analysis and policy development) and maintained	
Strategy 2.1	EPD coordinates energy database development, production and regular revision with relevant stakeholders
Expected Output 3: Coordination and communication on energy issues at national, regional (within Micronesia and wider Pacific) and global levels shall always be strengthened	
Strategy 3.1	The Marshall Islands to engage effectively with national, regional and global stakeholders, including energy service providers, private sectors, non-government organizations and community-based organizations and vulnerable groups to promote energy initiatives
Strategy 3.2	MRD participation in the budget reform process, including advocacy of performance-based budgeting within the government, with energy criteria as performance measures for each government ministry and agency

Strategy 3.3	EPD introduces a communications plan using multiple media and having targeted messaging to address particular interests of local stakeholder and international development partners
Expected Output 4 Decision making regarding the importation and consumption and pricing of petroleum products based on reliable data on petroleum imports, sales and end-use	
Strategy 4.1	Develop a petroleum act with provision of licensing as well as supply of petroleum data and reports
Expected Output 5 The wholesale and retail prices of petroleum products shall be made equitable for urban and rural users through control and regulation	
Strategy 5.1	Conduct an independent study of petroleum pricing on Majuro and outer atolls to determine benefits and costs and a proper pricing mechanism
Expected Output 6: The safe storage, handling and distribution shall be ensured for all petroleum products	
Strategy 2.3.1	Establish and maintain a system for inspection and certification of storage, handling and safety procedures, and licensing of petroleum storage and distribution facilities

Outcome 3 - All Marshallese have equitable access to modern energy services

Expected Output 7: The management and financial system for outer islands PV electrification regularly reviewed and enhanced to ensure sustainability, and make certain that recovery of O&M and battery replacement costs, for household and institutional systems (e.g. health, fisheries, telecoms, and school installations)	
Strategy 7.1	Conduct a comparison of two sustainability models currently in use – through selling of handicrafts and through the local government funds.
Expected Output 8: A transparent tariff structure established for those receiving full electricity supplies that covers the real costs of each island system, with a lifeline tariff that genuinely benefits low-income consumers without adversely affecting MEC income	
Strategy 8.1	Establish an effective and sustainable plan to address tariff collection and SHS maintenance
Strategy 8.2	Assessment of costs and benefits to the government subsidy to MEC[17] as part of government's efforts to rationalise payments to landowners
Expected Output 9: Initiatives on provision of access to clean and efficient fuels and appliances ensured the incorporation of interventions that promotes sustainable livelihoods, health and safety and environmental protection	
Strategy 9.1	Promote cleaner fuels and efficient cooking technologies to improve health and environmental protection, particularly the women and children

[17] MEC is one of the SOE under the Ministry of Public Works portfolio

Outcome 4 - Smarter uses of energy in households, businesses, government, the transport sector and power utilities

Expected Output 10 The reduction of MEC supply-side losses by 20% in 2017, consistent with sound technical and financial criteria should be developed and assessed	
Strategy 10.1	Effective implementation of the RMI Sustainable Renewable Energy and Energy Efficiency Measures in Micronesia including RMI[18]
Expected Output 11 The number of efficient electric appliances imported into the country through appropriate fiscal incentives for business, private households and government sectors increased	
Strategy 11.1	Effective implementation of the SIDS DOCK project titled Energy Efficiency Loan Schemes (EELS) [19]
Strategy 11.2	Revise taxation system to encourage the import of energy efficient air conditioners/major household appliances and introduce mandatory standards and labeling system
Strategy 11.3	Develop energy efficiency standards for new buildings and renovations including homes, businesses and government premises, with financing on subsidized terms for designs and construction/renovation meeting the standards
Expected Output 12 The energy use consumption is monitored and improved through energy auditing and demand side management	
Strategy 12.1	Carry out energy audits on the remaining government facilities, business communities and households and implementation of recommended energy efficient measures
Expected Output .13: Increased the number of energy efficient vehicles into the country through appropriate fiscal incentives for business, private sectors, households and government	
Strategy 13.1	Establish guidelines for the maintenance of government vehicles with adequate budget allocation
Strategy 13.2	Promote, increase awareness and create incentives (in the private sector) on efficient mode of transport, e.g. bicycles, sail boats, fuel efficient taxis
Expected Output 14 Government developed a more energy efficient transport network through collaborations with various stakeholders and adopting best practices that are applicable in the RMI	
Strategy 14.1	Investigate the practicality of retrofits to reduce fuel use in sea transport, e.g. more efficient propellers, sail-assist technologies, and other alternate energy sources

Outcome 4 - A reliable, sustainable and affordable energy supply

Expected Output 15 Private sector participation in the electric power supply in RMI shall be allowed under conditions that are fair to MEC and the supplier (i.e. independent power producer's agreement)

[18] RMI SREEM (Sustaining Renewable Energy and Energy Efficiency Measures in Micronesia) Project includes energy efficiency at MEC power plants

[19] The project includes activities to establish the energy efficiency loan schemes (EELS), to be completed by April 2015

Strategy 15.1	Develop appropriate legislation and regulations with clearly-defined authority, obligations and responsibilities for electric power supply in Majuro and throughout the Marshall Islands
Strategy 15.2	Quantify reduction in the national energy import bill for power generation
Expected Output 16 Available energy modelling developed to ascertain the technical and economic indigenous energy sources where technically practical and economically viable	
Strategy 16.1	Determine the indigenous energy resources that are available for development through feasibility studies
Strategy 16.2	Expand RE electrification for off-grid areas
Strategy 16.3	Expand the grid-connected RE capacity in Majuro, Kwajalein, Jaluit and Wotje
Expected Output 17 The technical capacity of government (EPD) and MEC to plan, develop, implement and manage renewable energy systems (small and medium-scale rural; large-scale urban) shall be continuously updated and enhanced	
Strategy 17.1	Increase awareness and provide training to public and private sectors on appropriate renewable energy systems
Strategy 17.2	Develop policy regimes including incentives and a marketing plan to increase private sector involvement and facilitate introduction of renewable energy systems
Expected Output 18 Economically feasible alternatives to diesel fuel for power generation shall be utilized	
Strategy 18.1	Conduct an independent study of the viability of alternatives to diesel fuel for power generation where economically sound (e.g. coconut oil, LNG, RE). Implementation of recommended viable alternatives

3.0 Monitoring and evaluation

This section represents a plan to guide the monitoring and evaluation (M&E) of the energy efforts and initiatives within the Marshall Islands over the life span of this national energy policy. It has been developed in conjunction with the EPD and other relevant departments, authorities, utilities and partners. The M&E plan has been developed in alignment with the RMI Strategic Development Plan objectives and the national energy policy outcomes, goals and policy outputs.

Principles of the M&E plan

1. It should be useful
2. It should be simple
3. It will strengthen government's ability to track its progress and assess effectiveness and efficiency
4. It provides a sound basis for purposes – evidence and contestability
5. It enhances transparency and accountability

3.1 Monitoring

The EPD will be the main coordinating entity for this M&E plan. It will work alongside relevant government agencies, statistics units and the national utility to collect data and undertake monitoring for the M&E plan. For the purpose of this plan, monitoring is used to describe an ongoing process of collecting routine data.

A monitoring logical framework for this national plan is provided in Annex 2. It focuses on tracking the key outcome indicators outlined above.

It is recommended that an annual monitoring report be developed, summarising the key activities undertaken during the year, as well as an analysis with recommendations based on progress against the M&E log frame to assist with forward planning, decision making on priorities, resource allocation and fundraising. This report should include an analysis of the extent to which the implementation of activities has contributed to the achievement of outcomes, which planned results were achieved, and some narrative on whether the planned activities were appropriate. The indicators and their means of verification, at the appropriate level in the log frame analysis, should be referred to.

3.2 Evaluation

An external evaluation will be undertaken at the mid-term juncture (2017) of the NEP to assess progress and outcomes of the energy efforts and to assist with any refinements to the EAP. A final evaluation should be undertaken at the end of the NEP lifespan (2020). This should also summarize the 'lessons learned' and should include information on the major challenges to implementation of the NEP and EAP, and the response to those challenges. The evaluations will be undertaken, looking at key measures of **effectiveness, efficiency, relevance** and **sustainability**. It should also have a special reference to gender and the extent to which gender has been integrated into energy initiatives and activities.

Annex 1: Energy Action Plan 2016 - 2019

The Energy Sector Action Plan provides guidance on implementing related activities to achieving the outcomes and goals set in the NEP. There are six key policy areas or thematic actions that the activities are aligned to

- Policy Administration and Coordination
- Petroleum
- Electric Power
- Transport and Energy Use
- Energy Efficiency and
- Renewable Energy

All of the activities that were not fully implemented in the 2009 EAP and considered important are included in the 2016 EAP. It is anticipated that the EAP to be monitored and evaluated annually through a log frame matrix which is developed as part of this policy and to be used for the monitoring of the EAP.

The EAP is revised to a three years strategic plan and with specific years for each activity. Each action plan includes:

- Policy Outputs as defined in the NEP
- Strategies that links the NEP to the Action Plan
- Activities under each strategy
- Organization responsible for each activities
- Support or participating organizations for implementing the activities
- Activity priority and year : the priority and the importance of each activity to progress towards the desired objectives and these are ranked as 1 as high therefore needs to be implemented in the first year of endorsing the plan
- Estimated budget and potential sources based on available information. This is expected to be change on a yearly basis when new information and projects are implemented.

The aim of the action plan is to allow the relevant stakeholders to work together to achieve the vision of the plan. The plans intend to include all activities related to the energy sector development so and that the development is coordinated through one agency and plan. Guiding principles as noted in the NEP should be considered when implementing the plan; these are adopting the whole of energy sector approach, the many partners one team approach, financial, social and environmental sustainability, gender, data management and information and climate change. The Action Plan sets out activities for a three years period and that are required to contribute to the policy outcomes and policy goal set out for the energy sector. The action plan also includes the leading agency and supporting or participating stakeholders required to implement the activities. It is noted that most of the activities are to be implemented and coordinated by the Energy Planning Division, in particular on the coordination of activities. This action plan is aligned to the National Energy Policy Outcomes identified in the policy framework;

1. Improving enabling frameworks for reducing dependency on imported fossil fuel
2. Ensure all Marshallese have access to modern energy services
3. Smarter uses of energy in households, businesses, government and transport sector, and
4. Reliable, sustainable and affordable energy supply

Each action plan includes:

- Policy Outcome
- Policy Goals linking to the Outcome

- Outputs
- Strategies
- Activities under each strategy
- Rankings is based on the Indicative Ranking Matrix see table 18
- Organization responsible for each activities
- Support or participating organizations for implementing the activities
- Activity priority : the priority and the importance of each activity to progress towards the desired objectives and these are classified as high therefore needs to be implemented in the first year of endorsing the plan
- Estimated budget and potential sources based on available information. This is expected to be change on a two year basis when new information and projects are implemented.

The activities were prioritized in accordance with the ranking matrix see below - Operationalization of the EAP

The aim of the action plan is to allow the relevant stakeholders to work together to achieve the vision of the national energy policy. The strategic and action plans intend to include all activities related to the energy sector development so and that the development is coordinated through one agency and plan. Cross cutting issues as defined in the 2016 NEP should be considered when implementing the action plan. The guiding principles are whole of energy sector, financial sustainability, environmental and social sustainability, climate change, data management and information and many partners one team.

Operationalization of the EAP

Local ownership and responsibility for the EAP are important sustainability criteria for any Plan. It was very encouraging that a number of activities in the existing EAP were earmarked to be implemented using local financial resources. This is planned to be the case in the new EAP. Increased effort is being made in the revised EAP to confirm donor funding for activities in Plan to reduce slippage during implementation. This will also enhance public confidence in the Plan. . Additionally, a ranking criterion will be used to prioritize the activities into high, low and medium categories. To enhance transparency the ranking matrix below is proposed for used to rank projects in the new EAP.

Table 1: Indicative Ranking Matrix

Criteria	**Weight (%) Up to**
Ease of implementation: proposal prepared and donor identified	15
Consistent with international obligations	10
Has revenue generation or employment creation potentials	15
Significant reduce energy imports in short run	15
Has to be implement before another activity can commence	15
Positive environmental impacts	10
Positive impact on women and poor communities	10
Meeting NEP outcomes	10
Total	100

The matrix was used to rank the activities as follows: activities with scores of 100-75% are ranked priority 1; those scoring 74 to 60%, priority 2 and those scoring 59-50% are ranked as priority 3.

The implementation of EAP was predicated on actions by state and non-state actors at the levels of the household, community and private sector investor (local and/or foreign).

It was not possible to obtain information on major users of energy in the private sector. In terms of the private sector a number of initiatives to encourage beneficial change were included in the EAP. These ranged from

assistance to carry out energy audits, favorable import tariffs to facilitate importation of energy efficient appliances and vehicles and loan financing programs to facilitate retrofitting and construction of new plants using energy efficient building technologies and appliances. These will be continued in the new EAP. Additionally, increased effort would be to quantify savings and costs associated with private sector activities as part of the revised EAP.

The private sector was to play a leading role in introducing renewable energy. Changes to energy legislation, fiscal incentives, data collection and feasibility studies were to be undertaken to contribute to an enabling environment to attract private sector investments in the renewable energy sectors. Limited progress and mixed results were made in this area. As part of the new EAP a national energy model will be developed to forecast the level of energy to be supplied by renewable energy and quantify the level of required investment to meet the targets. As part of the revised EAP GRMI will also consider developing a strategy to proactively market these opportunities available to the private sector in the energy sector. This will be included as part of the national inward investment strategy/Plan. Otherwise the required investment might not materialize and the GRMI would be in a weak position, having to react to *ad hoc* proposals from investors, which very often are speculative and not viable.

Of equal importance to creating an enabling environment for private sector involvement in the energy sector are developments in the continuation of the public sector reform programs discussed earlier. This will give prospective investors confidence and reduce uncertainty concerning the overall sustainability of RMI over the long term, when compact grants end in 2023. There is an increasingly competitive international business environment in which to attract investment. RMI would have some challenges in this area as it is ranked 114th by the World Bank, out of 189 countries in terms of doing business in 2014. In a few areas which are very important for attracting foreign investor or establishing a small business out of 189 countries RMI ranked as follows: starting a business, 56; enforcing contracts, 61; getting credit, 86; obtaining a construction permit, 32 and registering property, 189. In terms of developing a strategy to generally expand the private sector it would be advantageous for RMI to consider the issues highlighted by the World Bank doing business report.

At the household level, behavioral change is necessary to adopt energy conservation and energy efficiency practices. This would not only contribute to household energy cost savings, which could be diverted to other priority expenditure, it would also contribute to reduction of the national energy import bill and the national expenditure on energy subsidies. A number of education and awareness programs throughout the education system and using pubic media and social media commenced, more collaboration with the Ministry of Internal Affairs, Community Development Division in the current plan to facilitated action at the household level, These will be consolidated in the revised EAP. In addition a progressive tariff regime, which allowed the rate of import duties on energy efficient appliance and vehicles, was proposed in the 2009 EAP and recorded mixed results. Likewise various home financing loan programs were proposed, and achieved similar result. These efforts would be consolidated in the revised EAP. More effort would be made to increase education and awareness of these programs. As part of these effort will be to project savings from household, as this should increase interest in participating in these programs.

Energy Action Plan 2016 – 2019

THEMATIC AREA 1: ENERGY POLICY PLANNING AND COORDINATION						
Expected Output/Result 1: The Energy Planning Division developed its capacity and skills set to enable it to review and manage the energy legislations and policy frameworks						
Strategy 1.1: *A new energy law (Energy Sector Management Act) will be considered as appropriate to clarify powers and responsibilities within government for energy (1st priority)*						
Planned Activities	**Organization (s) Responsible**		**Ranking**	**Time Frame for initiation**	**Planned Budget**	
	Coordinating agency	**Participating or Supporting**			**Potential Source**	**Amount (USD)**
1.1.1 Formulate an Energy Sector Management Act[20] that provides for the management of the energy sector in the RMI including: a) Petroleum supply, safety, storage, transport, distribution and pricing b) RMI electricity utilities and their activities - c) Land, sea and domestic air transport d) Access to appropriate sites for renewable energy development and energy distribution e) Fiscal incentives (imports and taxations) and regulations relating to fuels, renewable energy components, electric appliances, vehicles, boats, large pumps and other equipment that are major energy providers and users on the national scale.	MRD	AG, MOF, MEC,KAJUR, EPA, MIA, EPPSO,OEPPC, MTC, Ports Authority, MISC, Private-Sector, AMI	1	2016	World Bank TA, SPC Petroleum Advisory TA	85,000
1.1.2 Based on above activity, review, prepare amendments, regulations and bylaws to clearly delineate responsibilities and structures for energy supply, distribution and their management	MRD	Same as above	1	2016 Q1		
1.1.3 Formally established the ETF membership, roles and functions and reporting mechanism through Cabinet. Members to include the primary energy sector stakeholders, MEC, MIA, MPW, MRD, EPPSO & OEPPC including private sector and civil society rep.	MRD	ETF members	1	2016 Q1	Internal	3,000

[2020] If the EPD is transferred to OEPPC under the Prime Minister's Office, a regulation of the OEPPC for the energy sector management is relevant

THEMATIC AREA 1: ENERGY POLICY PLANNING AND COORDINATION						
Expected Output/Result 1: The Energy Planning Division developed its capacity and skills set to enable it to review and manage the energy legislations and policy frameworks						
Strategy 1.1: *A new energy law (Energy Sector Management Act) will be considered as appropriate to clarify powers and responsibilities within government for energy (1st priority)*						
Planned Activities	**Organization (s) Responsible**		**Ranking**	**Time Frame for initiation**	**Planned Budget**	
	Coordinating agency	**Participating or Supporting**			**Potential Source**	**Amount (USD)**
a) First step is to prepare clear terms of reference for the ETF to include coordination of energy related efforts and improving energy efficiency within government						
					Sub-total Strategy 1.1	***88,000***
Strategy 1.2: *Annual work plan developed for MRD's EPD with clear objectives, priorities and timeframe including a communication strategy to be reviewed quarterly*						
Planned Activities	**Organization (s) Responsible**		**Ranking**	**Time Frame for initiation**	**Planned Budget**	
	Coordinating agency	**Participating or Supporting**			**Potential source**	**Budget (USD)**
1.2.1 Approval of national energy policy and strategic action plan providing a guideline to the energy sector planning	MRD	ETF	3	2016 Q2	Internal	3,000
1.2.2 Develop MRD EPD Annual Work Plan, based on the NEP and EAP, projects activities with clear objectives. If necessary, review and amend Action Plan according to resources available.	MRD	ETF	1	2016 Q1	Internal TA SPC	5,000
					Sub-total Strategy 1.2	***8,000***
Strategy 1.3 *Informal training of Energy Planning Division staff through attachments, RE/EE training, and possible diploma or degree level training in energy*						
Planned Activities	**Organization (s) Responsible**		**Ranking**	**Time Frame for initiation**	**Planned Budget**	
	Coordinating agency	**Participating or Supporting**			**Potential Source**	**Budget (USD)**
1.3.1 Determine the human resources needed to effectively implement the revised legislation, regulations and bylaws.	MRD	MEC/KAJUR ETF, PSC MOF, MIA	1	2016 Q1	ADMIRE, Internal Budget (TA)	10,000
1.3.2 Develop a capacity building program with costs where needed,	MRD	as above	1	2016 Q3	Internal,	10,000

prepare project document for capacity building.					SPC	
					Sub-total Strategy 1.3	***20,000***
Expected Output/Result 2: A national energy database is developed and managed (for analysis and policy development) and maintained						
Strategy 2.1:EPD coordinates energy database development, production and regular revision with relevant stakeholders						
Planned Activity	**Organization (s) Responsible**		**Ranking**	**Time Frame for initiation**	**Planned Budget**	
	Coordinating agency	**Participating or Supporting**			**Potential Source**	**Budget (USD)**
2.1.1 EPD to recruit a database officer to collate data and develop energy statistics yearbooks and to be trained on technical, gender and social aspects of energy.	MRD	EPPSO, MOF, SPC	2	ongoing	Internal	10,000
2.1.2 Enforce the regulation and through licensing to require all petroleum suppliers and retailers to provide quarterly reports to MRD and EPPSO on volumes of fuel imported as well as fuel consumption by sector – transport, fisheries, aviation, households/residential	MRD	AG, MEC, Fuel importers,	2	2016 Q2	SPC	3,000
2.1.3 Maintain an up-to-date active registry of opportunities for donor support through projects channeled to MRD-EPD	MRD	EPD, MOFA	2	2016 Q1	SPC - TA	5,000
					Sub-total Strategy 2.1	***18,000***
Expected Output/Result 3: Coordination and communication on energy issues at national, regional (within Micronesia and wider Pacific) and global levels shall always be strengthened						
Strategy 3.1 *The Marshall Islands to engage effectively with national, regional and global stakeholders including energy service providers, private sectors, non-government organizations and community based organizations and vulnerable groups to promote energy initiatives*						
3.1.1 Develop calendar events at national level with MIA –mayor, women, youth, disabled and other gender groups and work together to promoting energy initiatives (EE awareness and RE services)	MRD	MIA, SPC	3	2016 Q2	Internal	2,000
3.1.2 EPD to work in close collaboration with the OEPPC in mainstreaming of climate change activities, particularly support for appropriate and practical RE/EE, capacity building for environmental sustainability and economic opportunities and climate financing	MRD	OEPPC	2	2016 Q3	Project partners /GIZ, IUCN, SPC, SPREP, IRENA	2,000
					Sub-total Strategy 3.1	***4,000***

Strategy 3.2 *MRD participation in the budget reform process, including advocacy of performance-based budgeting within the government with energy criteria as performance measures for each government ministry and agency*						
Planned Activities	**Organization (s) Responsible**		**Ranking**	**Time Frame for initiation**	**Planned Budget**	
	Coordinating agency	**Participating or Supporting**			**Potential Source**	**Budget (USD)**
3.2.1 EPD to submit annual budget relating to policy implementation with energy indicators as performance measures	MRD	MOF, MIA, SPC	1	2016 Q1	SPC	5,000
					Sub-total Strategy 3.2	***5,000***
Strategy 3.3 *EPD introduces a communications plan using multiple medias and having targeted messaging to address particular interests of local stakeholder and international development partners*						
Planned Activities	**Organization (s) Responsible**		**Ranking**	**Time Frame for initiation**	**Planned Budget**	
	Coordinating agency	**Participating or Supporting**			**Potential Source**	**Budget (USD)**
3.3.1 EPD develops energy messages through different media targeting different gender groups, women, men, youth and school children	MRD	MIA, SPC	2	2016 Q1	SPC	10,000
					Sub-total Strategy 3.3	***10,000***
					TOTAL POLICY ADMINISTRATION AND COORDINATION ACTION PLAN	**149,000**

THEMATIC AREA: PETROLEUM SECTOR						
Expected Output/Result 4: Decision making regarding the importation, consumption and pricing of petroleum products based on reliable data on petroleum imports, sales and end-use						
Strategy 4.1 *Develop Petroleum Sector Act with provision of licensing as well as supply of petroleum data and reports*						
Planned Activities	**Organization (s) Responsible**		**Ranking**	**Time Frame for initiation**	**Planned Budget**	
	Coordinating agency	**Participating or Supporting**			**Potential Source**	**Budget (USD)**
4.1.1 Develop a Petroleum Act regulating the storage and handling of petroleum including rules for transporting and storing and licensing regime, sharing of data and information on a quarterly basis to MRD & EPPSO). This is in addition to Customs reporting requirements) on volumes of each type of fuel imported and sold.	MRD with AG	MOF, MEC, Fuel Importers	2	2016 -2017	Internal, TA/SPC	55,000
4.1.2 Provide information quarterly to SPC quarterly regional fuel price monitor that will assist with national fuel monitoring pricing.	MRD with MIA	MOF, Fuel importers	3	2016 - 2019	TA/SPC	3,000
4.1.3 Implement the MEC-Petroleum Reform Programme (PRP) activities; Management and Operational, Procedural and process and Physical	MEC	MRD	3	2016 - 2019		5,380,000
					Sub-total Strategy 4.1	**5,633,000**

Expected Output/Result 5: The wholesale and retail prices of petroleum products shall be made equitable for urban and rural users through control and regulation						
Strategy 5.1 *Conduct an independent study of petroleum pricing on Majuro and outer atolls to determine benefits and costs and a proper pricing mechanism*						
Planned Activities	**Organization(s) Responsible**		**Ranking**	**Time Frame for Initiation**	**Planned Budget**	
	Coordinating agency	**Participating or Supporting**			**Potential Source**	**Budget (USD)**
5.1.1 Develop a pricing template appropriate for RMI to monitor the fuel prices to be later regulated by legislation or other means	MRD	MIA AG	1	2016- 2017	SPC/TA, Internal	5,000
5.1.2 Arrange an independent study to evaluate gasoline, diesel fuel, kerosene and the benefits and costs of a mechanism to establish	MRD	SPC	2	2016 Q3	SPC/TA	20,000

maximum wholesale and retail price margins. The study should also identify and assess different methods for regulating fuel prices and recommend a method that is feasible and practical for the RMI						
5.1.3 Develop expertise with EPD and MEC as appropriate to tender, negotiate and monitor petroleum supply contracts through consultations	MRD	MIA, MEC	2	2016 Q3	SPC/TA	10,000
					Sub-total Strategy 5.1	**35,000**
Expected Output/Result 6: The safe storage, handling and distribution shall be ensured for all petroleum products						
Strategy 6.1 *Establish and maintain a system for inspection and certification of storage, handling and safety procedures and licensing of petroleum storage and distribution facilities*						
Planned Activities	**Organization(s) Responsible**		**Ranking**	**Time Frame for Initiation**	**Planned Budget**	
	Coordinating agency	**Participating or Supporting**			**Potential Source**	**Budget (USD)**
6.1.1 Recruit staff dedicated to implementation of the proposed Petroleum Act – inspection and licensing of petroleum storage and handling	MRD, PSC	MEC, MIA	1	2016- 2019	WB, SPC	10,000
6.1.2 Through proper trainings, develop standards/guidelines for inspection and certification of storage, handling and safety procedures and licensing of petroleum storage and distribution facilities	MRD	MEC, KAJUR MIA, MOF,EPA	1		SPC, WB	5,000
6.1.3 Obtain professional advice on the quality and suitability of fuels imported into RMI and any bio-fuels produced locally. Develop standards if required.	MRD	MEC, EPA, Toboloar	2		SPC/TA	5,000
6.1.4 To develop a concept on how to monitor the high sea fuel bunkering	MRD	MEC AG	2	2016 Q1	SPC/TA	5,000
					Sub-total Strategy 6.1	**25,000**
					TOTAL PETROLEUM ACTION PLAN	**6,008,000**

KEY THEMATIC AREA: ELECTRIC POWER						
Expected Output/Result 7: The management and financial system for outer islands PV electrification regularly reviewed and enhanced to ensure sustainability, and make certain that recovery of O&M and battery replacement costs, for household and institutional systems (e.g. health, fisheries, telecoms, and school installations)						
Strategy 7.1: Conduct a comparison of two sustainability models currently in use – through selling of handicrafts and through the local government funds						
Planned Activities	**Organization(s) Responsible**		**Ranking**	**Time Frame for initiation**	**Planned Budget**	
	Coordinating agency	**Participating or Supporting**			**Potential Source**	**Budget (USD)**
7.1.1 Marshall Islands Major Association (MIMA) in partnership with EPD to review and highlight pros and cons of the two models and develop a solution/establish partnerships with relevant agencies	MRD	MIA, MEC, MIMRA Tobolar, WUTMI	3	2016 Q2	Internal	5,000
7.1.2 Introduce Green tax for sustaining SHS to contribute to reducing use of petroleum products thus promoting a green and clean economy	MRD OEPPC	MEC, EPD	2	2016 Q3	Internal	1,000
7.1.3 Develop a plan on the maintenance and operations of all SHS to develop proposals for replacement of batteries when required	EPD	MEC	1	2016 Q1	Internal, North REP	2,000
					Sub-total Strategy 7.1	**8,000**
Expected Output/Result 8: A transparent tariff structure established for those receiving full electricity supplies that cover the real costs at each island system, with a lifeline tariff that genuinely benefits low-income consumers without adversely affecting MEC income						
Strategy 8.1 Establish an effective and sustainable plan to address tariff collection and SHS maintenance						
Planned Activities	**Organization(s) Responsible**		**Ranking**	**Time Frame for initiation**	**Planned Budget**	
	Coordinating agency	**Participating or Supporting**			**Potential Source**	**Budget (USD)**
8.1.1 Improving collection of monthly usages taking into consideration the limited cash opportunities in the outer and rural households. An assessment of real costs of rural PV electrification was done through North REP.	MRD	MEC, MIA	1	2016 Q1	Internal	2,000
8.1.2 Maintain collaborations with MIA and women's group organization to effectively adopt a plan for sustainability of the solar home systems	MRD	MIA, MEC, WUTMI	1	2016 Q1	Internal	2,000

					Sub-total Strategy 8.1	**4,000**
Strategy 8.2 *Assessment of costs and benefits to the government subsidy to MEC[21] as part of government efforts to rationalize payments to landowners*						
Planned Activities	**Organization(s) Responsible**		**Ranking**	**Time Frame for initiation**	**Planned Budget**	
	Coordinating agency	**Participating or Supporting**			**Potential source**	**Budget (USD)**
8.2.1 Develop a transparent policy that clearly defines the benefits of the 1,000kWh per month electricity allowance for landowners and government.	MRD	MEC, MIA	2	2016 Q1	MEC	2,000
8.2.2 Implement a cash power meter systems in all MEC customers including government, businesses and households	MEC, KAJUR	MRD	1	ongoing	Japan, Australia, DOI, ADB	500,000
					Sub-total Strategy 8.2	***502,000***
Expected Output/Result 9: Initiatives on provision of access to clean and efficient fuels and appliances ensured the incorporation of interventions that promotes sustainable livelihoods, health and safety and environmental protection						
Strategy 9.*1: Promote cleaner fuels and efficient cooking technologies to improve health and environmental protection particularly the women and children*						
Planned Activities	**Organization(s) Responsible**		**Ranking**	**Time Frame for initiation**	**Planned Budget**	
	Coordinating agency	**Participating or Supporting**			**Potential Source**	**Budget (USD)**
9.1.1 Promotes and seek support to distribute energy efficient biomass stove and LPG use for cooking[22].	EPD	KIO	1	ongoing	USA,GEF-UNDP, SPC	154,500
					Sub-total Strategy 9.1	***154,500***
					TOTAL ELECTRIC POWER ACTION PLAN	***668,500***

[21] MEC is one of the SOE under the Ministry of Public Works portfolio

[22] Two types of energy efficient stoves have been distributed to outer islands and atolls by KIO. The first 900 was purchased from StoveTech through the USA funding, the second patch 960 procured through GEF funding. Additional USD25,000 obtained from North REP project in 2015.

KEY THEMATIC AREA: ENERGY EFFICIENCY AND CONSERVATION						
Expected Output/Result 10: The reduction of MEC supply-side losses by 20% in 2017, consistent with sound technical and financial criteria should be developed and assessed						
Strategy 10.1:Effective implementation of the RMI Sustainable Renewable Energy and Energy Efficiency Measures in Micronesia including RMI						
Planned Activities	**Organization (s) Responsible**		**Ranking**	**Time Frame for initiation**	**Planned Budget**	
	Coordinating agency	**Participating or Supporting**			**Potential Source**	**Budget (USD)**
10.1.1 Preparation for the power plant testing (Majuro Power Stations 1& 2)	MEC	MRD, UNDP, SPREP	1	2016 Q1	SIDSDOCK, SPREP-PIGGAREP+	2,000
10.1.2 Conduct of power plant testing to establish the actual energy utilization performance of the generating units	MEC	MRD, UNDP, SPREP	1	2016 Q1		94,500
10.1.3 Analysis and interpretation of the performance testing of each power generation unit						
10.1.4 Documentation of the results, findings and evaluation of the energy utilization performance of each power generation unit in the Majuro Power Plant (1 &2)						
10.1.5 Identification of EE improvements in the power plant operations and in each power generation unit (no cost or housekeeping measures; low to medium cost measures; capital intensive)	MEC	MRD, UNDP, SPREP	1	2016 Q1		4,000
10.1.6 Power generation technical expert recruited to design an EE Improvement measures with implementation cost	MEC	MRD, UNDP, SPREP	2	2016 Q2		73,000
10.1.7 Development of a computerized load distribution and dispatch system	MEC	MRD, UNDP, SPREP	2	2016 Q2		8,000
10.1.8 Implementation of the load distribution and dispatch optimization system						

10.1.9 Prepare guides/manuals for EE power plant operations, power plant testing and load optimization – designed for the MEC Power Plants	MEC	MRD, UNDP, SPREP	1	2016 Q2		8,000
10.1.10 Conduct of capacity development on EE power plant operations, power plant testing and load optimization for MEC Power Plants technical and operations personnel						
					Sub-total Strategy 10.1	***189,500***

Expected Output/Result 11: The number of efficient electric appliances imported into the country through appropriate fiscal incentives for business, private sectors, households and government sectors increased

Strategy 11.1 Effective implementation of the SIDS DOCK project titled Energy Efficiency Loan Schemes (EELS) [23]

Planned Activities	Organization (s) Responsible		Ranking	Time Frame for initiation	Planned Budget	
	Coordinating agency	Participating or Supporting			Potential Source	Budget (USD)
11.1.1 Review of existing financing schemes in RMI and literature on financial mechanisms for EE housing projects and EE appliance/equipment loan programs	MIDB MRD	Sub contract	1	2014 Q4 - 2016	same as above	5,000
11.1.2 Design an appropriate financing scheme and capacity building						9,000
11.1.3 Launch of EELS						10,000
					Sub-total Strategy 11.1	**24,000**

Strategy 11.2 *Revise taxation system to encourage the import of energy efficient air-conditioners / major household appliances & introduce mandatory standards and labeling system*

Planned Activities	Organization (s) Responsible		Ranking	Time Frame for initiation	Planned Budget	
	Coordinating agency	Participating or Supporting			Potential Source	Budget (USD)
11.2.1 Review an existing act to adopt an appliance and labeling standard applicable to the RMI	MRD	EPPSO, SPC	2	2015 Q4 - 2016	SPC	5,000

[23] This is the project under the SID DOCK – PIGGAREP plus funding to be completed by April 2015

11.2.2 Introduce incentives to encourage importation of energy efficient appliances (this activity is ongoing and will be refined based on local and region experiences)	MRD	MOF, EPPSO, Importers and retailers	1	2014 Q1 - 2016	ADMIRE and Internal	3,000
					Sub-total Strategy 11.2	**8,000**

Strategy 11.3: *Develop energy efficiency standards for new buildings and renovations including homes, businesses and government premises, with financing on subsidized terms for designs and construction/renovation meeting the standards*

Planned Activities	**Organization (s) Responsible**		**Ranking**	**Time Frame for initiation**	**Planned Budget**	
	Coordinating agency	**Participating or Supporting**			**Potential Source**	**Budget (USD)**
11.3.1 Implement recommendation from research on energy codes and standards for buildings based on code from Palau	MRD	MPW, MIDB USDA, Hawaii DBEDT	1	2016	ADMIRE Internal	5,000
11.3.2 Re-form a building codes task force and engage a consultant to prepare draft energy codes/guidelines for new building construction and building renovation appropriate to the type of building construction used in RMI	MRD	DPW, Private contractors, MIA, MALGOV	1	2016	ADMIRE UNDP Internal	50,000
11.3.3 Implement and enforce new energy code/standards/guidelines for construction and renovation of buildings		MRD	1	2016	WB EIB (MIDB) EC	5,000
					Sub-total Strategy 11.3	**60,000**

Expected Output/Result 12: The energy use consumption monitored and improved through energy auditing and demand side management

Strategy 12.1 *Carry out energy audits on remaining government facilities, business communities and households and implementation of recommended energy efficient measures*

Planned Activities	**Organization (s) Responsible**		**Ranking**	**Time Frame for initiation**	**Planned Budget**	
	Coordinating agency	**Participating or Supporting**			**Potential Source**	**Budget (USD)**

12.1.1 Arrange training for contractors and importers in low cost energy efficiency improvements in air-conditioned homes and implement retrofits in at least five homes	MRD	Contractors, Importers, General Public, Media	1	2016 - 2017	Denmark (PIGARREP plus), Japan, ADB, GEF	100,000
12.1.2 Carry out energy audits and efficiency improvements within government, households and businesses	MRD	MPW, MEC, KAJUR	2	2016 - 2017		200,000
12.1.3 Based on results of energy audits, develop and implement a program to improve energy efficiency in 25% of all Majuro and Ebeye homes	MRD	As above plus RMI banks	1	2016 - 2019		800,000
12.1.4 Evaluate and refine programs and continue to engage public in energy conservation and efficiency education programs	MRD	Task Force, DOE,Media	1	2016 - 2019		300,000
12.1.5 Support the ongoing activities in delivering of energy audits, capacity and awareness raising on demonstrations of good practice	MRD/MPW	All government agencies	1	2016- 2019		100,000
					Sub-total Strategy 12.1	**1,500,000**
					TOTAL ENERGY EFFICIENCY ACTION PLAN	**1,781,500**

THEMATIC AREA: TRANSPORT AND ENERGY USE						
Expected Output/Result 13: Increased the number of energy efficient vehicles into the country through appropriate fiscal incentives for business, private sectors, households and government						
Strategy 13.1*:* Establish guidelines for the maintenance of the Government vehicle with adequate budget allocation						
Planned Activities	**Organization (s) Responsible**		**Ranking**	**Time Frame for initiation**	**Planned Budget**	
	Coordinating agency	**Participating or Supporting**			**Potential Source**	**Budget (USD)**
13.1.1 Review current legislation and develop a regulation or policy for mandating vehicle maintenance and engine size for government vehicles – do a comparative study to that of other pacific countries in the North.	MPW	MRD , OEPPC	1	2016 Q3	Internal	25,000
13.1.2 Provide Training of government personnel in the testing and repair process for government and private sector.	MPW	OEPPC, MRD	2	2016	Internal	5,000
13.1.3 Incorporate maintenance expenses in the National budget process	MOF	MPW, MRD	2	2016 – 2019	Internal	2,000
13.1.4 Introduce a regulatory instrument for spot-checks on vehicle emissions with penalties for emissions above a specified level	OEPPC	MRD, MPW	3	2016 Q4	Internal/ SPC TA	3,000
13.1.5 Develop standards on energy efficient vehicles and mandating all government vehicles comply with the standards and develop monitoring mechanisms	MPW	OEPPC, MRD	1	2016	SPC TA	3,000
13.1.6 Develop a policy that government made availability public transport for government workers (passenger seat of more than 12 people)	MPW	MRC	3	2016	Internal	10,000
					Sub-total Strategy 13.1	**48,000**

Strategy 13.2 Promote, increase awareness and create incentives (in the private sector) on efficient mode of transport e.g. bicycles, sail boat, fuel efficient taxis, small engine sizes						
Planned Activities	**Organization (s) Responsible**		**Ranking**	**Time Frame for initiation**	**Planned Budget**	
	Coordinating agency	**Participating or Supporting agencies**			**Potential Source**	**Budget (USD)**
13.2.1 Assess options to discourage the importation of vehicles that have larger engines through revise Import Duties Act and provide incentives for smaller engines or increased seat capacity	MRD	MPW, MOF/Customs	1	2016 Q2	Internal	10,000
13.2.2 Undertake a study of an efficient public transport systems in Pacific islands, with similar traffic patterns for implementation	MPW	Customs, MTC, EPD	2	2016 Q2	Internal	15,000
13.2.3 Study the feasibility of LPG, hybrid and electric (powered by renewable electricity vehicles, including buses	MOF	EPD	1	2016 Q3	Internal	20,000
13.2.4 Demonstrate the fuel savings on the hybrid car used by the Ministry of Finance	OEPPC	MRD/EPD	1	2016 Q1	Internal	5,000
					Sub-total Strategy 13.2	**50,000**
Expected Output/Result 14: Government developed a more energy efficient transport network through collaborations with various stakeholders and adopting best practices that are applicable in the RMI						
Strategy 14.1 Investigate the practicality of retrofits to reduce fuel use in sea transport, e.g. more efficient propellers, sail-assist technologies, and other alternate energy sources						
Planned Activities	**Organization (s) Responsible**		**Ranking**	**Time Frame for initiation**	**Planned Budget**	
	Coordinating agency	**Participating or Supporting**			**Potential Source**	**Budget (USD)**
14.1.1 Study the possibility that all diesel powered government	MRD	MOF,	2	2016 - 2019	Internal	50,000

vehicles will use locally made coconut based biofuel (to the extent it is available) by 2020. Must be linked to the renewable energy project for the increased production of locally sourced biofuel		MPW,Tobolar , MEC				
14.1.2 MRD coordinates with MTC on standards/codes on fuel efficient vessels with possible regulated under the Domestic Water Craft Act	MRD MTC	MOF MIA EPA	1	2016	ADB/WB TA-SPC/EDD	10,000
14.1.3 If feasibility study is technically feasible (above activity) the consultant would prepare a project that can encourage diesels for replacement of existing gasoline engines through favorable term financing and incentives.	MTC	MRD	1	2016	TA-SPC/EDD	20,000
14.1.4 Develop programs to encourage the use of wind supplementation for intra-atoll transport and lagoon fishing	MIA	WAM, MRD, OEPPC, MTC, MIMRA, WUTMI	1	2016- 2019	Internal	20,000
					Sub-Total Strategy 14.1	**100,000**
					TOTAL TRANSPORT AND ENERGY USE	**198,000**

ENERGY ACTION PLAN 2016 - 2019

KEY THEMATIC AREA: RENEWABLE ENERGY						
Expected Output/Result 15: Private sector participation in the electric power supply in RMI shall be allowed under conditions that are fair to MEC and the supplier (i.e. independent power producer's agreement)						
Strategy 15.1: *Develop appropriate legislation and regulations with clearly-defined authority, obligations and responsibilities for electric power supply in Majuro and throughout the RMI*						
Planned Activities	**Organization (s) Responsible**		**Ranking**	**Time Frame for initiation**	**Planned Budget**	
	Coordinating agency	**Participating or Supporting**			**Potential Source**	**Budget (USD)**
15.1.1 Develop the Electricity Act, that clearly define the powers of the MEC and other utilities, obligations, constitution and roles of the Board and responsibilities for electric power supply in Majuro and throughout the RMI	Cabinet , MEC Board	MOF, MPW, MRD	1	2016 Q1	Possibly WB as follow up to proposed 2009 study *	85,000
15.1.2 Development of technical guidelines for grid connected self-generation through renewable energy sources, and feed-in tariffs to be established. This guidelines are to be adopted through the proposed Electricity Act	MEC Board	MRD, ETF	1	2016 Q1	IRENA, JICA, PPA	20,000
15.1.3 Consider the recommendations on the MEC and utilities tariff review conducted through North REP project and to be regulated through the ESMA and the proposed Electricity Act	MRD with MEC	MOF, Business Community	2	2016 Q3	SPC, WB (follow-up to study)	5,000
					Sub-total Strategy 15.1	***110,000***
Strategy 15.2 *Quantify reduction in the national energy import bill for power generation*						
Planned Activities	**Organization (s) Responsible**		**Ranking**	**Time Frame for initiation**	**Planned Budget**	
	Coordinating agency	**Participating or Supporting**			**Potential Source**	**Budget (USD)**
15.2.1 Provide updated data on petroleum import and use	MEC	MRD, SPC	1	2016 - 2019	Internal	9,000

for power generation every quarter						
					Sub-total Strategy 15.2	**9,000**
Expected Output/Result 16: Available energy modelling developed to ascertain the technical and economic indigenous energy sources where technically practical and economically viable						
Strategy 16.1 Determine the indigenous energy resources that are available for development through feasibility studies						
Planned Activities	**Organization (s) Responsible**		**Ranking**	**Time Frame for initiation**	**Planned Budget**	
	Coordinating agency	**Participating or Supporting**			**Potential Source**	**Budget (USD)**
16.1.1 Establish and adopt the guidelines for on grid connection including appropriate policy measures such as feed in tariffs and power purchase agreements	MRD, MEC	MPW, Chamber of Commerce, SPC, PPA	2	2016 Q2	EC ADMIRE PPA/IRENA	25,000
16.1.2 Adopt the above guidelines into policies; the policies will include the designs and appropriate feed in tariffs, power purchase agreement, etc.	MRD	Same as above	2	2016 Q4	DOI; NREL Possibly EC TCF EC; UNDP	15,000
16.1.3 Complete the Renewable Readiness Assessment	MRD	MEC	3	2016 Q1	EC, IRENA	20,000
16.1.4 Create awareness and incentives for private and local households to participate in the on grid connections	MEC,MIDB	MRD	1	2016 Q 2	EC, ICDF	2,500
					Sub-Total Strategy 16.1	**62,500**
Strategy 16.2 *Expand solar electrification for off-grid areas*						
Planned Activities	**Organization (s) Responsible**		**Ranking**	**Time Frame for initiation**	**Planned Budget**	
	Coordinating agency	**Participating or Supporting**			**Potential Source**	**Budget (USD)**
16.2.1 Rehabilitation of SHS (change batteries)	MRD	MEC, EPA, MAWC	1	2016 - 2017	Taiwan, EC	1,000,000
16.2.2 Develop environmentally sound disposal plan for batteries, solar panels, etc.	EPA, MAWC	MRD, MEC, MIA	2	2016 Q2	Taiwan, ADMIRE	5,000

16.2.3 Implement solar grid connected home loan – replicate the EELS – Energy efficiency Loan Scheme	MIDB, MEC	MRD	2	2016	Taiwan, ADMIRE	10,000
					Sub-total Strategy 16.2	**1,015,000**
Strategy 16.3 *Expand the grid connected RE capacity in Majuro, Kwajalein, Jaluit and Wotje*						
Planned Activities	**Organization (s) Responsible**		**Ranking**	**Time Frame for initiation**	**Planned Budget**	
	Coordinating agency	**Participating or Supporting**			**Potential Source**	**Budget (USD)**
16.3.1 A solar PV Grid Stability Study	MRD	MEC	1	ongoing	JICA	350,000
16.3.2 Consider implementation of the proposed additional 500 kWp of grid connected RE systems for Majuro schools and government offices based on the feasibility study conducted by JICA	MRD	MEC, MPW, MOE	3	2016 Q1	JICA	5,000,000
16.3.3 Project proposals submitted to UAE funding for additional 500kWp for grid connected solar at MEC	MRD	MEC, MPW, MOE	3	2016 Q1	UAE	5,000,000
16.3.4 Undertake a roof tops and parking areas assessments to establish locations for solar installations	MRD	MEC	3	2016 Q 2	IRENA	5,000
					Sub-total Strategy 16.3	**10,355,000**
Expected Output/Result 17: The technical capacity of government (EPD) and MEC to plan, develop, implement and manage renewable energy systems (small and medium-scale rural; large-scale urban) continuously updated and enhanced						
Strategy 17.1 *Increase awareness and provide training to public and private sector on appropriate renewable energy system*						
Planned Activities	**Organization (s) Responsible**		**Ranking**	**Time Frame for initiation**	**Planned Budget**	
	Coordinating agency	**Participating or Supporting**			**Potential Source**	**Budget (USD)**
17.1.1 Replacement of electric water heaters with solar water heaters in existing buildings and use of solar water heaters for new buildings.	MEC/MWSC	MRD	3	2016	EU	50,000

					Sub-total Strategy 17.1	**50,000**
Strategy 17.2: *Develop policy regime including incentives and a marketing plan to increase private sector involvement and facilitate introduction of renewable energy systems*						
Planned Activities	**Organization (s) Responsible**		**Ranking**	**Time Frame for initiation**	**Planned Budget**	
	Coordinating agency	**Participating or Supporting**			**Potential Source**	**Budget (USD)**
17.2.2 Develop policies and payment methods (feed-in-tariffs) for private generation using solar energy sources	MRD	MEC	1	2016	WB/TA	10,000
					Sub-total Strategy 17.2	**10,000**
Expected Output/Result 18 Economically feasible alternatives to diesel fuel for power generation shall be utilized						
Strategy 18.1*: Conduct an independent study of the viability of alternatives to diesel fuel for power generation where economically sound (e.g. coconut oil, LNG, grid-connected solar). Implementation of recommended viable alternatives*						
Planned Activities	**Organization (s) Responsible**		**Ranking**	**Time Frame for initiation**	**Planned Budget**	
	Coordinating agency	**Participating or Supporting**			**Potential Source**	**Budget (USD)**
18.1.1 Seek funding for proposal on continue assessment of the 10% biodiesel use for power generation including	MRD	MIA, Tobolar, MEC	2	2016 Q1	UNDP, French, Taiwan	20,000
					Sub-total Strategy 18.1	**20,000**
					TOTAL RENEWABLE ENERGY ACTION PLAN	**11,631,500**

Annex 2: Monitoring Plan

INTERVENTION LOGIC	INDICATORS AND TARGETS	MEANS OF VERIFICATION	RISKS AND ASSUMPTIONS
GOAL **TO STRENGHTEN FINANCIAL, POLICY AND LEGISLATIVE FRAMEWORKS FOR THE ENERGY SECTOR**			
OUTCOMES Improved enabling frameworks for reducing dependence on imported fossil fuel	Number of energy sector plans developed and reviewed[24]. Target is 5 planning documents produced in 2020	• Reports on review of national energy policy, annual work plans	• National Interest in formulating plans is high
	Number of ETF meetings held annually with participation of government, non -government and private sectors. Target is 8 ETF meetings held annually in 2020	• ETF meeting minutes	• Interest in energy issues is high and stakeholders contribute effectively to the meetings • Proper records and dissemination of minutes
	Number of financing schemes/loans and applications approved for renewable energy technologies (RETs) and energy-efficient (EE) appliances. Target is 100 loan applications by 2020	• Bank records on funds disbursed and applications	• Implementing agencies and stakeholder's genuine willingness to cooperate to implement the SREEM project • Interest from all people is high in changing to energy efficient appliances
	Number of endorsed and implemented laws and regulations on the energy sector increased. Target is 4 energy legislations/regulation by 2020	• Legislative frameworks • Stock take reports updates • Energy security indicators	• Political willingness is high
	Percentage of verified and processed data sets increased. Target is 80% of required data set is readily available by 2020	• Data sets, energy security indicators	• Funding support for database officer post is available • Data providers cooperates
EXPECTED OUTPUTS/RESULTS 1. The Energy Planning Division developed its capacity and skills set to enable it to review and manage the energy legislations and policy frameworks	• A report with findings of legislation, regulations or bylaws that now have or may have in the future an effect on consistent and effective energy management. • Completion of draft legislation as noted by the review and recommendations submitted to MRD • Participation is expanded in the ETF and cabinet endorsed TOR for the ETF	• National legislative framework • National policy frameworks • Training reports	• National interest in energy issues is high • Regional and international support for training and policy and legislative formulation continues

[24] This will include energy sector policy, action plan, annual work plan, annual budget submissions

	• 2016 National Energy Policy endorsed • Completion of work plan. Implementation of work plan. • Recruitment and training of personnel needed to perform the tasks required under the new legislation, regulations and bylaws and positions filled		
2. A national energy database is developed and managed (for analysis and policy development) and maintained	• Database officer is recruited • Energy data collection and updates on energy security indicators • Information on donor funded projects and costs are readily available	• Legislation • Energy data set • Energy security indicators • Project matrix records	• Availability of financial and human resources
3. Coordination and communication on energy issues at national, regional (within Micronesia and wider Pacific) and global levels shall always be strengthened	• Number of activities that EPD is engaged with MIA on awareness on energy efficiency and conservation • Climate change policies integrate energy initiatives relating to mitigation to cc • NEP budget are included in the annual budget submission to implement the energy action plan • A Communication plans developed for EPD	• Majuro Declaration on climate initiative progress report • Government budgets • Trip reports	• Availability of human and financial resources • Supportive government in energy budget
4. Decision making regarding the importation, consumption and pricing of petroleum products based on reliable data on petroleum imports, sales and end-use	• A Petroleum Act developed and adopted • Regulation on data sharing developed • Templates and training on data reporting delivered • Data on the Marshall Islands fuel prices is reported monthly and included as part of the SPC Monitoring Price • Energy security day improves	• SPC Price Monitoring • MEC Benchmarking report • Legislative framework • Pacific Energiser • Energy Security Indicators	• Political support • Availability of financial support
5. The wholesale and retail prices of petroleum products shall be made equitable for urban and rural users through control and regulation	• Pricing template available • Completion of independent study evaluating the fuel prices and establish maximum wholesale and retail price margins • Number of people trained on petroleum tendering, monitor of petroleum supply and contracts	• Pricing templates • Energy Study and reports • Training reports	• Availability of financial and human resources • SPC Petroleum Advisory support • Availability of data and information
6. The safe storage, handling and distribution shall be ensured for all petroleum products	• Petroleum officer recruited • Adoption of the environmental standards and regulation under the proposed Petroleum Act • Templates developed and used for assessing the quality of fuels imported or produced locally; • Production and enforcement of any standards developed	• Legislative and regulatory frameworks • Energy Reports • Recruitment report	• Availability of financial and human resources

	• A consultant is hired to develop a concept to monitor the high sea fuel bunkering		
INTERVENTION LOGIC	INDICATORS AND TARGETS	MEANS OF VERIFICATION	RISKS AND ASSUMPTION
GOAL **TO SUPPLY 100% OF URBAN HOUSEHOLDS WITH ELECTRICITY BY 2015** **TO PROVIDE 95% OF RURAL OUTER ATOLL HOUSEHOLDS WITH OFF GRID ELECTRICITY BY 2015** **TO PROVIDE ACCESS TO MODERN FORMS OF COOKING TO 90% OF ALL HOUSEHOLDS BY 2020**			
OUTCOME Ensure all Marshallese have access to modern energy services	Percentage of urban households access to grid connected electricity- Target is 100% by 2015	• MEC maintenance reports • MEC financial records • MEC customer records	• Willingness of households to pay for electricity bills
	Percentage of outer atoll households with access to off-grid electricity. Target is 95% by 2015	• MEC SHS financial and maintenance records • WUTMI records on payment of SHS	• Household's willingness to pay for monthly usage • Political support for maintenance of SHS • Women group support for payment of SHS
	Sustainability of energy services: SHS monthly tariff collection rate (%) is improved {Actual collection/Target collection}. Target is 80% collection rate by 2015	• MEC financial records	• Availability of financial and resources
	Percentage of rural and urban households with modern forms of cooking Target is 90% by 2015	• KIO Field trip – dissemination reports • Project progress report	• Commitment of KIO • Availability of financial and human resources
	Improvement in the diesel quality used in transportation (500 ppm) MEC, 10 ppm (Mobil) Target is increased to 10ppm by 2017	• Petroleum imports database through customs and EPPSO • Petroleum suppliers	• Support of petroleum suppliers • MEC willingness to changes • Availability of financial resources
EXPECTED OUTPUTS/RESULTS 7. The management and financial system for outer island PV electrification regularly reviewed and enhanced to ensure sustainability and make certain the recovery of O&M and	• MOA signed between MEC & MIA (local government) and WUTMI • Green tax paper developed and submitted to Cabinet for approval and implement with funding collected for sustaining SHS in outer islands • Long, Medium and short term plan with investments developed and submitted to government or future	• Cabinet papers • EPU reports • Consultant reports • North REP Existing plan • Training reports	• Support and interest of stakeholders is high • National support and willingness to consult with relevant stakeholders

battery replacement costs, for household and institutional systems (e.g. health, fisheries, telecoms, and school installations)	donors on the maintenance of SHS • 2 consultations held with key partners - Capacity building plan in place for local governments • Transfer of SHS plan in place (North REP Project Exit Strategy)		
8. A transparent tariff structure established for those receiving full electricity supplies that cover the real costs at each island system, with a lifeline tariff that genuinely benefits low-income consumers without adversely affecting MEC income	• An approved and acceptable model for payment of SHS is put in place which can be different to each atoll/island situation and also for public institutions (schools and health centres) using the recommendations from the study • A policy paper that defines the benefits of the 1000kwh is developed and presented to MEC Board • Increased number of MEC customers with prepaid meters	• Energy reports and policies • MEC data • MEC financial records • MEC annual report • MEC website • Project matrix	• MIMA's support and interest in maintaining SHS is high • MEC's Board support and willingness to changes to the policy for landowners benefits • Availability of financial resources
9. Initiatives on provision of access to clean and efficient fuels and appliances ensured the incorporation of interventions that promotes sustainable livelihoods, health and safety and environmental protection	Funding support obtained for purchase of energy efficient biomass stove	• Project Proposals • Trip reports • Energy security indicators	• Financial and human resources • KIO's interest is high
INTERVENTION LOGIC	INDICATOR AND TARGETS	MEANS OF VERIFICATION	RISKS AND ASSUMPTION
GOAL **TO MAKE HOUSEHOLDS AND BUSINESSES 50% MORE ENERGY EFFICIENT AND GOVERNMENT BUILDINGS 75% MORE ENERGY EFFICIENT BY 2020** **TO ACHIEVE A 20% EFFICIENCY IMPROVEMENT IN TRANSPORT SECTOR FUEL USE BY 2020** **TO REDUCE SUPPLY SIDE ENERGY LOSSES FROM MEC BY 20% BY 2017**			
OUTCOME Smarter uses of energy in households, business, government and transport sector	20% decrease in the average monthly electricity consumption of connected households target is 79kWh per customer by 2020	• MEC consumer records	• Availability of data
	20% decrease in the average monthly electricity consumption of commercial customers. Target is 1641 kWh per customer by 2020	• MEC consumer records	• Availability of data
	20% decrease in the average monthly electricity consumption of government buildings Target is 8131kWh per customer by 2020	• MEC records on • Government's electricity bill	• Availability of data

	20% increase in fuel efficient vehicles imported (engine size) and car seats (increased load) through adoption of appropriate fiscal incentives by 2020	• Customs records • Legislative frameworks	• Availability of data • Political support to adoption of policies • Regional and international technical support
	20% improvement in the efficiency of fuel use in the transportation sector (Data on fuel end use for land and sea transport should be collated) by 2020	• Petroleum suppliers Database – annual reports	• Availability of data • Political support to adoption of policies • Regional and international technical support
	20.97 combined percentage decrease in power generation, and distribution losses of the power utilities by 2017 Station losses at MEC improves to 6.76% in 2017 Technical losses improves to 5.12% in 2017 Non-technical losses improves to 9.08% in 2017	• MEC – KEMA report • MEC power utility performance report; SIDS DOCK project progress reports, PPA reports	• Availability of data • Regional and international technical support • Availability of financial and human resources
EXPECTED OUTPUTS/RESULTS 10. The reduction of MEC supply-side losses by 20% in 2017, consistent with sound technical and financial criteria should be developed and assessed	• Mechanical and electrical systems data and specifications available • Actual energy utilization performance of the generating units conducted and made available • Measured and calculated operating parameters compared with standards • Number of EE improvements measures with costings available • An impact analyses of the load distribution and dispatch optimization system • Number of MEC power plants operators trained	• MEC Benchmarking reports • MEC financial reports • Energy Security Indicators • PIGGAREP plus progress reports • MEC Annual reports	• Availability of data • Availability of financial and human resources
11. The number of efficient electric appliances imported into the country through appropriate fiscal incentives for business, private sectors, households and government sectors increased	• A report on existing financing mechanisms on EE for housing and appliance and equipment • An appropriate financing scheme is designed with awareness and training • Number of applications approved for EE home loans and appliances • Efficiency labeling system used/ adopted for imported appliances • Number of different types of air-conditioners,	• Customs Data • Retailers records • Energy Reports and Assessments	• National support and interest • Availability of financial and human resources • Regional and international support is available

	refrigerators and freezers that are available for purchase, their relative energy efficiency, country of origin and relative price. • Relative change (improvement) in percentage of appliances sold that are energy efficient • A report on energy codes and standards for buildings based on code from Palau available • Draft energy code/standards/guidelines for construction and renovation of buildings available • Percentage of buildings constructed and renovated that meet the energy efficiency codes/standards/guidelines		
12. The energy use consumption monitored and improved through energy auditing and demand side management	• Training completed and at least five homes renovated with improved energy efficiency practices • Number of household and business audit completed • Number of house adopting energy efficiency improvements • Number of programs and special releases and new paper supplement • Participation of media and retailers in energy related event organised by EPU • Number of Energy audits completed (all government buildings)	• MEC records • Energy Audits reports	• National support and interest is high • Availability of financial and human resources
13. Increased number of energy efficient vehicles into the county through appropriate fiscal incentives for business, private sector, households and government	• A comparative study of type of registered vehicles that in FSM and Palau. A review report is available and with recommendations • Number of vehicles per month tested and scheduled for maintenance • Maintenance expenses became part of the national budget • A regulation for spot check on vehicle emission with fines available • Customs Act reviewed to include fiscal incentives on imports of fuel efficient vehicles • A proposal on the costs and benefit of having public transport for government workers for Majuro • Fuel efficient vehicles and standards are available • Reports on fuel savings using hybrid car is available and scaled up	• Energy Data sets • Energy Reports • Legislative framework • Plant and Vehicle Units records	

14. Government developed a more energy efficient transport network for urban and rural Marshallese through collaborations with various stakeholders	• Testing of biofuel use in the transport sector • Receipt of useable scheduling and management procedures to follow. Implementation of recommendations • Feasibility study report available on trialling of using biofuel to replace existing diesel engine powered outboards	• Study reports and feasibility studies on use of biofuel for transport • Energy Security Indicators	• Supply of biofuel stock available • Regional and international support is available • Coconut producer's interest is high • Availability of financial and human resources
INTERVENTION LOGIC	INDICATORS AND TARGETS	MEANS OF VERIFICATION	RISKS AND ASSUMPTIONS
GOAL **TO PROVIDE 20% OF POWER GENERATION THROUGH INDIGENOUS RENEWABLE RESOURCES BY 2020**			
OUTCOME Reliable, sustainable and affordable energy supply	Share of installed power generation capacity from indigenous renewable energy target is 20% by 2020 Affordability of energy services: percentage decrease in the average household energy expenditure load Target is 15.84% by 2020	• North REP Progress Report • Annual Energy sector Review • Energy Security Indicators • MEC generation and transmission reports • MEC annual reports • HIES report	• Availability of financial and human resources • Availability of reliable data
EXPECTED OUTPUTS AND RESULTS 15. Private sector participation in the electric power supply in the RMI shall be allowed under conditions that are fair to MEC and the supplier (i.e. independent power producers' agreement)	• Electricity Act drafted in 2015 and adopted in 2016 • Practical/Technical guidelines for grid connected renewable energy sources produced & adopted as policy guidelines • An appropriate new tariff system developed and put into operation • Energy security indicator updated • Increased in MEC profits	• Legislative framework • MEC website • Energy security indicator • MEC financial reports • MEC annual report	• Political, financial and human resources available
16. Available energy modelling done to ascertain the technical and economic indigenous energy sources where technically practical and economically viable	• Wind map produced. Estimate of kWh per kW of turbine provided by consulting firm. Specifications of appropriate turbine type received. • Percentage of the one year data collection period during which the data are actually collected and logged (Goal 98%) • Number of outer islands SHS have new batteries • Schools selected by MOE for electrification receive sufficient solar capacity for the operation of the intended programs • Increased solar on grid proposals and installations	• Energy assessments report • Survey reports • Energy security indicators • Outer island trip reports • Project proposals	• Availability of financial and human resources • National and political support

	• Sites appropriate for solar installations identified		
17. The technical capacity of government (EPD) and MEC to plan, develop, implement and manage renewable energy systems (small and medium-scale rural; large scale urban) continuously updated and enhanced	• Number of solar water heaters used increased • Roof top study report available • Net metering policy in place	• Energy Study Reports • MEC reports • MEC financial reports • MEC website	• National support and willingness • Availability of financial and human resources
18. Economically feasible alternatives to diesel fuel (biofuel and LNG) for power generation shall be utilized	• Number of project proposals developed and submitted to donors on biofuel use for power generation	Project proposals Project progress reports	National and regional support Availability of financial and human resources

Annex 3: Organizations and people consulted

Government

Office of the Attorney General
Nitijela (Parliament) – Legal Counsel
Marshall Islands Department of Public Safety
Ministry of Education
Ministry of Finance
Ministry of Foreign Affairs
Ministry of Health
Ministry of Internal Affairs
Ministry of Resources and Development
Division of Trade and Investment
Energy Planning Division
Ministry of Transportation and Communications
Office of Commerce and Investment
Economic Planning, Policy and Statistics Office
Office of Environmental Planning and Policy Coordination

Public enterprises and state-owned companies

Environmental Protection Authority
Majuro Atoll Waste Company
Marshall Islands Journal
Marshall Islands Mayor Association
Marshall Islands Visitors Authority
Marshalls Energy Company
Okinawa Enetech (JICA Project)
RMI Ports Authority
Tobolar
University of the South Pacific
College of the Marshall Islands

Local government and civil society

AilInglapalp Atoll Local Government
Church Youth Representative – Rita Village
Council Women Representative – Laura Village
KIO Club
Women United Together Marshall Islands