

Pacific **Energy** Update 2012



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Note: In this publication, “\$” refers to US dollars.

Pacific Energy Update 2012

Pacific developing member countries (DMCs) are highly dependent on imported fossil fuel for their electricity generation. The cost of importing fuel is high and volatile; this puts a major strain on the resources of countries, and threatens the sustainability of their growth and development. Meanwhile, in several countries in the Pacific region, the proportion of households with access to electricity is extremely low, some as little as 10%.

The Asian Development Bank (ADB) focuses on three strategic areas in the energy sector in the Pacific DMCs: improving the efficiency of electricity generation and use, expanding access to electricity by households, and supporting conversion to renewable sources of energy. Accordingly, ADB's objectives in the Pacific DMCs include:

- **Rehabilitating existing infrastructure.** Major improvements to old and inefficient equipment can be undertaken to achieve supply-side efficiency at the least cost. Examples include the replacement of inefficient generator sets, resizing of transformers, and retrofitting of overhead line conductors.
- **Improving access to electricity.** ADB is expanding electricity grids in unserved areas and helping communities to use the new source of energy in their livelihood chores, learning in schools, and getting treatment in health care facilities.
- **Supporting conversion to renewable energy.** Reliance on imported fossil fuels can be reduced by generating power from renewable sources. This is particularly true in the Pacific region where cost competitive renewable energy technologies are being implemented. ADB is piloting and upscaling technologies, such as a small-scale hydropower; grid-connected solar power; indigenous biofuels; and wind power.
- **Supporting energy efficiency.** Improving the efficiency of energy use by customers offers significant potential for fuel savings. Through its flagship program, Promoting Energy Efficiency in the Pacific, ADB is providing support to a range of initiatives including Minimum Energy Performance Standards for appliances, public awareness raising, and efficient lighting and buildings.
- **Developing the private sector.** Private sector involvement in the power sector in the Pacific region is important to help overcome the constraints faced by governments due to limited capital and technical capacity. ADB is helping to establish appropriate regulatory frameworks to foster private sector participation in the power sector and increase government capacity in managing private sector contracts. ADB is also improving access to international carbon finance through the Clean Development Mechanism (CDM).

Examples of these initiatives across the region are detailed in the following sections. This update is produced annually by ADB's Pacific Department.

ADB Energy Sector Projects in the Pacific Developing Member Countries (June 2012)

Country	Project	Funding Source	Status	Amount
Cook Islands	Promoting Energy Efficiency in the Pacific (Phase 2)	ACEF, Australia, GEF, TASF	Approved 2011	\$8.75 million R-CDTA grant (5 Pacific DMCs)
	Renewable Energy Project	ADF and OCR	Proposed 2013	
Marshall Islands	Improved Energy Supply for Poor Households	JFPR	Approved 2010	\$1.76 million grant
	Public Sector Program – Subprogram 1 ¹ (2)	ADF	Approved 2010	\$9.50 million loan
Micronesia, Federated States of	Omnibus Infrastructure Development	ADF and OCR	Approved 2004	\$10.09 million loan for power component
	Yap Renewable Energy Development	ADF	Proposed 2012	\$11.20 million proposed loan and grant ²
	Pohnpei Power Sector Development	ADF	Proposed 2012	\$14.00 million proposed loan and grant (see footnote 2)
	Implementation of the National Energy Policy	CEF, TASF	Proposed 2012	\$1.50 million proposed CDTA grant
Nauru	Regulatory and Governance Reform for Improving Water and Electricity Supply in Nauru	TASF	Approved 2011	\$0.20 million S-CDTA
Papua New Guinea	Town Electrification Investment Program	ADF, OCR	Approved 2010	\$150.00 million MFF investment program
				Tranche 1: \$57.30 million loan
	Improved Energy Access for Rural Communities	JFPR, New Zealand	Approved 2012	\$5.00 million grant
	Promoting Energy Efficiency in the Pacific (Phase 2)	ACEF, Australia, GEF, TASF	Approved 2011	\$8.75 million R-CDTA grant (5 Pacific DMCs)
	Port Moresby Power Grid Development	OCR, TASF	Proposed 2012	\$101.20 million proposed loan and grant (see footnote 2)
	Energy Access Development		Proposed 2012	
Samoa	Promoting Access to Renewable Energy in the Pacific	CEF ³	Approved 2009	\$3.00 million R-CDTA (3 Pacific DMCs)
	Power Sector Expansion	ADF, Australia, EPC, JBIC	Approved 2007	\$100.00 million loan and grant
	Implementing the Samoa National Energy Policy	Australia, Finland, JSF	Approved 2007	\$1.85 million ADTA
	Preparing the Afulilo Environmental Enhancement	JSF	Approved 2008	\$1.20 million PPTA
	Promoting Energy Efficiency in the Pacific (Phase 2)	ACEF, Australia, GEF, TASF	Approved 2011	\$8.75 million R-CDTA grant (5 Pacific DMCs)
	Renewable Energy	ADF	Proposed 2013	\$1.00 million
Solomon Islands	Promoting Access to Renewable Energy in the Pacific	CEF (see footnote 3)	Approved 2009	\$3.00 million R-CDTA (3 Pacific DMCs)
	Outer Island Renewable Energy	ADF, Others (TBD)	Proposed 2013	\$8.00 million proposed loan and grant
Tonga	Private Sector Development Initiative (state-owned enterprise reform)	ADB, Australia	Approved 2006	\$8.70 million RETA
	Promoting Energy Efficiency in the Pacific (Phase 2)	ACEF, Australia, GEF, TASF	Approved 2011	\$10.15 million R-CDTA grant (5 Pacific DMCs)
	Outer Island Renewable Energy	ADF, JFPR	Proposed 2012	\$5.50 million proposed grant (see footnote 3)
Vanuatu	Promoting Access to Renewable Energy in the Pacific	CEF (see footnote 3)	Approved 2009	\$3.00 million R-CDTA (3 Pacific DMCs)
	Promoting Energy Efficiency in the Pacific (Phase 2)	ACEF, Australia, GEF, TASF	Approved 2011	\$8.75 million R-CDTA grant (5 Pacific DMCs)
Regional	Performance Benchmarking of Power Utilities	Australia	Approved 2009	\$0.30 million RETA
	Capacity Building for CDM and Establishment of DNAs ⁴	ACEF	Approved 2010	\$0.5 million R-CDTA

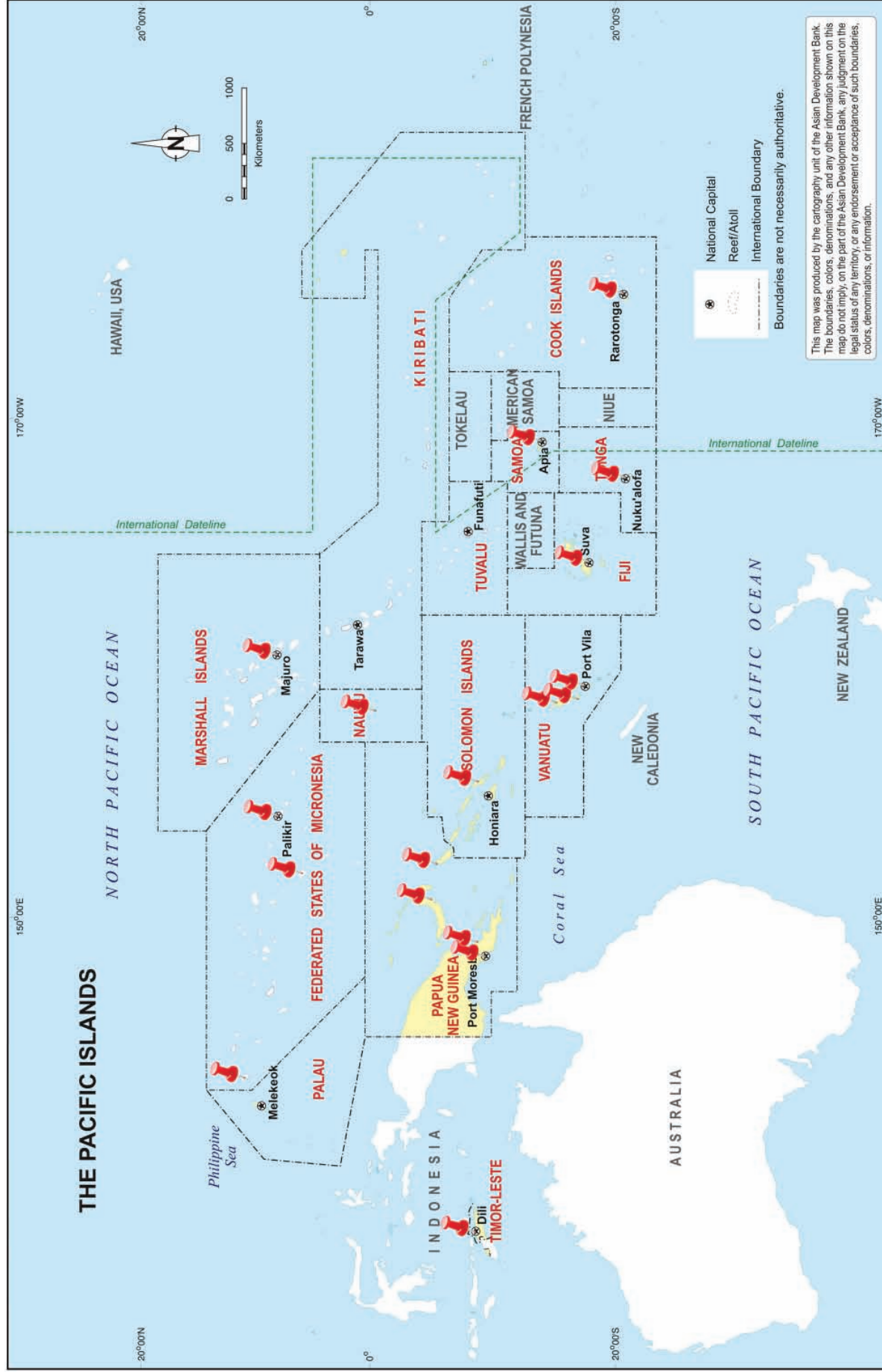
ACEF = Asian Clean Energy Fund, ADB = Asian Development Bank, ADF = Asian Development Fund, ADTA = advisory technical assistance, CDM = Clean Development Mechanism, CDTA=capacity development technical assistance, CEF = Clean Energy Fund, DMC = developing member country, DNA = designated national authority, EPC = Electric Power Corporation, GEF = Global Environment Facility, JFPR = Japan Fund for Poverty Reduction, JBIC = Japan Bank for International Cooperation, JSF = Japan Special Fund, MFF = multitranché financing facility, OCR = ordinary capital resources, O&M = operation and management, PPTA=project preparatory technical assistance, R = regional, RETA = regional technical assistance, S = small-scale, TASF = Technical Assistance Special Fund, TBD = to be determined.

¹ Majority of the support was for Marshalls Energy Company debt restructuring.

² Amount is indicative and includes the cost of project preparatory technical assistance. Additional cofinancing sources are still to be confirmed.

³ Clean Energy Fund is financed by the governments of Australia, Norway, Spain, and Sweden.

⁴ Support is being provided under the regional technical assistance to Strengthen the Capacity of Pacific DMCs to Respond to Climate Change.



Shows the location of ADB Energy Projects in the Pacific

The Cook Islands



A total of 18,000 compact fluorescent light (CFL) bulbs were distributed to all households throughout the islands. The project was able to successfully set a benchmark for long lifetime, voltage-tolerant CFLs; and it established a system for recycling used bulbs

Promoting Energy Efficiency in the Pacific (Phase 2)

This regional technical assistance project entered its second phase in November 2011, with the Cook Islands, together with Papua New Guinea, Samoa, Tonga, and Vanuatu, among the five Pacific DMCs benefiting from the program. Phase 1 was approved in 2008 and completed in 2011; and it received \$1.4 million funding from the Global Environment Facility (GEF). This phase provided support to the Cook Islands in reducing its reliance on imported diesel through demand-side energy-efficiency measures. These measures could lower total electricity consumption by 13% and peak demand by 0.9 megawatts (MW).

The first phase of the program also supported the introduction of low-energy light bulbs in all residential homes and raised awareness of the public on the advantages of using this type of bulb over the standard incandescent light bulbs. A total of 18,000 compact fluorescent light (CFL) bulbs were distributed to all households throughout the islands. The project was able to successfully set a benchmark for long lifetime, voltage-tolerant CFLs; and it established a system for recycling used bulbs. In Rarotonga, through the energy-efficiency technologies identified by the project, diesel consumption will be reduced by 174,000 liters, which, as a result, will also reduce the emission of carbon dioxide by 450 tons per year. For the households, it is estimated that they will save over \$80 per year on electricity bills. The project was implemented in the Cook Islands in partnership with the power utility, Te Aponga Uira.

The follow on Phase 2 of the regional program is supporting the Cook Islands and the four other Pacific DMCs to implement the energy-efficiency measures that were identified under Phase 1. For phase 2, ADB, Australia, GEF, and the Asian Clean Energy Fund provided a total funding of \$8.75 million funding while the participating governments and power utilities contributed \$3.67 million. Activities being undertaken under Phase 2 include

- establishing a comprehensive database of energy use by sector and type of appliance;
- mainstreaming of energy-efficiency practices, such as the Minimum Energy Performance Standards and labeling schemes in government processes, procedures, and policies and regulations;
- evaluating pilot projects undertaken under Phase 1 and scaling up the adoption of the most effective energy-efficiency measures tested in the previous phase; and
- raising awareness on the importance of energy conservation among government officials, service providers, and end users through energy audit trainings and information dissemination.

Country Website

www.adb.org/CookIslands



Country	Project	Funding Source	Status	Amount
Cook Islands	Promoting Energy Efficiency in the Pacific (Phase 2)	ACEF, Australia, GEF, TASF	Approved 2011	\$8.75 million R-CDTA grant (5 Pacific DMCs)
	Renewable Energy Project	ADF and OCR	Proposed 2013	

ACEF = Asian Clean Energy Fund, ADF = Asian Development Fund, CDTA = capacity development technical assistance, DMC = developing member country, GEF = Global Environment Facility, R = regional, TASF = Technical Assistance Special Fund.

Increasing demand for coconut oil for power generation will put money in the pockets of outer islanders, where most of the copra is produced

—Robert Guild, Director, Transport, Energy, and Natural Resources Division, Pacific Department



The Marshall Islands

Improved Energy Supply for Poor Households

This grant, which was approved in 2010 for \$1.76 million, financed by the Japan Fund for Poverty Reduction, seeks to improve the livelihoods of poor households in the Republic of the Marshall Islands (RMI) by providing them access to sustainable electricity supply and through better delivery of electricity services. The project is implementing the following innovations:

- **Prepayment meters installation.** Prepayment meters will be installed in the residences of customers who had been disconnected during the economic crisis and because of fuel price spike, and are unable to afford payment of the reconnection fees. A total of 350 prepayment meters will be installed for residential customers of the Marshalls Energy Company (MEC) grid, including target recipients in the main island of Majuro and the outer islands of Worje and Jaluit. The prepayment meters will enable the affected poor households to regain access to electricity and will also give them greater flexibility in managing their power usage.
- **Distribution grid rehabilitation and extension.** This component will extend power supply to low-income households that are not physically connected to the power grid. As they cannot afford the high connection cost, these households are forced to rely on the relatively less expensive kerosene or biomass for their energy needs. As these poorer households are concentrated in several small suburbs, this component will also rehabilitate the distribution system to these areas. With improved power supply in these areas, those currently unserved customers will thus have the facilities to be connected to electricity.
- **Coconut oil diesel replacement.** The innovation will entail a trial period for blending coconut oil (CNO) as the main fuel in the Majuro diesel-fired power station. This project component will also (i) upgrade MEC generators to operate on CNO and diesel blend, (ii) establish CNO supply contract with the local mills, (iii) establish quality control and monitoring systems, and (iv) undertake analysis of various biofuel alternatives. This component has direct poverty alleviation benefit as it creates additional market for CNO; and it consequently increases the demand for copra, which is the main source of cash-generating income for the outer atolls. Thus, it generates additional income for the poor.

Public Sector Program

The program, which was approved in 2010 and is funded by a \$9.5 million concessional loan from ADB, supports RMI's Comprehensive Recovery Plan for MEC, through the restructuring of its debt. The majority of loan funds (90%) were on-lent from the Government to MEC. The funds were used to repay a high interest loan held by MEC with a commercial bank. Using the cash-flow savings from repaying this loan, MEC was able to undertake a refurbishment of a generator. The refurbished generator has a significantly higher megawatt output than previously which has resulted in a reduction in fuel usage of approximately 14%.

Country Website

www.adb.org/MarshallIslands



Country	Project	Funding Source	Status	Amount
Marshall Islands	Improved Energy Supply for Poor Households	Japan Fund for Poverty Reduction	Approved 2010	\$1.76 million grant
	Public Sector Program ¹ – Subprogram 1	Asian Development Fund	Approved 2010	\$9.50 million loan

¹ Majority of the support was for Marshalls Energy Company debt restructuring.

The Federated States of Micronesia

Through improved energy efficiency, it is estimated that Pohnpei will reduce diesel consumption for power generation by approximately 20%

Omnibus Infrastructure Project—Chuuk State

The loan proceeds are used to fund the investment in power sector infrastructure in Chuuk State that includes a new diesel power plant and distribution facilities. Construction of the infrastructure is ongoing. As part of the operation of the infrastructure, building the capacity of the power utility is also being undertaken

Proposed Yap Renewable Energy Development Project—Yap State

The project will support the development of the power system in the State of Yap, to reduce dependency on imported diesel. This will be achieved through expansion of renewable power generation (1.4 MW wind and 0.3 MW solar) and improvement of the supply-side efficiency of power delivery (through additional diesel generation). The project is estimated to convert 22% of power generation to renewable energy. The project preparatory technical assistance (approximately \$1 million) has been completed, and the processing of the loan and grant project is ongoing. ADB Board approval is expected in late 2012, with total project financing estimated at \$11.2 million.

Proposed Pohnpei Power Sector Development Project—Pohnpei State

The project will support the rehabilitation of Pohnpei State power system, including the improvement of the efficiency of diesel generation and the supply-side efficiencies through distribution upgrades and support for tariff reform. Through improved energy efficiency, it is estimated that Pohnpei will reduce diesel consumption for power generation by approximately 20%. The project will also support capacity building of the Pohnpei Utility Corporation. The project is scheduled for ADB Board approval in late 2012, for an estimated \$14.0 million financing.

Proposed Implementation of National Energy Policy

The technical assistance project will support the implementation of key reforms identified under the draft National Energy Policy of the Federated States of Micronesia. The technical assistance project will also help the government to identify and implement sector and tariff reforms toward promoting the power sector sustainability. The project is proposed for approval in 2012, for \$1.5 million.

Country Website

www.adb.org/Micronesia

Country	Project	Funding Source	Status	Amount
Federated States of Micronesia	Omnibus Infrastructure Development	ADF and OCR	Approved 2004	\$10.09 million loan for power component
	Yap Renewable Energy Development	ADF	Proposed 2012	\$11.20 million proposed loan and grant ¹
	Pohnpei Power Sector Development	ADF	Proposed 2012	\$14.00 million proposed loan and grant (see footnote)
	Implementation of the National Energy Policy	CEF, TASF	Proposed 2012	\$1.50 million proposed CDTA grant

ADF = Asian Development Fund, CDTA = capacity development technical assistance, CEF = Clean Energy Fund, OCR = ordinary capital resources, TASF = Technical Assistance Special Fund.

¹ Amount is indicative and includes the cost of project preparatory technical assistance. Additional cofinancing sources are still to be confirmed.

Papua New Guinea

An ADB grant will finance the connection of households, schools, and medical clinics in rural communities to the power distribution grid which will be extended by PNG Power to rural communities



Town Electrification Investment Program

The program is a \$150-million-multitranchise financing facility (MFF) designed to support the development plans of PNG Power to improve power delivery in provincial centers. Tranche 1 of the MFF was approved in 2010, for \$57.3 million covered by ordinary capital resources and the Asian Development fund. Project implementation of Tranche 1 has commenced, and it includes the construction of the

- Divune Hydropower Plant (approximately 3 MW run-of-river) in the Northern Province;
- Ramazon Hydropower Plant (approximately 4 MW run-of-river) in the Autonomous Region of Bougainville; and
- Kimbe–Bialla Interconnection, consisting of a 150-kilometer, 66-kilovolt transmission line connecting Bialla to Kimbe, West New Britain; it also includes accessing 1 MW spare generation from Lake Hargy Hydropower Plant and connecting biomass power (methane recovery) from palm oil plantations along the alignment.

Port Moresby Grid Development

The proposed project will support PNG Power to upgrade the transmission and distribution grid in the national capital, Port Moresby, thereby improving the reliability and quality of power supply to the main urban center in Papua New Guinea. The project will also aim at improving the energy efficiency of power delivery, and enabling the delivery of essential power to rapidly expanding areas of Port Moresby. The project preparatory technical assistance, for \$1.2 million, is currently being implemented. The project which is proposed to comprise a loan and grant amounting to \$101.2 million is expected for ADB Board approval in 2012.

Improved Energy Access for Rural Communities

The grant will finance the connection of households, schools, and medical clinics in rural communities to the power distribution grid which will be extended by PNG Power to rural communities. It targets 4,500 households, 20 schools, and 20 clinics connected to the grid by 2014. The project will also assist PNG Power to upscale the trials of community-based civil works contracts for distribution powerline construction. A \$5 million grant was approved in the first half of 2012, cofinanced by the Japan Fund for Poverty Reduction and New Zealand.





Papua New Guinea continued ...

ADB is funding hydropower scoping study to reduce PNG's cost of electricity generation

Promoting Energy Efficiency in the Pacific (Phase 2)

Under Phase 1 of this \$1.4 million regional technical assistance project, the Government of PNG was supported in identifying and piloting demand-side energy-efficiency activities, including the implementation of a pilot Power Factor Correction initiative in Port Moresby. The initiative sought to improve network stability and power quality and, as a result, it reduced energy demand by 180 megawatt-hours.

Phase 2 is further supporting the government in expanding the collection of data on power use that will inform future policy decision, and in implementing policies to foster energy efficiency. With \$8.75 million funding, this follow on regional technical assistance project is being implemented in PNG, as well as in the Cook Islands, Samoa, Tonga, and Vanuatu. The activities of the project include (i) establishment of database containing baseline data on energy use; (ii) mainstreaming of energy-efficiency practices, such as the Minimum Energy Performance Standards and labeling schemes in government processes, procedures, and policies and regulations; (iii) evaluation of energy-efficiency pilots undertaken under Phase 1 and scale-up of the most efficient measures; and (iv) information dissemination and awareness raising.



Promoting Access to Renewable Energy in the Pacific

The regional technical assistance is helping the PNG Power prepare the Rouna hydropower cascade development plan, as well as build the capacity of the power utility on system management and maintenance. The project was approved in 2009 for \$3.0 million, and is being implemented in PNG, Solomon Islands, and Vanuatu.

Country Website

www.adb.org/PapuaNewGuinea

Country	Project	Funding Source	Status	Amount
Papua New Guinea	Town Electrification Investment Program	ADF, OCR	Approved 2010	\$150.00 million MFF investment program Tranche 1: \$57.30 million loan
	Improved Energy Access for Rural Communities	JFPR, New Zealand	Approved 2012	\$5.00 million grant
	Promoting Energy Efficiency in the Pacific (Phase 2)	ACEF, Australia, GEF, TASF	Approved 2011	\$8.75 million R-CDTA grant (5 Pacific DMCs)
	Port Moresby Power Grid Development	OCR, TASF	Proposed 2012	\$101.20 million proposed loan and grant ¹
	Energy Access Development		Proposed 2012	
	Promoting Access to Renewable Energy in the Pacific	CEF ²	Approved 2009	\$3.00 million R-CDTA (3 Pacific DMCs)

ACEF = Asian Clean Energy Fund, ADF = Asian Development Fund, CDTA = capacity development technical assistance, DMC = developing member country, GEF = Global Environment Facility, JFPR = Japan Fund for Poverty Reduction, MFF = multitranchise financing facility, OCR = ordinary capital resources, R = regional, TASF = Technical Assistance Special Fund.

¹ Amount is indicative and includes the cost of project preparatory technical assistance. Additional cofinancing sources are still to be confirmed.

² Clean Energy Fund is financed by the governments of Australia, Norway, Spain, and Sweden.

The Power Sector Expansion investment project is supporting the Electric Power Corporation of Samoa to develop the power sector infrastructure in the country



Power Sector Expansion

The investment project is supporting the Electric Power Corporation of Samoa to develop the power sector infrastructure in the country. It comprises a sector loan and grant totaling \$100 million to finance 29 subprojects that include transmission and distribution upgrades, diesel power plant construction and rehabilitation, assessment and development of hydropower resources, and installation of prepayment meters and demand-side management. It also includes a trial loan buy down and grant conversion mechanism in which approximately \$4 million of the loan proceeds will be converted to grant if implementation targets are met. The project is cofinanced by the Government of Australia and the Japan International Cooperation Agency (JICA). Implementation of the project will run until 2016.

Implementing the Samoa National Energy Policy

The technical assistance project, worth \$1.85 million, is helping the government in the following areas:

- establishment of the power sector regulator (the structure and the office of the regulator), including the revision of the Electricity Act and Regulations and preparation of operating manuals;
- development of the Clean Energy Fund, including the operational framework and initial project pipeline, and provision of seed capital;
- carbon trade by establishing the CDM designated national authority (DNA); and
- provision of resident financial advisors to the Electric Power Corporation to support the implementation of its reform agenda.

Afulilo Environmental Enhancement

This \$1.2 million technical assistance enables the Electric Power Corporation to complete due diligence for the preparation of the proposed Afulilo hydropower plant. The project will, among others, assess the environmental and social impacts of the envisaged first and sole storage hydropower in Samoa, and identify options for generation capacity augmentation. Technical evaluation of the proposed ensuing project has been completed.

Promoting Energy Efficiency in the Pacific (Phase 2)

Under Phase 1 of this regional technical assistance program, with funding of \$1.4 million, the Government of Samoa received support for its demand-side energy-efficiency activities. The program identified energy-efficiency measures that could reduce total electricity consumption by 9% and peak demand by 1.6 MW. It also supported the Electric Power Corporation in implementing a pilot Power Factor Correction initiative in Apia to improve network stability and power quality; this reduced energy demand by 35 megawatt-hours.

Phase 2 of the program is again providing support to the Government of Samoa in expanding the collection of data on power use and implementing policies to foster energy efficiency. The project is being implemented in Samoa, and in four other Pacific DMCs which include the Cook Islands, Papua New Guinea, Tonga, and Vanuatu. With total funding of \$8.75 million, it will be used to fund the (i) establishment of databases on baseline energy use; (ii) mainstreaming of energy-efficiency practices, such as the Minimum Energy Performance Standards and labeling schemes in government processes, procedures, and policies and regulations; (iii) evaluation of energy-efficiency pilots undertaken under Phase 1 and scale-up of the most efficient measures; and (iv) information dissemination and awareness raising.

Country Website

www.adb.org/Samoa

Country	Project	Funding Source	Status	Amount
Samoa	Power Sector Expansion	ADF, Australia, EPC, JBIC	Approved 2007	\$100.00 million loan and grant
	Implementing the Samoa National Energy Policy	Australia, Finland, JSF	Approved 2007	\$1.85 million ADTA
	Preparing the Afulilo Environmental Enhancement	JSF	Approved 2008	\$1.20 million PPTA
	Promoting Energy Efficiency in the Pacific (Phase 2)	ACEF, Australia, GEF, TASF	Approved 2011	\$8.75 million R-CDTA grant (5 Pacific DMCs)
	Renewable Energy	ADF	Proposed 2013	\$1.00 million

ACEF = Asian Clean Energy Fund, ADF = Asian Development Fund, ADTA = advisory technical assistance, CDTA = capacity development technical assistance, DMC = developing member country, EPC = Electric Power Corporation, GEF = Global Environment Facility, JBIC = Japan Bank for International Cooperation, JSF = Japan Special Fund, PPTA = project preparatory technical assistance, R = regional, TASF = Technical Assistance Special Fund.



Solomon Islands

Preliminary studies show that developing the hydro sites could increase access to electricity by households from 3% to 8% in Malaita, 3% to 18% in Temotu, 17% to 27% in Western Province, and 2% to 12% in Choiseul

Promoting Access to Renewable Energy in the Pacific

Less than 20% of all households in Solomon Islands have access to electricity. Power generation is restricted largely to urban centers and relies almost exclusively on the import of costly diesel fuel. As a result, electricity tariffs in Solomon Islands are among the most expensive in the Pacific region. These issues are being addressed under this \$3 million regional technical assistance project, with ADB supporting the government in terms of increasing access to sources of renewable energy.

Options for scaling up indigenous renewable energy sources are also being studied. The feasibility of using coconut oil for power generation at the outstations of the Solomon Islands Electricity Authority has been assessed and the potential for this resource to displace 2 million liters of diesel imports at five outer island locations has been identified. Small-scale hydropower resources in the outer islands have also been screened and feasibility studies for five schemes have been prepared. These have the potential to supply clean power to over 6,000 households in the outer island growth centers.

Outer Island Renewable Energy

This proposed project, a mix of loan and grant, is programmed for ADB Board approval in 2013. It will finance hydropower investment projects selected from those identified under the regional technical assistance for Promoting Access to Renewable Energy in the Pacific. Five potential hydropower sites in the outer islands were identified; and the preliminary studies show that developing the hydro sites could increase access to electricity by households from 3% to 8% in Malaita, 3% to 18% in Temotu, 17% to 27% in Western Province, and 2% to 12% in Choiseul. During the preparation of the proposed investment project, sites will be screened and prioritized based on land availability, technical and financial viability, and social and economic impact. Currently, ADB is in discussion with the government to identify funding sources for the estimated \$8 million financing for the investment implementation.

Country Website

www.adb.org/SolomonIslands

Using Power to Energize the Local Private Sector

Under the technical assistance project, Promoting Access to Renewable Energy in the Pacific, the Asian Development Bank is supporting the Solomon Islands Electricity Authority (SIEA) in conducting a trial of the use of coconut oil (CNO) for power generation. A new 340-kilowatt generator and a CNO conditioning unit have been installed at the SIEA outstation at Auki on the island of Malaita. The generator runs on a blend of locally sourced CNO and imported diesel fuel. CNO concentration is limited to 20% during an initial testing period, with the potential to displace up to 90% of diesel usage in the future. Of the total CNO supply, 20% is provided by a local CNO mill which has a fixed-time contract with SIEA for supplying 1,000 liters of CNO per week. The supply contract has created a steady source of income to the local mill which now plans to expand production.

Through this project, the power grid will be extended to provide 250 new households access to electricity. ADB is also supporting the SIEA in piloting a new basic connection kit for leaf houses. The connection kit consists of a box with a prepayment meter and plugs that can be installed outside the leaf houses, increasing safety when using power and allowing connection to non-standard dwells.



Country	Project	Funding Source	Status	Amount
Solomon Islands	Promoting Access to Renewable Energy in the Pacific	CEF ¹	Approved 2009	\$3.00 million R-CDTA (3 Pacific DMCs)
	Outer Island Renewable Energy	ADF, Others (TBD)	Proposed 2013	\$8.00 million proposed loan and grant

ADF = Asian Development Fund, CDTA = capacity development technical assistance, CEF = Clean Energy Fund, DMC = developing member country, R = regional, TASF = Technical Assistance Special Fund, TBD = to be determined.

¹ Clean Energy Fund is financed by the governments of Australia, Norway, Spain, and Sweden.

Promoting Energy Efficiency in the Pacific (Phase 2) supported Tonga Power in purchasing and installing 109 light-emitting diode street lights along Vuna Road in the capital, Nuku'alofa. These street lights will reduce energy consumption by 35% and save \$12,000 per year in fuel costs



Outer Island Renewable Energy

The proposed grant project will support the government's efforts toward reducing the country's heavy reliance on imported fossil fuel for power generation. This will be achieved by providing a secure, sustainable, and environmentally sound source of electricity for private and commercial consumers. It will implement a 1.2 megawatt-peak (MWp) solar power capacity to be connected to the existing diesel networks. The solar capacity will be sourced from the (i) 0.75 MWp of Tonga's outer islands of Ha'apai, Vava'u, and 'Eua; (ii) 0.45 MWp of Ha'apai's outer islands ('Uiha, Nomuka, Ha'ano, and Ha'afeva); and (iii) the unelectrified Niua islands (Niua Toputapu and Niuafo'ou) whose capacity is yet to be determined. The project will also support the implementation of the Tonga Energy Roadmap which aims to reduce diesel imports by 480,000 liters per year. An ongoing technical assistance project approved in 2011 for a total amount of \$0.725 million is preparing the implementation plans for the proposed Outer Island Renewable Energy Project.

Promoting Energy Efficiency in the Pacific (Phase 2)

Under Phase 1 of this \$1.4 million regional technical assistance program, the Government of Tonga received support for its demand-side energy-efficiency activities. The program identified energy-efficiency measures that could reduce total electricity consumption by 12% and peak demand by 1.3 MW. The program supported Tonga Power in purchasing and installing 109 light-emitting diode street lights along Vuna Road in the capital, Nuku'alofa. These street lights will reduce energy consumption by 35% and save \$12,000 per year in fuel costs.

Phase 2 of the program is supporting the Government of Tonga in expanding data collection of power use and in implementing policies to foster energy efficiency. With total funding of \$8.75 million, the second phase is under implementation in Tonga, as well as in the Cook Islands, PNG, Samoa, and Vanuatu. The activities being undertaken include

- establishment of a comprehensive database of energy use by sector and type of appliance;
- mainstreaming of energy-efficiency practices, such as the Minimum Energy Performance Standards and labeling schemes into government processes, procedures, and policies and regulations;
- evaluation of the pilot projects initiated under Phase 1 and scaling up of energy-efficiency measures that were most effective; and
- raising awareness on the importance of energy conservation among government officials, service providers, and end users through energy audit trainings and information dissemination.

Country Website

www.adb.org/Tonga



Country	Project	Funding Source	Status	Amount
Tonga	Private Sector Development Initiative (state-owned enterprise reform)	ADB, Australia	Approved 2006	\$8.70 million RETA
	Promoting Energy Efficiency in the Pacific (Phase 2)	ACEF, Australia, GEF, TASF	Approved 2011	\$8.75 million R-CDTA grant (5 Pacific DMCs)
	Outer Island Renewable Energy	ADF, JFPR	Proposed 2012	\$5.50 million proposed grant ¹

ACEF = Asian Clean Energy Fund, ADB = Asian Development Bank, ADF = Asian Development Fund, CDTA = capacity development technical assistance, DMC = developing member country, GEF = Global Environment Facility, JFPR = Japan Fund for Poverty Reduction, R = regional, RETA = regional technical assistance, TASF = Technical Assistance Special Fund.

¹ Amount is indicative and includes the cost of project preparatory technical assistance. Additional cofinancing sources are still to be confirmed.

Vanuatu



ADB is currently in discussion with the government to identify funding sources to support the implementation of hydropower projects in Vanuatu

Promoting Access to Renewable Energy in the Pacific

ADB is helping the Government of Vanuatu in addressing issues relating to low rates of electricity access by households and the high reliance on imported diesel. Under this regional technical assistance, ADB is supporting the construction of a pilot grid-connected solar photovoltaic (PV) on the island of Espiritu Santo. Separate solar PV arrays totaling 40 kilowatts in capacity will be installed on public buildings in Luganville, which include College de Santo, Luganville District Hospital, and the Sanma provincial government building. The project will build capacity in the construction and operation of renewable energy technologies, and resolve technical issues relating to their integration with small power grids.

Feasibility studies of identified hydropower sites have been prepared for the Brenwe River on Malekula and the Wambu River on Espiritu Santo. ADB is currently in discussion with the government to identify funding sources to support the implementation of hydropower projects in Vanuatu.

Promoting Energy Efficiency in the Pacific (Phase 2)

Under Phase 1 of this \$1.4 million regional technical assistance program, the Government of Vanuatu received support for its demand-side energy-efficiency activities. The program identified energy-efficiency measures that could reduce total electricity consumption by 10% and peak demand by 1.3 MW. The program supported the establishment of a training program in energy efficiency and energy audit at the Vanuatu Institute of Technology and carried out energy audits for major energy consumers in the hotel sector. Energy conservation measures were piloted; the measures included solar water heaters, key switches, lighting and cooling optimization, and improvements in water management systems.

The ongoing Phase 2 of the regionwide program is supporting the Government of Vanuatu in implementing the energy-efficiency measures that were identified under Phase 1. The technical assistance grant of \$8.75 million is financing the implementation of this phase in Vanuatu, as well as in the Cook Islands, PNG, Samoa, and Solomon Islands. Activities undertaken include

- establishment of a comprehensive database of energy use by sector and by type of appliance;
- mainstreaming of energy-efficiency practices, such as the Minimum Energy Performance Standards and labeling schemes into government processes, procedures, and policies and regulations;
- evaluation of pilot projects undertaken under Phase 1 and scale up of energy-efficiency measures that were most effective; and
- raising awareness on the importance of energy conservation among government officials, service providers, and end users through energy audit trainings and information dissemination.

Country Website

www.adb.org/Vanuatu



Country	Project	Funding Source	Status	Amount
Vanuatu	Promoting Access to Renewable Energy in the Pacific	CEF ¹	Approved 2009	\$3.00 million R-CDTA (3 Pacific DMCs)
	Promoting Energy Efficiency in the Pacific (Phase 2)	ACEF, Australia, GEF, TASF	Approved 2011	\$8.75 million R-CDTA grant (5 Pacific DMCs)

ACEF = Asian Clean Energy Fund, CDTA = capacity development technical assistance, CEF = Clean Energy Fund, DMC = developing member country, GEF = Global Environment Facility, R = regional, TASF = Technical Assistance Special Fund.

¹ Clean Energy Fund is financed by the governments of Australia, Norway, Spain, and Sweden.

ADB's assistance to the Pacific DMCs includes training and capacity building for the DNA and its stakeholders, and the development of a clear and transparent legal and institutional framework for CDM



Performance Benchmarking of Power Utilities

ADB provided the technical assistance project, which was approved in 2009 for \$0.3 million, to support the performance benchmarking of utilities in the power sector of the Pacific island countries. The initiative aims to improve the performance and service delivery of power utilities by comparing their performance, learning from each other, and enhancing the availability of information on the delivery of power services in the region. The regional project is being implemented through the Pacific Infrastructure Advisory Centre, on behalf of the Pacific Region Infrastructure Facility, and in collaboration with the Pacific Power Association (PPA) and the Secretariat of the Pacific Community.

The PPA is responsible for the overall management and coordination of the benchmarking exercise. The benchmarking team developed a framework and questionnaire of performance indicators in close coordination with the power utilities, regional organizations, and development partners. The team collected benchmarking data for 21 participating utilities across the Pacific region and analyzed the results (PIAC. Benchmarking Report. December 2011).

Improving Access to Carbon Finance

A barrier to the development of renewable energy projects in the Pacific region has been the inability of DMCs to attract carbon financing. At present, only two projects have been successfully registered for carbon credits under the flexible CDM of the Kyoto Protocol. At the Conference of Parties 16 in Mexico in December 2010, the registration rules for projects in countries with fewer than 10 registered CDM projects were relaxed. To facilitate access to the CDM, ADB has launched several initiatives to assist the Pacific DMCs access the international carbon markets.

Under the regional technical assistance project, Strengthening the Capacity of Pacific Developing Member Countries to Respond to Climate Change, and through bilateral programs, ADB is supporting the establishment of DNAs for CDM in Samoa, Solomon Islands, Timor-Leste, Tonga, and Vanuatu. The assistance to the Pacific DMCs includes training and capacity building for the DNA and its stakeholders, and the development of a clear and transparent legal and institutional framework for CDM. Support is also being provided in preparing a CDM pipeline and in promoting its benefits through the development of nationally appropriate mitigation actions and drafting of relevant CDM documentation at the project level.

Through its Carbon Market Initiative, ADB is further providing project-level support, as exemplified by the activities in PNG listed below.

- Under the ADB Technical Support Facility, the project design documents for Ramazon and Divune Hydropower projects under the PNG Town Electrification Program Tranche 1 were prepared.
- Through access to the ADB Future Carbon Fund, a Certified Emission Reduction Purchase Agreement has been signed with the PNG Power for the post-2012 carbon credits, with agreement providing for an upfront payment for 50% of the projected carbon credits.
- ADB is working with PNG Power to prepare a program of activities for renewable energy projects in the country. The programmatic approach will allow streamlined approvals of subsequent power sector CDM projects in PNG.
- PNG Power and other stakeholders are being provided with CDM awareness training under the project preparatory technical assistance for PNG on PPTA 7113-PNG.

Level	Project	Funding Source	Status	Amount
Regional	Performance Benchmarking of Power Utilities	Australia	Approved 2009	\$0.30 million regional technical assistance
	Capacity Building for Clean Development Mechanism and Establishment of Designated National Authority ¹	Asian Clean Energy Fund	Approved 2010	\$0.50 million regional capacity development technical assistance

¹ Support is being provided under the regional technical assistance to Strengthen the Capacity of Pacific Developing Member Countries to Respond to Climate Change.

Pacific Energy Update 2012

The Asian Development Bank (ADB) is working to assist the development of the energy sectors in our 14 Pacific developing member countries through technical assistance and concessional loan/grant financing. ADB is providing support for the rehabilitation and expansion of power sector infrastructure, improvement in electricity access rates, expansion of renewable energy generation, and improving efficiency of energy use. ADB is currently implementing energy sector projects in 11 Pacific countries (the Cook Islands, Fiji, the Marshall Islands, the Federated States of Micronesia, Nauru, Papua New Guinea, Samoa, Solomon Islands, Tonga, Timor-Leste, and Vanuatu). This document provides an update of the existing 2012 portfolio of Pacific energy sector projects and a summary of requested assistance for 2013.

About the Asian Development Bank

ADB's vision is an Asia and Pacific region free of poverty. Its mission is to help its developing member countries reduce poverty and improve the quality of life of their people. Despite the region's many successes, it remains home to two-thirds of the world's poor: 1.8 billion people who live on less than \$2 a day, with 903 million struggling on less than \$1.25 a day. ADB is committed to reducing poverty through inclusive economic growth, environmentally sustainable growth, and regional integration.

Based in Manila, ADB is owned by 67 members, including 48 from the region. Its main instruments for helping its developing member countries are policy dialogue, loans, equity investments, guarantees, grants, and technical assistance.

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