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29 April 2009

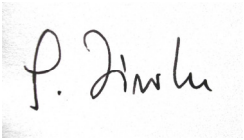
The Ministry of Finance, Republic of Palau

Your ref: NEPF/PAL5/NPE2

Dear Sir/Madam

We are pleased to herewith submit our Inception Report for the DEVELOPMENT OF THE PALAU NATIONAL ENERGY POLICY. The report summarizes findings and stakeholder suggestions of the first field mission.

Yours truly,



29/04/09
Gerhard Zieroth

DEVELOPMENT OF THE PALAU NATIONAL ENERGY POLICY

NEPF/PAL5/NPE2

Inception Report

Gerhard Zieroth (International Consultant) in co-operation with
Kathy Kesolei & Associates, Palau

April 2009

Executive Summary

An Inception mission was held under the project 'National Energy Policy (NEP) and accompanying Energy Sector Strategic Action Plan (EESAP) for Palau from April 13 until April 22. The objective of the mission was to establish a national task force which will drive energy policy development. In addition the views of key stakeholders with respect to problems, challenges and opportunities in Palau's energy sector have been collected and analysed. Interviews and lively discussions during a Task Force inception meeting allowed to perform a preliminary problem analysis. Stakeholders acknowledged the lack of a policy guideline and inadequate institutional arrangements as major shortcomings that need to be addressed. The problems discovered in Palau's energy sector are often interlinked. They mostly fall into two different categories of core problems:

a) the inadequate allocation of resources (human and material) to energy sector development and
b) the lack of an institutional and regulatory framework that ensures an efficient management of the energy sector.

Palau being a small island economy has to manage her human resources in an effective way. In the energy sector this means first and foremost the need to focus on issues that are relevant. Palau does not have the capacity to engage in research and development of pre-commercial technologies; the expense would be prohibitive.

The inception mission also permitted to analyse risks that may influence the outcome of the policy development exercise. Energy policy will, when tied to concrete implementation, investment and enforced regulation, impact on all aspects of the economy. Stakeholders have expressed their preference for voluntary change through public awareness and/or education. However, without some form of regulatory intervention changes required will be unlikely to achieve. Faced with an acute power crisis the government needs to establish PPUC as a healthy public utility, the utility needs to be able to charge cost covering tariffs and enforce revenue collection from all its customers including government. While the policy development process itself and the drafting of a new energy policy itself is less critical, the major risk involves a lack of political will for implementation and enforcement. Senior stakeholders have expressed the need for a policy to be practical and geared towards implementation in order to avoid the faith of other policy papers that have been written and quickly forgotten.

P olicy development methodology will be based on a conventional approach towards energy sector planning. I.e. we will analyse future energy demand and aim to balance the demand with least cost supply sources for both urban and outer island areas. The nature of the services, namely the formulation of policy, procedures, guidelines and project documentation, demands a close relationship and constant consultation with the government and the project task force. The deliverables will be ignored if they do not closely reflect the intent of GoP and other key stakeholders and the project Task Force.

While the projects Task Force is eminently important to integrate needs and views of a broad range of groups and organizations in society, the group appears too large to drive policy development. For some members energy is not a core business and there is a lack of experience and expertise to govern the process. Thus, it is recommended to establish an Executive Committee consisting of four – five members. The following composition of the EC is recommended:

A Senator
A Delegate
General Manager PPUC
Director Energy Office
Director OERC

1. Introduction

This Inception Report by the consultants[1] describes the outcomes of the first phase of the Development of a National Energy Policy for Palau. Through the Palau Energy Office, the Government of Palau has launched the initiative to develop a National Energy Policy in 2008 and it is expected that by the end of 2009 a policy document will be ready for endorsement and adaptation. With support from the European Development Fund 9 (EDF 9) a consultant was engaged to assist a national task force in developing such a policy. The task force assembled to drive the energy policy development brings together stakeholders from public, private and non state sectors and reflects the multitude of interests that the Palauan society has in the energy sector.

The assignment is expected to contribute to the overall objective of improving energy sector performance and efficiency by developing a new Energy Policy (NEP) and accompanying Energy Sector Strategic Action Plan (EESAP) and carrying out Energy Project Design. While NEP development is mainly concerned with long term sector energy sector performance, however, the project has to consider the current power crisis in Palau. As the power utility PPUC is forced to implement a load shedding program due to lack of capacity, the economy is burdened by costs of un-served electricity. At the same time, PPUC's financial position is deteriorating as revenue declines and fixed operating cost increase relative to total sales of electricity. This situation required urgent attention and the consultants have dedicated a section of this report to the current crisis.

2. Background

Following an international competitive tender a contract was awarded to a team of consultants based on concise Terms of Reference (ToR) for technical assistance. The ToR outline support to the Palau government in energy policy development and follow a logical progression in requiring the consultants' team to:

- Assist the government of Palau to formulate a policy to direct future development of Palau's energy sector;
- Draft documents such as policy statements, strategic plans and funding requirements
- Prepare procedures and documentation for stakeholder consultations at various levels
- Draft proposals and implementation guidelines for energy sector projects, with particular emphasis on building on the work already done and developing
- Assist in holding 3 workshops and working sessions
- Facilitate stakeholder consultation and provide a platform to introduce, explain and seek feedback on the documents produced.
- Prepare an NEP and ESSAP that covers all relevant aspects of energy use, supply, an distribution
- Design the NEP and ESSAP that fit the needs and capabilities of the country; and are specific enough but flexible enough to allow for changing conditions and have the support of a high level in government to ensure enforcement.
- Develop actions and projects that are technically, economically and financially sound.
- Assign an estimated cost, benefits, priority, timeline, and implementing agency or agencies to each action.

The project has been planned to extend over a period of 7 months and is expected to come to a end by November 2009.

[1] Gerhard Zieroth (International Consultant) in co-operation with Kathy Kesolei & Associate, Palau

3. Problem Analysis

The following problem analysis is based on a review of documents and reports on Palau's energy sector and on interviews held with key stakeholders during the inception mission.[2] The need to develop a new national energy policy together with guidelines for energy sector management and project implementation stems from the existence of problems and constraints that hinder an efficient development of the Palau energy sector.

All stakeholders interviewed acknowledged the lack of a policy guideline and inadequate institutional arrangements as major shortcomings that need to be addressed. It should be noted that the problems in Palau's energy sector are often interlinked. They mostly fall into two different categories of core problems:

c) the inadequate allocation of resources (human and material) to energy sector development and
d) the lack of an institutional and regulatory framework that ensures an efficient management of the energy sector.

According to responses by key stakeholders Palau's energy sector currently faces the following problems and challenges:

Power Crisis

PPUC is currently unable to continuously supply the demand for electric power and has to ration power under a load shedding program. The economic cost of un-served demand may be difficult to quantify, but it is significant, considering the disruptions that affect the household, public and commercial sectors. The cause for the current power crisis is inadequate maintenance of the utility's generation assets. Inadequate financial management, poor management and scheduling of maintenance resulted in a shortfall of approximately 1.5 MW during peak hours. The situation has been exacerbated by the lack of standardisation[3] and related high O&M cost. At present, load shedding reduces PPUC's revenues and further undermines PPUC'c financial position. At the same time large commercial consumers have to generate their own power at considerable cost.

Addressing the power crisis and establishing a financially healthy and well managed PPUC is clearly the first short term priority in Palau's energy sector. The utility has recently gone through a change in management and board and the new management has taken immediate action to address the crisis through engagement with its customers and the local media. This is a good start but PPUC will require massive support from both the Government and its major clients to end a crisis.

Lack of Regulatory Framework

The lack of a consistent national energy policy that survives changes of government creates an environment of uncertainty for consumers, and public and private sector investors. As a consequence, the regulation of energy sector operations is inadequate and without an energy sector development perspective. In the absence building codes and construction standards energy efficiency in the housing sector is low. There is no independent regulator of private and public sector power operations. PUCC is still self-regulating in many areas. The first effort to provide a regulatory framework is a recent legislative initiative aims at providing the regulatory framework for grid access for 'Net Metering' investors. The respective bill has past first reading yet it is not taking into consideration all the variables.

2 Interviews were held using a standardized questionnaire attached as Annex 2

3 PPUC uses 5 different generator makes in its main system, all with different spare part supply chains, different maintenance procedures and repair processes.

Ideally this bill would be developed as an integral part of the Energy Policy for Palau, thus can benefit from a more holistic perspective. (See Annex 3 for consultants' comments on Net Metering Bill).

Need to Focus

Palau being a small island economy has to manage her human resources in an effective way. In the energy sector this means first and foremost the need to focus on issues that are relevant. Palau, as other small nations, does not have the capacity to engage in research and development of pre-commercial technologies; the expense would be prohibitive. Moreover, the country does not need to be represented at every international and regional energy event; it should pick only those strategic to their short and medium term needs to make better use of their scarce human resources.

The consultants "discovered" many initiatives being driven in parallel and sometimes even overlapping which may lead to a waste of time and resources. With exploration activities for gas and perhaps oil being imminent, and PPUC's current situation, the need to focus on issues of national importance has become even more pressing. Once again, a plan will assist the Republic of Palau in focusing its efforts and thus maximizing its capacity and efficiency.

Ineffective Energy Sector Management and Coordination

The Palau Energy Office which is part of the Ministry of Infrastructure, Industry and Commerce lacks a clear mandate. It does not have any regulatory function and its director is not a member of the PPUC board. Furthermore, currently there is consideration to place them under the Office of the President, yet no decision has been made yet which further undermines their effectiveness. There is also a focal point for energy in the Office of the President.

With a small budget, only two full time energy officers and no permanent support staff, the Energy Office has insufficient capacity to play a significant role in energy sector management. The office mainly acts as an international contact point and represents Palau in overseas energy meetings. It also acts as a project management unit for renewable energy and energy efficiency projects. There has been insufficient coordination and consultation among the various government agencies involved in energy sector activities. Under previous PPUC management, there was little or no communication between the utility, its clients and other energy sector organizations such as the Palau Energy Office.

Capacity Constraints

Palau is confronted with severe capacity constraints in both public and private sectors. Small island economies are no strangers to rigorous budget constraints which makes them dependent on foreign aid. This situation is exacerbated in Palau but the limited availability of qualified human resources given a total workforce of approximately 7000 citizens. Lastly few if any Palauan citizen has had the training or exposure to negotiate or evaluate complex technical, political and economic issues in the energy sector, nor would they be expected to have that experience as the country has not engaged in the sector as larger economies are.

These capacity constraints limit the effectiveness of Palau in different ways:

- Limited ability to engage effectively with donors or contractors in order to protect Palau's interest in the implementation of joint interests.
- Limited ability of The Palau Energy Office to internally perform complex tasks such as the preparation of documentation needed for accessing international finance, management of solicitation processes, and regulation of private sector activities.

- Donor driven projects due to limited ability for project planning and design ad based on poor or inaccurate data
- Little build-in flexibility in strategic planning too to react to fast changing energy market conditions (the recent drop in world market prices for fossil fuels is a good example how fast market conditions can change) and no efforts.

It is apparent that capacity building and human resource development in both private and public sectors is a necessary precondition for enhancing energy sector performance to reduce the high degree of reliance on external support.

Unreliable Data

Data on energy supply and demand are sketchy. Data management is inadequate and project design and investment decisions are often based on conjecture rather than reliable data. The next national census that is due will provide an excellent opportunity to establish a better data base on energy use. In the past little efforts have been made to improve data and knowledge management.

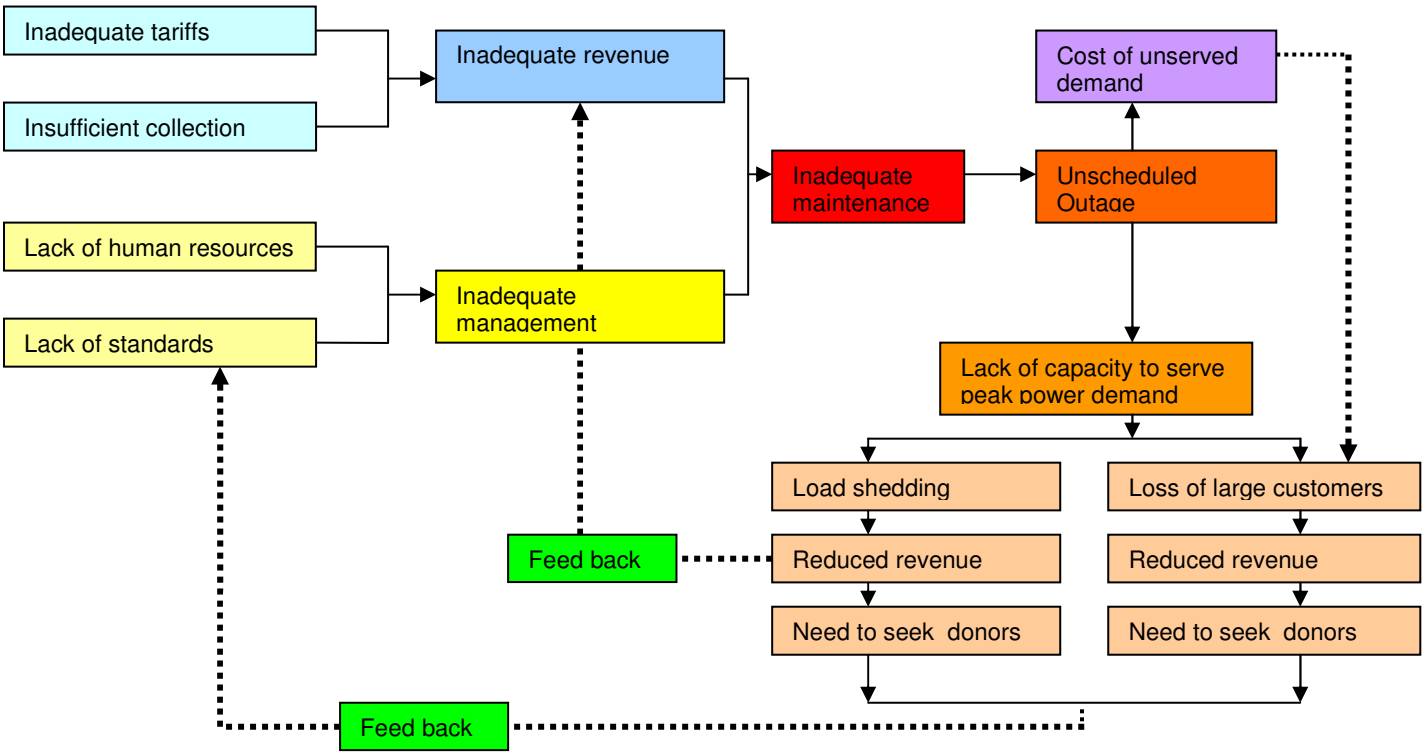
Lack of Public Awareness

Consumer behaviour in Palau suggests that the general public, householders, civil servants and the commercial sector are not adequately educated in energy matters. Often consumers chose appliances with inferior energy ratings, ignore basic principles of energy housekeeping and select means of transport with oversized engines that are inefficient. About one third of Palau's households use electricity, the most expensive energy form for cooking. Electric water heating is also common while solar water heaters would be a viable technology for most households. There have been little or no efforts by the power utility to communicate basic facts such as capacity constraints, load curve shapes and the cost structure of power supply to its clients.

Interlinked Issues

It should be noted that most problems in the energy sector are interlinked and have a propensity to reinforce each other. The above description does not always cover the full and detailed cause-effect relationship that characterizes the complex interactions in the sector. An example for a more elaborate analysis of the current power problems is provided below. It is also suggested to include a more detailed problem analysis in the first project workshop in June 09.

Problem Analysis Power Crisis (Example)



The above graph is a simplified problem analysis for the current power crisis which has been caused by constraints in human capacity, poor management decisions and numerous external factors such as substantial revenue arrears. The current situation further weakens PPUC's financial position through the feed back loops shown.

4. Risks and Assumptions Affecting the Project

A new energy policy for government of Palau (GoP) will induce chance and trigger a re-balancing of stakeholders' positions and will require a re-organization of institutional roles and responsibilities. The Palau Energy Office for instance needs a clear mandate and needs to take over roles and responsibilities that go beyond its current function as a project management office with a large portion of efforts being devoted to representing Palau in overseas meetings. In this context, the most significant risk for this assignment is resistance to change amongst key stakeholders.

Energy policy will, when tied to concrete implementation, investment and enforced regulation, impact on all aspects of the economy. During the inception mission, stakeholders have expressed their preference for voluntary change through public awareness and/or education. However, without some form of regulatory intervention changes required will be unlikely to achieve. In order to establish PPUC as a healthy public utility, the utility needs to be able to charge cost covering tariffs and enforce revenue collection from all its customers including government.

Although, we will aim to find win-win solutions where stakeholder interests are balanced as far as practically possible, there is a risk that certain stakeholders will feel disadvantaged by change. While

the policy development process itself and the drafting of a new energy policy itself is less critical, the major risk involves a lack of political will for implementation and enforcement. Senior stakeholders have expressed the need for a policy to be practical and geared towards implementation in order to avoid the faith of other policy papers that have been written and quickly forgotten.

There are numerous examples both in the Pacific region and worldwide where well intentioned energy policies met considerable resistance and thus failed to achieve their ultimate objectives which require implementation of projects and enforcements of legislations and regulations. However, it needs to be emphasized that in a confrontational environment even the policy development process can be at risk if key stakeholders do not co-operate and obstruct the consultant's work. An example is disclosure of critical data. Here we have to assume that the relevant public and private sector stakeholders including regional organizations such as the PIFS, UNDP and World Bank will provide the consultants with the necessary data to effectively and efficiently perform policy development and planning work. Disclosure of data and information will not only be necessary for effective policy development, it will also be critical for the project development process that forms part of the strategic action planning process described in the ToR.

A third category of risk relates to financing of the project proposals that will be developed under the assignment. Although we will develop the projects in line with international (DAC) standards, there is no guarantee that the projects will be financed once they have been presented to the donor community. While EDF 10 financing will be relatively secure other donors may define other priority sectors or prefer to control the development of their projects themselves if they engage in the energy sector. This may lead to further increases in technical complexity, and lack of standardization particularly in power supply. We have started to mitigate this risk through engaging with relevant donors in particular with EU, JICA and USDA and these engagement will continue during the entire project. In fact, we consider it a key activity of the assignment to map out ongoing and pipelined energy sector projects and programs. The resulting donor matrix will allow an early assessment which program is relevant for Palau.

In summary we have to assume that achieving the objectives of this assignment on three assumptions:

- The success of policy development and strategic planning itself rests on the assumptions that key stakeholders in the public and private sectors will co-operate, disclose data and information and support the efforts of the project team. During the first mission, key stakeholders such as PPUC freely shared information with the consultants and it is hoped that the other agencies and organisations will do the same.
- With respect to medium and long term impact of the policy development exercise, success will depend on the level of political will that the Palau government will demonstrate to reform the energy sector and implement regulations leading to change.
- We have to assume that high quality project proposals developed under the assignment will be funded by private investors, the Government or Palau's major donors.

5. Proposed Implementation Strategy

Our policy development methodology will be based on a conventional approach towards energy sector planning. I.e. we will analyse future energy demand and aim to balance the demand with least cost supply sources for both urban and outer island areas. The nature of the services, namely the formulation of policy, procedures, guidelines and project documentation, demands a close relationship and constant consultation with the government and the project task force. The deliverables will be ignored if they do not closely reflect the intent of GoP and other key stakeholders. In the following we highlight a few issues that emerged during the inception mission.

Inclusiveness

A number of GoP ministries and agencies and other parties are involved with or have an interest in energy sector development in Palau. During project inception we consulted with a majority of the

stakeholders to ensure an accurate understanding of their priorities, concerns and preferences. Among those with a particular contribution to make to this assignment are:

1. The Palau Energy Office
2. The Office of the President
3. The Ministry of Finance
4. The Office of Environmental Response and Coordination (OERC)
5. Ministry of Infrastructure, Industry and Commerce
6. Ministry of Natural Resources, Environment and Tourism
7. 8th OEK, Senate and House representatives
8. The Palau Public Utilities Corporation (PPUC)
9. The Palau Chamber of Commerce
10. Shell Palau
11. Mobil Oil Micronesia
12. The Bureau of Public Works
13. The Palau Community College
14. The Palau Community Action Agency (PCAA)
15. The National Development Bank of Palau (NDBP)
16. Regional Organizations in particular the Pacific Island Forum Secretariat and its Petroleum/Import Advisor and the PPA
17. Major development partners such as ADB, EIB, JICA, World Bank, US government (DOI), UNDP, other bilateral donors

Public Awareness and Consultation

Policy development needs to carefully balance the interest of stakeholders of consumers and investors and aim to change inefficient institutional structures and inadequate regulations. We strongly suggest supporting policy development work in Palau from the very beginning with a public awareness campaign that aims at sensitizing and educating the general public on the key issues in the energy sector and relays the message that energy sector development is everyone's business. The issue as to when to engage the public has been discussed at the inception meeting of the Task Force on April 15. Suggestions were made to postpone involving the public at large until a more concrete outline of the new policy has been developed. We believe, however, that the policy development process should be as inclusive as possible and engage the general public early in the process but this can be done through targeted consultations such as engaging the Governor's Association, Women's groups, etc.

Executive Committee

While the projects task force is eminently important to integrate needs and views of a broad range of groups and organizations in society, the group appears too large to drive policy development. For some members energy is not a core business and there is a lack of experience and expertise to govern the process. Thus, it is recommended to establish an Executive Committee consisting of four members:

A Senator
A Delegate
General Manager PPUC Ken Uyehara
Director Energy Office G. Decherong
Acting Director OERC Olai Polloi

The executive committee would take responsibility to provide guidance to the local counterpart – Kathy Kesolei & Associates -- for invitations to major events such as workshops, set agendas and decide on content of those functions. It would also review documents, decide on how and when to engage in

public consultations and ensure that relevant politicians are kept informed on the progress of the project. The executive committee will meet at least twice before the next arrival of the consultant.

Work Plan

Our methodology will follow a logical progression and aim for an optimum vertical integration of the work. The inception mission allowed establishing views and preferences of key stakeholders and the next step will be to institute the main energy sector policy goals in the first workshop in June 2009. For this workshop it is recommended to:

- Refine the problem analysis presented in this report
- Perform a SWOT [4]and stakeholder analysis
- Determine the key issues to be addressed in policy development
- Determine the format of the NEP policy document
- Outline energy policy goals and objectives for the strategic action plan

The policy document, strategic action plan and project proposals to be developed belongs to GoP and the consultant's role is simply to facilitate the papers' preparation, provide advice to guide contributions by government agencies and other sources, and to draw the different threads into a coherent policy cum action plan and project pipeline/investment plan. We propose to conduct further activities that lead to the major outputs of the assignment in a fully integrated manner in order to emphasize logical coherence and vertical integration. This means that as far as practical, the activities leading to the outputs will be conducted in parallel. It is for instance recommended to initiate a tariff review for PPUC as early as possible. This would naturally be part of the strategic action plan, but could be pursued in parallel to policy development due to the high priority that is given to the restoration of PPUC's commercial viability.

It is expected that towards end of June (after second mission), we will be able to produce a draft of the policy paper and strategic plan encompassing the following issues:

Petroleum supply and storage

1. Appropriate taxes and duties on petroleum products;
2. Product standards and monitoring of standards
3. Energy security both on national and local level;
4. Safe storage of petroleum products;
5. Environmental aspects of petroleum supply and storage;
6. Bulk purchasing of fuel with other governments and utilities in the region as proposed by the PIFS;
7. Substitution strategies;
8. Sizing of storage and financial and economic cost of storage

Electricity generation and distribution:

1. Establishing appropriate electricity tariffs for customers based on customer type and geographic location;
2. Upgrading existing infrastructure, and replacing equipment as it depreciates;
3. Procurement of equipment and services;
4. Connection of Independent Power Producers (IPPs) and smaller scale embedded generation (net metering) to the main grid;
5. Capacity building requirements and co-ordination of interventions by various development partners;
6. Supply side efficiency improvements and benchmarking for power utility;

[4] Common tool for policy development exercises analysing Strengths, Weaknesses, Opportunities and Threats for a certain business entity or sector.

7. Role of energy service companies (ESCOs) in energy efficiency and outer island electricity supply.

Transportation:
1. Public transit systems for the main urban areas;
2. Inter-island shipping;
3. Inter-island air transportation;
4. Environmental aspects of energy use in the transport sector

Renewable energy:
1. Renewable energy resource assessment and priority resources;
2. Potential impact of different renewable energy technologies;
3. Economics of renewable energy utilization;
4. Renewable energy for electricity generation for remote communities;
5. Incentives to promote renewable energy integration into the utility grid;
6. Incentives for developing the market for renewable energy products;
7. Renewable energy targets and related regulations;
8. Monitoring of results from renewable energy projects;

Energy efficiency and conservation:
1. Incentives for promoting energy efficient electrical products and vehicles and discouraging inefficient electrical products and vehicles
2. Building codes and enforcement mechanisms for energy efficient buildings;
3. Regulation for the importation of inefficient products;
4. Energy efficiency standards for government offices;
5. Energy efficiency standards for large civil works equipment (pumps, generators, etc.)
6. Monitoring of energy efficiency in the different sectors;
7. Fuel conservation in transportation.

For all of the above major energy policy areas we will compile strategies that are based on a thorough analysis that addresses the following cross cutting issues:

- Reform institutions and institutional structures to clarify responsibilities, strengthen commercial functions and streamline administration
- Allocation of resources to energy sector development
- Legal and regulatory development to align with private investment practices;
- Identification of priority projects for public and private development in urban and rural areas;
- Development of ownership and implementation models to encourage private sector participation;
- Environmental and social standards for energy sector projects
- Tariff and pricing policies for towns and rural areas;
- Selection criteria for developers and private sector operators;
- Public consultation steps;
- Incentives and subsidies for IPPs and other private sector initiatives;
- Solicitation models and concession award processes;
- Project evaluation and implementation procedures;
- Participation by GoP in the ownership of projects;
- Conditions to be satisfied for multilateral and bilateral agency support;
- Availability of political risk cover.

The third phase (Mission in August 2009) will then focus on strategic planning and the development of a project pipeline. The development of the project pipeline will be fully integrated with the policy and strategic planning. Activities will include a review of all data and information on energy sector projects

that have been implemented or are under implementation. Broad consultations will be undertaken in order to establish a preliminary list of project ideas for further assessment and ranking. Focus will be on renewable energy and energy efficiency projects. It is however, proposed to include conventional projects in the area of power generation/distribution and petroleum products as well if justified (urgency, good economic performance, significant contribution to energy security).

The pipeline of projects will be developed using a transparent ranking method. I.e. we will collect project ideas from all stakeholders and scrutinize them in an evaluation matrix that includes criteria such as technical feasibility, economic performance, social impacts, environmental characteristics and probability to attract finance. Our activities will also include a systematic assessment of risks associated with the proposed projects. The three highest ranking projects will then be fully developed into donor ready proposals that can be used to solicit funding/financing. As with the policy and strategic planning we expect several feed back loops during stakeholder consultations and we will aim at integrating these with the consultations on policy as the two aspects are closely linked.

The final phase October/November 2009 will be a refinement of the various documents and a fine-tuning of the NEP and the Strategic Plan. In the following, a proposed implementation schedule is displayed.

Time Table Palau Energy Policy and Strategic Planning

Calendar Week	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	**Working Days**	
Project Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	G. Zieroth	K. Kesolei
Contract Signature and Project start																																							
Inception Mission																																						10	10
Documentation, Reporting																																						3	4
Second Mission and 1st Work Shop																																						13	11
Documentation, Reporting																																						8	3
Third Mission and 2nd Work Shop																																						10	8
Documentation, Reporting																																						8	3
Fourth Mission and 3rd Work Shop																																						10	8
Documentation, Reporting																																						8	3
End of Project																																							
																																			Total Days			**70**	**50**

In country mission

Home office time

Annex 1: List of Contacts during Inception Mission

Energy Policy Working Group (EPWG) Attendees

	Agency	Representative	Title
1	Palau Energy Office	Greg Decherong	Director
		Nyk Kloubak	Energy Planner
2	The Office of the President	Hiob Mesubed	Advisor to the President
3	The Ministry of Finance	Kerai Mariur (n/a)	Vice President
		Darren Fritz	Budget Analyst
4	The Office of Environmental Response and Coordination (OERC)	Olai Polloi	Acting Director
5	Ministry of Public Infrastructre	Jackson R Ngiraingas	Minister of Infrastructure
		Ken Ueyhara	General Manager
7	The Palau Chamber of Commerce	Francis Remengesau	President
8	Shell Palau	Frank Kyota	Palau Area Manager
9	Mobil Oil Micronesia Inc.	Ralph Moses	Sales Manager
10		Regis Akitaya	Senator
11	Obiil Era Kelulau (OEK) House	Horace Raphael	Delegate
		Lencter Basilius	Delegate
12	The Bureau of Public Works	Techur Rengulbai	Director
	Capital Improvement Projects	Brian Melrairei	CIP Manager
13	The Palau Community Action Agency (PCAA)	Benjamin Adelbai	Executive Director
14	The National Development Bank of Palau (NDBP)	Clarinda Ziegler	Loan Officer
15	Bureau of International Trade and Technical Assistance (BITTA)	Gustav Aitaro (n/a)	Director
16	Ministry of Natural Resources, Environment and Tourism	Harry R. Fritz (n/a)	Minister
17	Department of Interior (US)	Bob Nelson	Consultant
18	Palau Energy Steering Committee	Cliff Terry	Member

Interviews

	Agency	Representative	Title
1	PPUC	Ken Uyehara	General Manager
2	House of Delegates, 8th OEK	Noah Idechong	Speaker of the House
3	DOI	Bob Nelson	Consultant
4	Office of the President	Johnson Toribiong	ROP President
5	PPUC Board (GM)	Olai Polloi	Board member
6	National Development Bank	Kaleb Udui	President
7	Chamber of Commerce Board	Francis Remengesau	President
		Ambassador Ueki	Board member
		Dermot Keane	Board member
		Kaleb Udui	Board member
		Temechtul Baules	Executive Director
8	Palau Community College	Dr. Patrick Tellei	President
9	Palau Community Action Agency	Ben Adelbai	Energy Sector
10	US Embassy	Mark Bezner	Charge d'Affairs
11	US Department of Agriculture (USDA)	Linda Mitchell	Officer
12	Shell Palau	Frank Kyota	Palau Area Manager
13	Japanese International Cooperation Agency (JICA)	NODA Makamoto	Resident Representative
14	Palau Energy Office	Greg Decherong	Director
		Nyk Kloubak	Energy Planner

Annex 2:

Comments on Net Metering Bill

Palau Net Metering Act
(Bill 8-17, Amendment to 37 PNCA)

Comments by G. Zieroth, Energy Policy Consultant

The NMB is an innovative new approach to promote clean energy and an inclusive development of Palau's energy sector. I also consider the initiative an important strategic move towards a higher energy security for Palau while providing a stimulus for the local commercial sector supplying equipment and providing engineering and operating support. With respect to the draft NMB that has passed 1st reading I have the following comments:

1. Based on current price levels for fuel and power, a net metering program based mainly on solar and perhaps small wind generators can only take off if a considerable up-front subsidy is introduced for those who are willing to invest. Concessionary finance at below market interest rates will not be sufficient for those investors who are not entirely driven by ecological (green energy) considerations.

2. On the other hand it is likely that a NMB would be able to attract grant donor support to cover the up-front subsidy. The key argument would be that a donor would have considerable leverage in promoting clean energy as private investors would finance about 50-60 % of the total cost. I.e. in contrast to projects such as the solar projects at the Capitol and hospital which are straight grant donations to the government, a donor would get double the impact when allocating aid to a net metering program. In the absence of donor support, a government subsidy may also be justifiable as the introduction of embedded generation would stimulate local business and create employment. Such programs are in place in Europe and in Japan.

3. Under a subsidy scenario it would be important to ensure a fair distribution of benefits from donor or government funding between the private investor and the utility. The draft NMB is presently heavily biased against the utility by not allowing for any compensation for lost revenue and perhaps more importantly, for lost contribution to capacity cost. In return the utility has the right to cap capacity and thus limit the impact of the program. This means the utility has a strong incentive to cap at a low level in order to mitigate its losses from the initiative using technical reasoning. Given the fact that one of the most pressing problems in Palau's energy sector is the weak financial position of the PPUC utility that has made operational losses for the last 8 years, I suggest to introduce a higher fixed charge for net metering customers tight to the size of the respective installation. This would compensate the utility for providing capacity without getting any capacity contribution from the net metering clients that are making use of an erratic form of energy.

4. In addition, I suggest deleting the provision for cash compensation for credits accumulated at the end of a metering period. In the presence of subsidies (which would be necessary to stimulate the program) this provision introduces an incentive to oversize systems. Not compensating for accumulated credits in contrast would provide an incentive to size a system more in line with the demand of the respective investor.

5. A successful net metering program has the potential to generate approximately 10% - 15 % of Palau's electricity from renewable energy sources (8 – 12 GWh per annum). This requires, however, that a program is set up in a sustainable manner with a fair distribution of subsidies that will be needed to trigger investments. Assuming that such a program will be implemented in parallel with other, more centralized renewable energy projects such as the existing solar projects and new projects such as the Japanese funded solar project at the airport, it may become necessary that PPUC invests in dispatchable short term storage (battery or flywheel) in order to secure system stability.