CHALLENGES AND RECOMMENDATIONS FOR CLEAN DEVELOPMENT MECHANISM AIMING TO IMPROVE WOMEN'S LIVELIHOOD IN THE PACIFIC REGION

Prepared by Koin Etuati,
Energy Officer
Pacific Islands Applied Geoscience Commission (SOPAC)
Community Lifelines Programme
Suva Fiji islands

for GenderCC - Women for Climate Justice
www.gendercc.net
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1. Introduction

Access to energy is essential and vital for the economic, social and sustainable development for developing countries. Access to affordable, reliable and appropriate energy services is recognised as a means of wealth creation for women in the rural and remote communities of the Pacific and Caribbean Region. On the other hand, its absence can constrain women from contributing to improving their livelihoods. Linkages have been established between energy and major socio-economic national and global issues such as poverty and hardship, education, gender disparity, food security, health, environment, economy and security.

Women need energy services for practical, productive and strategic needs, either at the household, at the community level and at national level. The practical needs for women in rural and remote areas include provision of electricity for pumping water supplies to their homes, thus reducing need to haul and carry water long distances. Access to efficient lighting system improves working conditions at home, improves children's study and education. On the other hand, women's productive needs include having access to proper lighting at night where they are provided with opportunity to carry out income generating activities during evening hours, provide refrigeration for local food production, storage and sale. In addition, access to energy efficient biomass stoves and solar cookers improve women's productive needs and therefore their livelihood by limiting time spend on collection of firewood, tending to open fire cooking, and reducing in-door pollution. Spending less time in laborious activities can improve women's health and caring services to children and the age. Women's strategic needs and issues include making streets safer allowing participation in meetings and sharing of information on reproduction and preventive health issues, attending women's group meetings at night and also opening horizons through radio, mobile phones and internet access.

The drudgery and the hardship faced by women to carry out productive, practical and strategic needs can be reduced through the access to appropriate, efficient and affordable renewable energy services. In terms of access to electricity, the Pacific can be divided into three categories as follows:

Rate of electrification	Countries
>90%	Niue, Cook Islands, Nauru, Palau, Tonga, Samoa, Tuvalu and Tokelau
50-80%	Fiji, RMI, Kiribati, FSM
< 25%	PNG, Solomon Islands and Vanuatu

Source: SOPAC, Paper presented at the 4 Inter-regional ACP e-Parliament Hearing, Tobago, 15 -16 Nov 2008

2. Renewable Energy Technologies in the Pacific

Renewable energy technologies such as solar home systems for lighting and water pumping, solar refrigeration in remote and outer islands have been technically proven in some of the Pacific Island communities. For example in the 1980's, solar energy was used for lighting, water heater and water pumping in remote and rural villages in Tonga. A solar refrigeration project was developed in 2005 by the Fiji Department of Energy in one of the rural area to assist women in improving their business operation, see (Box 1), and solar home systems have been developed and used in the Solomon Islands, Samoa, Kiribati and Papua New Guinea through private and government initiatives. Wind energy has been used in Fiji and wind assessment studies are being carried out in other countries, such as Cook Islands, Tuvalu, Kiribati and Samoa.

The development of energy efficient biomass stoves, biogas digester using cow and swine's waste and recently the use of solar cookers have all been proven technically viable in most of the communities of the Pacific Island Countries. However, these projects have limited impact on the economy and the overall improvement to women's livelihood due to financial barriers related to the high capital and maintenance costs of the technologies.

Box 1: Driti Village - Vanua Levu, Fiji Islands

A Solar Energy Project managed by Fiji Department of Energy provides basic power for refrigeration whereby women are able to keep fish fresh after harvesting from fish farming. The solar energy project helped the women with their business operations – fish farming. Each month $30.00 is kept for the solar maintenance and the rest is used for fish farming operation.
The project improved the lives of the village women who are able to pay the school fees for their children to complete their education. The children will then later get better education and able to get income for their families.

Source: DVD Linkages between Energy & Gender in the Pacific

3. The Clean Development Mechanism

The renewable energy technologies (RETs) introduced and referenced earlier can all contribute to improving livelihoods of women and the sustainable development of the countries. SOPAC[1] is currently working with some Pacific Island Countries (PICs) and technical partners such as REEEP[2] and the Ferris University[3] on two renewable energy projects, solar PV LED lighting systems (Box 2) and Solar Cookers Demonstration and Monitoring (Box 3)

Box 2: Pacific Micro Energy Service Companies Project

The Pacific Micro Energy Services (PMESCOs) project between REEEP and SOPAC provided 70 solar PV LED lighting systems for rural and remote areas of Kiribati and the Solomon Islands. The average estimated amount of kerosene used by 70 households surveyed in the Solomon Islands and Kiribati was 4.613 tons per year. Women in the Tau Community, one of the three communities selected for the project in the Solomon Islands usually walk 3 – 4 hours along rough terrain and streams to buy kerosene. With limited cash and transportation, they are only able to purchase 0.3 litres of kerosene per trip and this will last them for two days. The Kiribati communities have limited purchasing power due to lack of access to markets for sale of local produce. The project aims to improving standard of living of rural communities in the outer islands and remote communities using solar PV LED lighting systems sold through a micro credit scheme established as part of the project, in the Solomon Islands and Kiribati.

With the use of the 70 solar PV LED lighting systems, an estimated carbon emission reduction for 10 crediting years is equivalent to 7,918 tonnes of CO_2 equivalent.

Replication of this project up to 5000 solar PV LED lighting systems as a CDM -Programme for Activities (CPAs) or small scale bundling will improve the livelihoods of 5000 women or households from the Pacific Island Countries. Additional information is available from http://www.sopac.org/Pacfic+Micro+Energy+Services+Company
(SOPAC, 2008)

[1] Secretariat for the Pacific Islands Applied Geoscience Commission
[2] Renewable Energy and Energy Efficiency Programme
[3] A Japanese University for women

Box 3: Manufacture and use of Hand Made Solar Cookers in Kiribati

Two types of solar cookers, the Hand Made Solar Cooker (HMC) and the Parabolic Solar Cookers (PC) were introduced in Kiribati and Tuvalu in February and September 2008 respectively through a technical collaboration between SOPAC and Ferris University from Japan.

Kiribati and Tuvalu are two atoll islands, highly vulnerable to sea level rise and rely heavily on kerosene for cooking in the urban areas and biomass use in the rural areas. The number of households on the capital island of Kiribati, South Tarawa, in 2005 was 5,245. The total consumption of kerosene is Kiribati is shown below:

Annual Total	2003	2004	2005	2006	2007
Total kerosene used (tonnes)	2,317,736	2,408,975	2,351,750	2,690,550	2,805,543

Using a Hand Made Solar Cooker (HMC) in Kiribati replaces 0.3 litres of kerosene a day. Using 100 HMC for 9 months a year will reduce an estimate of 19 tons of CO_2 equivalent annually.

Developing a CDM Programme of Activities (CPAs) on the use of solar cookers will benefit the women and contribute to sustainable development for Kiribati and Tuvalu. The CDM fund will allow more women access to the solar cookers and to contribute to improving their livelihoods.

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The replications of such RETs projects in thousands will improve livelihoods of women through reducing dependency on fossil fuels and therefore saving money, improved energy security and trade deficit, creating opportunities for wealth creation and improvements to the local environments.

The initial funding required for replicating and scaling up of the technologies continues to be a barrier in most of the developing countries. The CDM under the Kyoto Protocol may be an option that can provide funding for the uptake of renewable energy technologies. However there are also challenges and barriers to participate in the CDM and which are discussed in this paper.

4. CDM projects in the Pacific

Out of the current 1191 CDM registered projects[4] only 2 projects belong to the Pacific Region. These projects are the Lihir Geothermal Power Project from Papua New Guinea and the Vaturu and Wainikasou Hydro Projects in Fiji, while the Caribbean Region has four (4) projects.

The monthly CDM pipeline:[5] showed that some of the RETs that can improve women's livelihood, such as solar PV, use of agricultural residuals and solar cookers are in various statuses of the CDM Project Cycle.These renewable energy technologies are summarised below:

Technology	At Validation	Request Registration	Registered	Total
Solar PV	9	3	2	14
Solar Thermal	2	0	0	2
Solar Water Heating	2	0	0	2
Solar Cooking	6		4	10
Agricultural Residues (animal waste)	2		1	3

[4] http://cdm.unfccc.int © 27.10.2008 19.53
[5] www.cdmpipeline.org/

5. Challenges to Participate in the CDM Process

The main challenges for the Pacific region not participating in the CDM processes are mainly due to the following:

5.1 Financial and Market Barriers

- Low economies of scale for renewable energy projects due to CDM high transaction costs associated with developing a Project Development Design (PDD) ranging from USD40,000 to USD60,000.
- High costs for travelling between the islands (monitoring and verification of projects) and the absence of local accredited verifiers.
- Carbon funds are not readily available for small projects but focuses on large projects only e.g Umbrella Carbon Facility – housed at the World Bank.
- Most small island developing states have limited financial resources to pay Designated Operating Entities (DOE) or consultants to write up PDD, an initial requirement for registration of a CDM project.

5.2 Information and Resource Barriers

- Lack of capability available in the Pacific and Caribbean region to prepare CDM project documentation and other project documents required for accessing international finance;
- Lack of information on CDM assistance available;
- Lack of understanding of CDM procedures remains a challenge for women and energy developers and this could be attributed to the number of reasons.
    - lack of participation of women and energy project developers at the appropriate forums such as COP/MOPs.
    - No specific training on CDM developed by UN agencies in the Pacific and Caribbean region. For example, the project developed under the United Nation Environmental Programme (UNEP) called CDM4CDM[6] is only for the Africa and the Asian countries.
    - No specific CDM Framework developed for the Pacific and the Caribbean region similar to the Nairobi Framework[7] – "Catalysing CDM in the African countries"

5.3 Other Challenges/Barriers

- Geographical remoteness in the Pacific thus the implementation and operational costs is high due to isolated and remote locations.
- Investors and/or potential buyer's criteria on location, type or size of a prospect CDM project.
- Complexity of CDM management system, that is Designated Operating Entities only writes PDD and registers the project.
- Absence of Designated National Authorities in some Pacific Island Countries (except Fiji and Papua New Guinea).

6. Recommendations

6.1 Development of a Pacific regional assistance body for provision of advice, recommendations and assistance to Pacific Island Countries. This could include activities such as the establishment of sustainable development criteria, the development of a consistent host country approval process, the provision of recommendations regarding individual project approval, and other technical assistance.

6.2 Development of specific CDM capacity building for Pacific and Caribbean countries similar to the UNEP CDM4CDM project for the African and Asian countries.

[6] www.cdm4cdm.org
[7] www.unfccc.int

6.3 Creation of a Micro Credit Facility to fund RETs and allow women access to the renewable energy services such as solar LED lighting, solar water pumping, solar cookers and energy efficient biomass stoves and biogas digesters.

6.4 Specific Carbon Funds Facility for the Pacific and Caribbean region to allow more accessibility and less competition with other bigger developing countries. The special funds to be used for capital costs for RETs that are ready to be replicated that have contributed to improving livelihoods of women in the host countries.

6.5 Develop capacity of project developers so they are able to put together projects, to monitor and report on the projects thus reducing transaction costs.

6.6 Develop capacity of UNFCCC focal points in the small islands developing states in order to establish and set up functions of a National Designated National Authority (DNA) for the host countries.

6.7 Develop separate funds for mitigation activities similar to the Adaptation Funds which should fund for mitigation activities on the ground.

7. Conclusion

Most of the renewable energy projects implemented in Pacific island countries are donor driven. One of the challenges for replication and scaling up of these RETs is the lack of additional funds to replication of successful projects. In addition, the affordability of the RETs to women is addressed through the PMESCOs and the Solar Cookers Project through the establishment of micro credit programmes.

The CDM is supposedly to assist with capital inputs through foreign investment but due to the rules and procedures involved, the process is difficult and costly for the small island developing countries to engage in. The Designated Operating Entities and project developers for CDM are only interested in bigger projects with higher financial returns.

The continuation of the Kyoto Protocol beyond 2012 is recommended and to allocate resources and give greater emphasis to the small island developing states, particularly to the Pacific and the Caribbean states who have not received the required resources to build their capacity during the First Commitment Period. The use of renewable energy sources have been proven technically viable in most of the Pacific Island Countries.

Participating in the CDM component of the Kyoto Protocol may contribute to improving livelihoods of women if the rules are aligned to assisting the needs of developing countries, to allow technology transfer and allocate funds for delivery of renewable energy and energy efficiency technologies that are appropriate, efficient, reliable and affordable.

References:

- SMEC, 2006 " Energy Sector Market Opportunities for the Clean Development Mechanism in the Pacific
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GenderCC – Women for Climate Justice
Anklamer Str. 38
10115 Berlin
Germany
info@gendercc.net
www.gendercc.net