REVIEW OF NAMDRIK ATOLL SOLAR PROJECT, RMI – DEBRIEFING NOTE

by
Empower Consultants Limited

PIEPSAP Project Report 29

August 2005

~ Participating Pacific Islands Countries ~
Cook Islands, Federated States of Micronesia, Fiji, Kiribati, Marshall Islands, Nauru, Niue, Palau, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu and Vanuatu
Review of Namdrik Atoll Solar Project, RMI

Debriefing Note

Empower Consultants Limited

August 2005
Introduction
This report covers activities since inception of the Empower project team sent to review the Namdrik solar PV project, investigate the potential for local production and consumption of coconut oil (CNO), and develop recommendations for sustainable Outer Island electrification for Government of the Marshall Islands’ forward programme.

Programme
Team members prepared by reading briefing papers and preparing survey instruments prior to arrival in Majuro. On arrival, meetings commenced with the SOPAC Programme Manager Gerhard Zieroth and Energy Department Planning Officer Atina Myazoe. Ms Ellia Sablan-Zebedy was welcomed to the team to develop some in-country experience in the issues around implementation of Outer Island electrification projects.

Meetings were held with key institutional stakeholders, listed at Annex A. This served to identify issues and interests from the perspective of these constituencies, to sound out some preliminary ideas about improving the impacts and sustainability of Outer Island electrification, and to pre-plan a multi-stakeholder workshop to follow field work in Namdrik. A summary of team activities in Majuro and Namdrik is provided at Annex B.

Field Work
Reception on Namdrik was cordial but initially cool. It rapidly became apparent that the community has become quite politicised. The preliminary consultations had not included the Mayor, an adherent of the Ailin Kein Ad (AKA) party which dominates local government on the island, but who resides in Majuro. The team therefore arrived with only half the desirable introductions, which had been arranged through the Minister, from the opposing United Democratic Party. Moreover, the residents were initially somewhat suspicious and sensitive of yet another team of consultants investigating their electrification programme. Escort by the MEC technician, the team made a courtesy call as soon as he was available on the Acting Mayor, an AKA adherent, to discuss the work plan on the island, and to obtain his advice over local groups to consult. The programme as proposed was adopted, and the Acting Mayor undertook to announce the arrival of the team and its purpose at church on Sunday, to prepare the ground for a public meeting the next day, focus group meetings and household surveys.

Meantime, the team proceeded with key informant interviews. It quickly became apparent that numerous key informants, including the traditional leaders, were not in Namdrik. During the school holidays, many residents were away in Majuro for either the national Mayor’s meeting, religious leaders’ and teachers’ workshops, or a Women’s Group programme to prepare cultural events for the opening of Parliament on 8 August. The religious leader workshop should have included the MEC technician, who was anxious to attend. For these reasons the project team aimed to complete the necessary field work in 7 days, instead of the 14 days originally planned, so as to meet these key informants in Majuro. The Energy Department Planning Officer arranged meetings for return with the Mayor, and commenced locating the religious leaders, teachers, and Women’s Group. The Leroj (traditional leader) unfortunately suffered a bereavement and was not available during the team’s visit.

The Energy Department also rearranged the planned multi-stakeholder workshop for Tuesday 2 August, a much more suitable day and date than the formerly planned Friday 5 August, which conflicted with the Mayor’s meeting in Majuro. The upshot was attendance at the workshop that greatly exceeded expectations, and included the two key Ministers of Resources and Development and Public Works.

Meanwhile, back in the jungle, the team had detailed meetings with the MEC technician, held a community meeting, the Health Assistant, the Copra Co-operative, the only one of its kind remaining in the RMI, members of the two Women’s Groups (WUTMI), four Local Government Councillors. Their advice was asked about wealth ranking to facilitate
stratification for household interviews, but they were unable or unwilling to provide this information; the LGC keeps no records, and number concepts throughout the society are very weak. The MEC technician advised on the basis of payment records, and the team interviewed 31 householders selected from within the categories of poor, average a good payers he distinguished. The outcome was not as predicted by his categorisation, but a robust and representative picture emerged. The weather throughout the week was stormy, and the very heavy rain hampered but did not prevent movement around the island.

The technical team member was able to undertake survey work including social mapping and taking an inventory of representative plantation areas to assess coconut tree stocks and other uses of forest species.

Levels of mistrust reduced as the team moved around, and people were reassured that this was a positive project ultimately aimed at improving their energy supply, rather than a witch-hunt. One of the Women’s Groups staged a spectacular song and dance welcome, and by the time of departure the team was being urged warmly to return. The expatriate members’ acceptability was enhanced by association with the Marshallese team member, whose pleasant and empathetic personality commended her immediately to local residents. A mission that had high potential to arouse hostility and suspicion thus passed very successfully, and the team received volumes of free, frank and critical commentary that informed the multi-stakeholder workshop, and will be reflected in the report under preparation.

**CNO findings**

The team surveyed and mapped 5 individual coconut plantations (weto) to assess present and potential copra production. A present production average of 1.9 metric tons of copra per Ha was determined. The GPS positions of each land area survey is available. Coconut tree density was found to vary widely from weto to weto, and also within each weto. Obtaining a meaningful ‘average’ figure was difficult due to the wide and inconsistent variation from unordered planting and soil quality. Data is available on average annual copra production from Namdrik, along with estimations on potential improvements to production rates if a higher copra price encouraged a more systematic and coordinated approach.

The copra collective is functional but only handles around 50% or less of the total copra produced. Most households prefer to sell direct to the ships for the full 12 cents per pound but sell to the collective when they run out of cash between field trips.

Conversion to copra oil on Namdrik appears viable from a preliminary technical and financial perspective. Additional ‘real world’ testing, as proposed by Tobolar on their newly acquired and commissioned ‘mini plant’ will yield very valuable data on performance, conversion rates and possible technical problems from the direct use of CNO. The final report will contain direct technical and financial comparisons between the present solar home system and a hypothetical mini-grid based system using CNO as the main source of generation.

The report will also briefly explore possible markets for other produce including coir, and adding value to by-products of on-atoll CNO processing for domestic consumption.

**Solar system condition**

The technical team member and the local technician inspected solar home systems for general condition. Key points are:

- Overall condition is operational and no major problems found.
- Heavier than planned loads, particularly from TV/DVD systems are cycling batteries harder. Some cells are now requiring replacement after showing poor recovery from deep cycling.
- The local technician reports only one charge controller failure so far.
- Internal light fittings pose the most serious problem, with internal ballasts reported as the most common part needing replacement. There are no spare parts remaining on Namdrik or Majuro, however a stock is on order and expected shortly. Confusion
over responsibility for the repairs to internal light fittings is contributing to consumer
dissatisfaction and payment problems.

- General structural condition of the systems is sound but attention needed on potential
  for wooden poles to rot below ground, and for climbing vines to grow into system
cabling.
- GPS points for each connection have been taken.

**Social Conditions**

Namdrik is a pleasant and still reasonably clean environment which can provide the basic
necessities of life for its residents. There is no obvious, grinding poverty, though there is
differential access to resources that makes income generation harder for some, and the
prevalent Pacific poverty of opportunity affects everyone more or less. Much of this centres
around poor transport and communications, and results in long periods when there are severe
limitations on the amount of cash circulating in the economy. This is partly, but not solely
responsible for the poor financial performance of the solar projects.

**Collection of Payments, Willingness and ability to pay**

MEC records that the collection rate reflected in the July schedule, to hand since return from
Namdrik, has inched up to 57%. This is not spectacular, but is moving in the right direction.
The team's provisional conclusion is that willingness to pay is more of an issue than ability to
pay, and the analysis of household survey results is continuing to substantiate or amend this
conclusion. There are, however, issues associated with poverty of opportunity and with
cashflow on the island that will be fully discussed in the report under preparation. Namdrik
my be atypical in that though it is on the wet and more fertile side of the country in the Ralik
chain, it is the most densely populated of the Outer Islands, and relative population pressure
may be a facet of genuine difficulty with meeting cash commitments. There is, as noted in
earlier reports, palpable disappointment and resentment about some of the anomalies
inherited from the earlier projects. The team is discussing the comments emerging from on-
island consultations and the multi stakeholder workshop, and will report on this in the Draft
Report.

There is residual and largely ill founded mistrust of the MEC technician, and bad feelings
linger around the inequities of utilisation of the large systems from the first project. Though
public consultations preceded the rehabilitation project, LGC feels functionally excluded, and
believes that its involvement could improve payment performance.

The community is generally only moderately happy with performance of the systems, mostly
because whatever the original explanations and agreements, they want more power.
However, there is fairly general agreement that in most ways, with the exception of social
interaction which is perceived by a significant minority as having been damaged by the
projects, life is better.

**Multi-Stakeholder Workshop**

After return from Namdrik, the team completed the consultations with the Mayor, religious and
educational key informants prior to final workshop preparation.

The two hour workshop comprised introduction, a PowerPoint presentation based on findings
from the survey activities, and open discussion on the preliminary conclusions and
recommendations. Participants were quite vocal, and though not all spoke, the key actors,
the two Ministers, a representative from WUTMI, and representatives of Tobolar in particular
contributed to robust discussion. The representative from Transport and Communications
expressed irritation at the stream of consultants that keep coming to advise RMI on how to
manage their country. He recommended a year's stay in the field, not a popularly supported
viewpoint. Options for offering and supporting hybrid systems offering AC power for the
range of social and economic objectives articulated on Namdrik were presented, ranging from
solar lanterns where only minimal lighting is required to limited mini-grids or centralised “service centres” to meet demands in excess of the capacity of household home systems. There was general agreement about the thrust of the recommendations, though the Minister of Resources and Development stressed that government policy is to provide light for all atolls with the expectation of benefits to the country’s priorities of education and health, and that budgetary constraints may limit ability to invest in infrastructure that allows productive uses of power. CNO has the potential to meet this need, but it was agreed that a formal test programme is desirable before deployment on the Outer Islands. This may be commercially robust without donor or government intervention, but in any case would provide a basis on which to request donor support, as an indigenous “green” energy alternative.
Annex A: Stakeholder meetings in Majuro

<table>
<thead>
<tr>
<th>Organisation</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minister Resources &amp; Development</td>
<td>John Silk</td>
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<tr>
<td>Minister Public Works</td>
<td>Mattlan Zakhras</td>
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<tr>
<td>Deputy Secretary Resources &amp; Development</td>
<td>Rebecca Lorennij</td>
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<td>R&amp;D Energy Office</td>
<td>Atina Myazoa</td>
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<td>R&amp;D Agriculture</td>
<td>Henry Capelle</td>
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<td>R&amp;D Small Business Development Centre</td>
<td>Anel Philimon</td>
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<td>MIMRA</td>
<td>Glen Joseph</td>
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<tr>
<td>MEC Alternative Energy Section</td>
<td>Billy Schutz</td>
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<tr>
<td>MEC Solar Technician Namdrik</td>
<td>Osi Jitiam</td>
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<tr>
<td>Tobolar</td>
<td>Wilfredo Candilez</td>
</tr>
<tr>
<td>Tobolar/Pil</td>
<td>Jerry Kramer</td>
</tr>
<tr>
<td>Transport &amp; Communications</td>
<td>Korent Joel</td>
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<td>NTA</td>
<td>Tommy de Brun</td>
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<tr>
<td>WUTMI</td>
<td>Marie Maddison</td>
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Annex B: Activity Diary

Activities in the Field

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<tr>
<th>Date</th>
<th>Event</th>
<th>Location</th>
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<tr>
<td>Friday, 15 July 2005</td>
<td>Arrival in Majuro. Meet SOPAC Project Manager</td>
<td>Majuro</td>
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<td>Saturday, 16 July 2005</td>
<td></td>
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<td>Sunday, 17 July 2005</td>
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<td>Monday, 18 July 2005</td>
<td>R&amp;D, MEC, Tobolar, MRD</td>
<td>Majuro</td>
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<tr>
<td>Tuesday, 19 July 2005</td>
<td>MIMRA, Minister, MRD</td>
<td>Majuro</td>
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<td>Wednesday, 20 July 2005</td>
<td>Communications</td>
<td>Majuro</td>
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<td>Thursday, 21 July 2005</td>
<td>Depart for Namdrik</td>
<td>Namdrik</td>
</tr>
<tr>
<td>Friday, 22 July 2005</td>
<td>Field work</td>
<td>Namdrik</td>
</tr>
<tr>
<td>Saturday, 23 July 2005</td>
<td>Field work</td>
<td>Namdrik</td>
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<td>Sunday, 24 July 2005</td>
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<td>Monday, 25 July 2005</td>
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<td>Tuesday, 26 July 2005</td>
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<td>Wednesday, 27 July 2005</td>
<td>Field work</td>
<td>Namdrik</td>
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<td>Thursday, 28 July 2005</td>
<td>Return to Majuro. Meet with MRD Debriefing with Energy Planner, Meeting with Mayor of Namdrik</td>
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<td>Friday, 29 July 2005</td>
<td>Debriefing with Energy Planner, Meeting with Mayor of Namdrik</td>
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<tr>
<td>Saturday, 30 July 2005</td>
<td>Meeting with religious leaders</td>
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<td>Sunday, 31 July 2005</td>
<td>Namdrik, workshop preparation</td>
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<td>Monday, 1 August 2005</td>
<td>Meeting with MRD and Namdrik</td>
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<td>Tuesday, 2 August 2005</td>
<td>Workshop</td>
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<td>Wednesday, 3 August 2005</td>
<td>Debriefing with MEC and MRD</td>
<td>Majuro</td>
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