



PROJECT IDENTIFICATION FORM (PIF)

PROJECT TYPE: FULL-SIZED PROJECT

THE GEF TRUST FUND

Submission Date: 21 Jan 2008

Re-submission Dates: 21 Aug 2008; 19 Sep 2008; 1 Sept 2009

PART I: PROJECT IDENTIFICATION

GEFSEC PROJECT ID: 3641

GEF AGENCY PROJECT ID: 42078

COUNTRIES: Cook Islands, Samoa, Tonga, Vanuatu, (Papua New Guinea*)

PROJECT TITLE: Promoting Energy Efficiency in the Pacific

GEF AGENCY: Asian Development Bank

OTHER EXECUTING PARTNER(S): N/A

GEF FOCAL AREA: Climate Change

GEF-4 STRATEGIC PROGRAM: CC SP-1, CC SP-2

NAME OF PARENT PROGRAM/UMBRELLA PROJECT: Pacific Alliance for Sustainability (PAS)

INDICATIVE CALENDAR	
Milestones	Expected Dates
Work Program	Nov 2009
CEO Endorsement	Apr 2010
Agency Approval Date	Jun 2010
Implementation Start	Aug 2010
Mid-term Review	Oct 2011
Implementation Completion	Apr 2013

*The participation of Papua New Guinea (PNG) will be fully supported from cofinancing sources; no GEF funds will be used in PNG.

A. PROJECT FRAMEWORK

Project Objective: Greenhouse Gas Emissions Reductions and Improved Energy Security through Energy Efficiency (EE) and Conservation									
Project Components	Investment, TA, or STA	Expected Outcomes	Expected Outputs	Indicative GEF Financing		Indicative Co-financing*		Total (\$)	
				(\$)	%	(\$)	%		
1. Policies, Institutions and Capacity Building	TA	EE mainstreamed in Government energy policy Guidelines, codes, tariffs, and directives for EE and energy conservation adopted Institutional capacity to harness EE opportunities in both short and long-term planning horizons	EE and energy conservation targets incorporated into national energy policy and sector roadmaps. Workshops to enhance understanding of EE benefits by Government and private the sector. Adoption of EE standards for energy-consuming appliances. Regulated phase-out of incandescent bulbs and implementation of mandatory energy labeling for imported white goods. Building codes to promote EE best-practice for existing and new-build residential and commercial buildings. Energy audits of major public buildings. Fiscal incentives to promote EE programs, including tariff adjustments and subsidy schemes, e.g. for CFLs. Strategies to ensure sustainability of EE initiatives over the long run, including assessment of EE Service Company and innovative financing options.	400,000	20	1,600,000	80	2,000,000	
2. Implementation of EE	Investment, TA	Increased market penetration and implementation of EE	Deployment of power factor correction equipment to major commercial power customers in COO, PNG & SAM to	4,254,545	38	7,010,000	62	11,264,545	

programs across all sectors		technologies, practices and products in the residential, commercial and industrial sectors Implementation of large-scale EE initiatives across all 5 participating countries, leading to minimum annual saving of: <ul style="list-style-type: none"> • 38 GWh/yr (equal to 6-7% total power generation) • 26,000 tCO2/yr • \$4-5m in end-user energy costs 	reduce reactive power on system. Upgrade inefficient street lighting technology in all countries using LED and High Pressure Sodium technology. Roll-out subsidized CFLs to the residential lighting sector in all countries. Hotel sector energy audits in COO, PNG & VAN. Implementation of EE improvements in air conditioning, lighting, pumping and management schemes. Public building energy audits in all countries. Implementation of EE improvements in air conditioning, lighting, pumping and management schemes.					
3. Monitoring and Evaluation, Public awareness and Information Sharing	TA	Improved monitoring of energy data by class of end-user to enable rigorous monitoring of EE program impact Improved compliance with policies and regulations for EE Improved public awareness and understanding of EE and the benefits of energy saving activities	Systematically updated database to monitor energy consumption by sector in each country. Use of database to plan, monitor and evaluate of EE programs. Ex-post analysis of impact of EE initiatives in Component 2 on load curve, energy demand and GHG emissions. Information dissemination and education of stakeholders on benefits of energy saving activities. To include public education programs, stakeholder workshops, media broadcasts, etc. National and regional workshops to exchange information on EE best-practice and lessons learned between countries and major stakeholders. Fully-trained local experts in energy audits and EE products. Use of resource to plan, implement, monitor and evaluate energy saving programs.	400,000	20	1,600,000	80	2,000,000
4. Project management				200,000	33	400,000	67	600,000
Total Cost				5,254,545		10,610,000		15,864,545

C. INDICATIVE CO-FINANCING FOR THE PROJECT BY SOURCE and BY NAME (in parenthesis) if available, (\$)

Sources of Co-financing	Type of Co-financing	Project Amount
Government Contributions		
Gov. of Cook Islands	In-kind	500,000
Gov. of PNG	In-kind	500,000
Gov. of Samoa	In-kind	500,000
Gov. of Tonga	In-kind	500,000
Gov. Vanuatu	In-kind	500,000

GEF Agency: ADB	Grant/Cash	1,100,000
Bilateral Aid Agency(ies)	N/A	-
Multilateral Agency(ies)	N/A	-
Private Sector - Power Factor Correction Customers	Cash	2,359,944
Private Sector - Hotels	Cash	1,082,736
Public Building Owners/Government	Cash	830,448
Power Utilities (TAU, PPL, EPC, TPL, UNELCO)	Cash	2,736,872
Total co-financing		10,610,000

C. INDICATIVE FINANCING PLAN SUMMARY FOR THE PROJECT (\$)

	Previous Project Preparation*	Project	Agency Fee	Total
GEF	0	5,254,545	525,455	5,780,000
Co-financing	0	10,610,000		10,610,000
Total	0	15,864,545	525,455	16,390,000

*A PPG application in the amount of \$220,000 (including agency fee) with cofinancing of \$1,700,000 will follow shortly. This will bring the total GEF funds to \$6 million for the entire project.

D. GEF RESOURCES REQUESTED BY FOCAL AREA, AGENCY SHARE AND COUNTRIES

GEF Agency	Focal Area	Country Name/ Global	(in \$)		
			Project	Agency Fee	Total
ADB	Climate Change (Group Allocation)	Cook Islands	1,313,636	131,364	1,445,000
		Samoa	1,313,636	131,364	1,445,000
		Tonga	1,313,636	131,364	1,445,000
		Vanuatu	1,313,636	131,364	1,445,000
Total GEF Resources		5,254,545	525,455	5,780,000	

PART II: PROJECT JUSTIFICATION

A. STATE THE ISSUE, HOW THE PROJECT SEEKS TO ADDRESS IT, AND THE EXPECTED GLOBAL ENVIRONMENTAL BENEFITS TO BE DELIVERED:

Climate Change Issues

The accumulation of greenhouse gases (GHGs) in the atmosphere is contributing to climate change, the impacts of which are predicted to include sea level rise, increased ocean temperature and acidity, greater frequency and intensity of extreme storms, and greater variability of rainfall. This will result in damage to coastal, marine, aquatic and terrestrial ecosystems and their associated economic values as realized through fisheries, tourism, agriculture, water resources and a range of un-priced ecological services. Such climate change consequences are caused in part by the development and use of conventional energy, and their impacts will be felt particularly strongly amongst the fragile and vulnerable Pacific island countries (PICs).

Although the accumulation of GHGs in the atmosphere is largely the result of energy use by developed countries, the high environmental vulnerability to the impacts of climate change of small islands and low-lying atolls has created very strong interest in addressing the global problem within the PICs. As international leaders in raising awareness of and calling for action on the negative consequences of climate change, Pacific leaders recognize that it is imperative that they take a strong stand in coming to grips with the region's energy and environmental vulnerabilities.

Economic and Development Issues

PICs are also extremely vulnerable to high and volatile oil prices because of their heavy dependence upon oil-derived imports for their energy needs. Although a few have indigenous energy resources (e.g. hydro power in the more mountainous countries), the majority are dependent on imported petroleum fuels for 100% of their commercial energy

usage. The cost of providing these resources is very high, because consumers are dispersed and domestic markets are small. The cost of conventional energy in PIC capital cities is significantly higher than in Asia and neighboring industrialized countries, and in rural and outer island areas it is much higher still. Analysis conducted by the Pacific Islands Applied Geoscience Commission (SOPAC) indicates that every 10% increase in the oil price translates into a loss of up to 14% of PIC gross national product. The high cost of petroleum fuel also places a mounting strain on economies and trade balances, resulting in potential crowding out of other imports and loss of real income through high costs for transport fuel and electricity, and consequent exacerbation of poverty.

Despite the reliance on high cost petroleum imports, commercial and consumer energy demand is expected to continue to increase as PICs develop and modernize. Because the availability of commercial energy strongly influences real income and the quality of life, reducing energy supply costs as well as the volume of energy imports required to meet people's needs are critical parameters for poverty alleviation. Notwithstanding the region's high exposure to economic and environmental risk from dependence on fuel imports, access to high quality yet affordable energy is crucial to the development and economic future of the region. PICs must ensure they put their scarce energy resources and infrastructure to the best possible use. In the long run, the (i) affordability of commercial energy; (ii) minimization of environmental impact; and (iii) credibility of the region's response to the global warming issue can all be addressed by making meaningful energy savings through energy efficiency and demand-side management initiatives.

Energy Challenges in the Pacific

The Asian Development Bank (ADB) completed the Renewable Energy and Energy Efficiency Program in the Pacific (REEP) in 2006. The results of this project highlighted how the region is marked by limited human and institutional capacity to respond to energy challenges. The establishment of appropriate institutional arrangements; suitable policy and legislative support; collection, analysis, and dissemination of energy data required for routine sector management and monitoring of demand-side efficiency improvements; and an environment enabling private sector participation in energy management services have been identified as priorities to address key issues. These include: (i) insufficient public understanding and awareness of the potentials of energy efficiency resources (ii) a lack of confidence among stakeholders in energy efficiency technologies due to the limited success of technology demonstration programs¹; (iii) inadequate institutional capacities and technical expertise to plan, manage, and maintain energy efficiency programs; (iv) the absence of a clear market-based policy, legislation, and regulatory framework; and (v) limited political commitment and financial support to the sector. All PICs involved in the program identified a Pacific sub-regional project on energy efficiency as high priority.

Project Description

The project provides a least-cost means of reducing GHG emissions from the energy sector and promotes energy security through energy efficiency improvements in the residential, commercial and governmental sectors. A significant amount of project preparation is already being carried out under an ADB regional technical assistance project². As well as implementing five pilot-scale EE projects, the TA has identified the need for much larger-scale EE initiatives across each of the same five PICs. It identifies the need to mainstream EE and energy conservation measures in policy and to build local capacity, as well as identifying concrete proposals for EE programs at the national scale and across different sectors. This much larger second phase will produce environmental benefits and energy savings that are both measurable and material in an international context. The project has three major components:

Component 1 – Policies, Institutions and Capacity Building

The project will mainstream EE across all sectors through policy support and capacity building. Energy saving targets will be incorporated into national energy policies and workshops will be held to enhance the institutional and technical capacity of government and the private sector. Minimum EE standards for energy-consuming appliances and building codes to promote EE best-practice will be developed and implemented. Fiscal incentive programs to promote EE, such as subsidy schemes for CFLs will also be implemented. Strategies will also be developed to ensure the sustainability of EE initiatives over the long run. This will include assessing the potential for development of the Energy Service Company (ESCO) sector, together with development of innovative financing tools to support ESCO development.

Component 2 – Implementation of EE programs in across all sectors

¹ The limited success was more on the sustainability of the demonstration than on the technology itself. In fact, although the demonstration outputs were often achieved, they could not maintained over time.

² TA 6485-REG: *Promoting Energy Efficiency in the Pacific*

Through analysis of energy use data, combined with discussions with country stakeholders, the regional TA has already identified five concrete EE programs for implementation under this component. Alone, these five programs offer a direct reduction in GHG emissions by approximately 26,000 tCO₂e/yr, and an annual energy saving of at least 38 GWh/yr. This energy saving is equivalent to a 6-7% aggregate reduction in diesel-based power generation across all the countries, whilst maintaining consumption at existing levels. It will also be possible to retire a number of inefficient diesel-based generating plants from use.

Program	Country	Energy Savings GWh/yr	Emission reductions ktCO ₂ e/yr
2.1 Power Factor Correction	COO, PNG, SAM	26.5	17.9
2.2 LED & HPS Street Lighting	All countries	3.1	2.4
2.3 Residential CFL Program	All countries	3.0	2.0
2.4 EE in the Hotel Sector	COO, PNG, VAN	3.2	2.0
2.5 EE for Public Buildings	All countries	2.5	1.9

COO – Cook Islands; PNG – Papua New Guinea; SAM – Samoa; VAN – Vanuatu; TON - Tonga

Component 2 will carry out in depth energy audits of major energy users and carry out the implementation of energy efficient technology. This will include capacitor equipment to reduce the reactive power component on the grids, the promotion of high-efficiency appliances such as air conditioners and refrigerators and the phasing out of incandescent light bulbs, which consume approximately 500% more electricity than a CFL of equivalent. Building codes will also be introduced that can cut energy needed for lighting and cooling by 50% in comparison with buildings now common in the Pacific.

Component 3 – Monitoring and Evaluation, Public awareness and Information Sharing

To encourage sustainability of EE initiatives and ensure the effectiveness of programs, steps will be taken to monitor and evaluate EE initiatives in the five countries and to promote the public awareness of the issue. This will involve the development of knowledge management systems for assembling up to date metrics on energy use, ex-post analysis of EE initiatives and national initiatives to disseminate information and educate stakeholders on the benefits and cost-effectiveness of energy saving activities. Regional workshops will also be undertaken to ensure EE best-practice and lessons learned are shared between countries and major stakeholders. The project will also develop the local skill base and address the lack of fully-trained experts in energy audits and EE products. The environmental and energy-saving benefits of Components 1 & 3 are less easily quantified than Component 1, however, through institutional capacity building and knowledge dissemination, Components 1 & 3 will indirectly lead to benefits substantially in excess of Component 2 in isolation. More detailed assessments of the full energy savings and GHG reductions of all components will be made during later project preparation.

B. DESCRIBE THE CONSISTENCY OF THE PROJECT WITH NATIONAL PRIORITIES/PLANS:

The proposed initiative was discussed with senior government officials, representatives of the private sector, civil society and bilateral and multilateral agencies, and senior staff of major regional agencies from the participating countries. During the discussions Government officials reported that, because of high costs, the energy sector is a priority concern of the Government and efforts are underway to reduce dependence on imported petroleum and that energy efficiency improvements are a priority. Discussions began during a fact-finding mission undertaken by the ADB in February and March of 2008 and have continued during implementation of the regional EE TA. As part of this TA, as well as discussing the small-scale pilot projects, ADB discussed the scale-up of these projects and government officials have been notified of all five of the initiatives to be implemented.

Furthermore, this initiative is congruent with the aims of GEF PAS supported by the countries, and responds to priorities raised during the consultative process as a comprehensive, regionally-coordinated, and nationally-executed strategic investment program responding to country demands. It is also consistent with the Barbados Program of Action and the Mauritius Strategy in terms of enhancing energy efficiency and promoting access to energy efficient technologies. Further, improving energy efficiency is closely in line with the Pacific countries' National Strategic Development Plans, energy policies and renewable energy and efficiency strategies, national policies on combating climate change including GHG Abatement Strategies and National Communications to the UNFCCC, and achieving national Millennium Development Goal targets.

C. DESCRIBE THE CONSISTENCY OF THE PROJECT WITH GEF STRATEGIES AND STRATEGIC PROGRAMS:

The project responds to Climate Change Focal Area Strategic Objective 1 and Strategic Program 1, promoting energy-efficient technologies and practices in the appliance, machinery and buildings in both residential and commercial sectors. The project activities will improve the EE of buildings through the increased adoption of energy-efficient building designs, technologies, and appliances, particularly in the hotel and public building sectors. Enabling policy formulation and mainstreaming, capacity building and awareness-raising will ensure long-term impacts of the project. The project is also aligned with Strategic Program 2 – Promoting Energy Efficiency in the Industrial Sector with the improvement of energy systems in public utilities, particularly through the implementation of power factor correction equipment for the largest power users in the participating countries. This initiative is expected to reduce demand by some 26 GWh alone.

D. OUTLINE THE COORDINATION WITH OTHER RELATED INITIATIVES:

The Council of Regional Organisations in the Pacific (CROP) Energy Working Group developed the Pacific Islands Energy Plan (PIEP) to address and coordinate the energy programs of the regional organizations and development partners. As such, the PIEP has been developed as a means of coordinating energy programs in areas where international cooperation is required. This project is aligned with the goals for energy efficiency and conservation of the PIEP and will collaborate with CROP members and other agencies contributing to energy development. Sustained efforts will be made to cooperate closely with all regional energy initiatives in the region from which useful lessons to this project can be learned, or with which productive synergies can be developed at the design and/or implementation stages. The project will incorporate the lessons and best practices from the ADB REEP program and will build on ADB's on-going initiatives addressing power sector reforms in the participating countries as well as on the results from past and ongoing GEF-related activities, such as the GEF Pacific Islands Climate Change Assistance Program, the Pacific Islands Greenhouse Gas Abatement Renewable Energy Project and the GEF Pacific Islands Renewable Energy Project. This initiative will also coordinate with Energy Ministerial Meetings as well as Pacific Power Association Meetings to increase awareness on EE and conservation's challenges and opportunities in the PICs.

E. DISCUSS THE VALUE-ADDED OF GEF INVOLVEMENT IN THE PROJECT DEMONSTRATED THROUGH INCREMENTAL REASONING:

Without GEF support, much of the valuable assistance provided to the PICs under REEP and other energy efficiency-related technical assistance projects will remain unimplemented. Timely GEF support can increase awareness and maintain *momentum* facilitating the implementation of proper energy efficiency and conservation initiatives. Although improving the efficiency of the PICs' energy systems is often the least-cost way to meet demand, scarce financial and technical resources remain a severe constraint on improving demand-side energy sector management. Support from GEF will help to overcome that constraint and move on from continued reliance on inefficient and CO₂ intensive energy technologies. The proposed project represents a clear opportunity for GEF to generate global environmental benefits required to address climate change at the same time address solutions to the PICs' energy security and cost concerns.

F. INDICATE RISKS, INCLUDING CLIMATE CHANGE RISKS, THAT MIGHT PREVENT THE PROJECT OBJECTIVE(S) FROM BEING ACHIEVED, AND IF POSSIBLE INCLUDING RISK MEASURES THAT WILL BE TAKEN:

The key risk associated with this program is that governments, utilities, and public and private partners do not give enough priority to the program's rationale nor take full ownership of it, and that the public at large will fail to become aware of the individual and community value of conserving energy. The risk of insufficient capacity (and, again, awareness) within the private sector to participate in EE investments also exists. The program will address these risks by conducting concerted awareness campaigns with key target groups, closely involving the participation of the main government, private, and consumer stakeholders in the design and implementation of energy efficiency measures (including policy, legislative, and regulatory reform measures), improving the capacity and incentives for key electricity utilities to promote energy efficiency among their customers; and building capacity in the public and private sectors to deliver commercially-viable energy efficiency services (including under appropriate tax and subsidy incentive arrangements as required).

G. DESCRIBE, IF POSSIBLE, THE EXPECTED COST-EFFECTIVENESS OF THE PROJECT:

This Project aims to reduce the transaction costs of switching to a more energy efficient setting and achieving economies of scale through regional involvement and leveraging of private sector resources. Moreover, the multi-country approach

will respond to each of the country priorities while taking advantage of regional economies of scale for project administration, and leveraging private sector resources.

Demand-side management EE initiatives are generally significantly more cost-effective than investing in new generating capacity. The cost-effectiveness of the different initiatives identified varies and the Power Factor Correction program offers the least cost of reducing energy demand. However, by offering energy savings of at least 35 GWh/yr for a direct cost of \$11.3m, Component 2 is significantly more cost effective than increasing generating capacity by investment in other sources of power generation. Levelised over the annual energy savings, and assuming a 10 year useful life, the effective cost of the saved energy is approximately US \$0.06/kWh. This is significantly less than the cost of power generation in all five countries, where electricity tariffs range from approximately \$0.16 - \$0.36/kWh. Payback periods have also been calculated for each initiative and all are significantly less than 5 years and in some cases only a matter of months. Further verification of these estimates will be done during project preparation.

H. JUSTIFY THE COMPARATIVE ADVANTAGE OF GEF AGENCY:

The Asian Development Bank has been a strong partner of the GEF in the Pacific, supporting the development of an Energy Efficiency Technical Assistance framework that matches the priorities and circumstances of the Pacific nations and the relevant bi-lateral, multi-lateral and investment partners. The ADB has allocated initial technical and financial resources of \$1.2m through TA 6485 which have been made available to Cook Islands, PNG, Samoa, Tonga and Vanuatu. ADB will be able to support this program in terms of procedural and reporting responsibilities as well as bringing investment resources and contacts to the table. In addition to support from ADB's Manila-based staff, its Pacific Liaison and Coordination Office in Australia and South Pacific Subregional Office in Fiji also can provide direct assistance to the project.

PART III: APPROVAL/ENDORSEMENT BY GEF OPERATIONAL FOCAL POINT(S) AND GEF AGENCY

A. RECORD OF ENDORSEMENT OF GEF OPERATIONAL FOCAL POINT (S) ON BEHALF OF THE GOVERNMENT(S):

(Please attach the country endorsement letter(s) or regional endorsement letter(s) with this template).

Vaitoti Tupa Director Environment Service The Cook Islands	Date: <i>March 10, 2008</i>
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Tu'u'u Taule'alo Chief Executive Officer Ministry of Natural Resources and Environment Samoa	Date: <i>March 7, 2008</i>
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Nailasikau Halatuituia Secretary Ministry of Lands, Survey, Natural Resources and Environment Tonga	Date: <i>March 5, 2008</i>
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Russell Nari Director General of Lands, Ministry of Lands & Natural Resources Vanuatu	Date: <i>February 29 2008</i>
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B. GEF AGENCY(IES) CERTIFICATION

This request has been prepared in accordance with GEF policies and procedures and meets the GEF criteria for project identification and preparation.	
 Daniele Ponzi Principal Environment Specialist GEF Agency Coordinator	 Robert Kesterton Energy Specialist Pacific Operations Department
Date: <i>31 August 2009</i> Tel: +(632) 632 6746 Email: dponzi@adb.org	Date: <i>31 August 2009</i> Tel: +(632) 632 4530 Email: rkesterton@adb.org