

Women and Productive Uses of Energy: Some light on a shadowy area

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1. Introduction

The objective of this paper is to briefly outline the key issues in mainstreaming gender issues in UNDP initiatives on Productive Uses of Renewable Energy (PURE), which is aimed at linking energy services with poverty reduction. The paper defines gender mainstreaming in the context of energy, the gender dimensions in PURE, identifies critical issues to be addressed, and suggests specific strategies for addressing gender issues in PURE, using good practices from past experiences in addressing the energy-gender-poverty nexus.

2. Gender mainstreaming in the context of energy

Gender mainstreaming has gained in prominence since the Platform for Action from the 4th International Conference on Women in 1995 called on governments to mainstream gender perspective in all policies and programmes to ensure equalities of outcome for men and women. Gender mainstreaming can be defined as including gender as one of basic underlying factors that is taken into account in planning processes, i.e. recognising gender differences in energy needs, use and priorities; developing programmes responding specially to these needs; and incorporating meaningful roles for women in planning and implementing programmes.

At the project level, mainstreaming means that energy projects have to be designed to ensure that women as well as men are entitled to participate and benefit from a project. And since women may be more disadvantaged than men in similar circumstances, sometimes this means that special provisions have to be made so that women can overcome the obstacles that have prevented them participating in the past. In this context the pertinent question is not which particular technology is best for a productive application, but how to enlarge the basket of choices for women and enable them to choose the option that best meets their needs and fits their circumstances. One approach to reducing inequalities in project participation is positive discrimination in favour of women enabling them to take up management and decision making positions (see case study from Nepal in Annex 1).

3. Role of energy in women's enterprises: Gender issues in the context of PURE

The gender dimension of productive uses of energy in Asia is driven by the fact that in most developing countries, women are usually found working in micro and small scale enterprises, particularly in the informal sector. The enterprises tend to be concentrated around a narrow range of activities; with relatively low rates of return compared to men's activities (in part because women tend to work in unskilled manual work and are often not registered, while men work in skilled manual work or management). A study of Pakistan (quoted in Kelkar and Nathan 2005) reported that approximately 100,000 women worked in brick kilns, but were not officially employed because, although the entire families worked, only the men were registered as the head of the households. Enterprises usually operated by women include food-processing industries, kiln-using manufacturing activities and service-sector activities. Women's micro-enterprises are often heat-intensive (food processing), labor intensive; and/or light-intensive (home based cottage industries with work in evenings) and often dangerous to women's health. As a result, lack of adequate energy supplies for these activities affects women's ability to operate these micro-enterprises profitably and safely.

Women frequently run income-generating activities from home since it enables them to combine productive tasks with reproductive tasks, such as childcare.

Despite the low financial returns however, women's enterprises provide crucial sources of household income. Statistics show that the informal sector is a larger source of employment for women than for men and that the numbers of informal sector enterprises are on the increase. The limited data available point to the importance of women in home-based work and street vending in developing countries: 30-90 per cent of street vendors (except in societies that restrict women's mobility) ; 35-80 per cent of *all* home-based workers including both self-employed and home workers); and 80 per cent or more of home workers (industrial outworkers who work at home) are women (ILO 2002). In Bangladesh between 1983-84 and 1995-1996, the number of women among the informal workers increased from 44 percent to 75 percent (Kelkar and Nathan 2005). In the Philippines, after a large number of factories and small business closed due to the financial crises in Asia, there has been a five-fold increase in street food vendors over the past three years and majority of these are run by women (Lumampao, personal communication). These enterprises often use process heat and since they operate in commercial markets, they are vulnerable to shocks from energy price rises. The significant contribution of the informal sector to national economies is not explicit in national statistics. As a result, majority of the women entrepreneurs operate in a policy vacuum, including in relation to energy, and have no automatic recourse to supportive legal and policy structures.

The key issues in providing energy services for women's enterprises are as follows:

- **Informal and unorganized nature of enterprises:** Women-headed enterprises are frequently located in the home, and these "cottage industries" tend to be overlooked by agencies because they can be indistinguishable from other household activities. When women do generate income, they operate mostly in the informal sectors, with less access to technical training, financial resources, credit and equipment than men, and less of a voice in household, or community level decision-making.
- **Heavy reliance on process heat:** Majority of the enterprises operated by women use process heat, generated from wood, usually purchased. Given the focus on electricity supply within energy planning, it should not be forgotten that for many of these applications, electricity is not the most cost effective option. Some indication of the not insignificant quantities consumed can be seen in the following figures. In Nepal, an estimated 816,865 metric tonnes of fuelwood is consumed annually by hotels, restaurants, guesthouses and teashops, which is nearly half the total consumption of rural industries.
- **High use of women's metabolic energy:** The tasks in women's enterprises typically involve large quantities of metabolic energy. The production of palm and other oils is extremely arduous, requiring lifting and moving heavy containers of hot liquid. Tasks like spice and grain pounding are extremely arduous and time-consuming. The production of *kenkey* (maize balls) can take up to six days, involving soaking, milling, fermentation, dough making, cooking, ball-making and boiling. Much could be done to reduce the demands on women's metabolic energy by the substitution of their labour by machines.
- **Energy's contribution to sustainability of rural enterprises:** The role of energy in the sustainability of women's enterprises is not well understood. In food processing enterprises it has been estimated that energy costs are 20 - 25% of the total inputs. However, for most other industries, there is practically no data available on how much energy is being consumed and what is its role in their start-up/ shut down and sustainability. In general, energy is considered a significant cost factor and small industries generally buy their fuel. Even in rural areas, women may have to buy fuelwood to run enterprises. Small enterprises can be severely affected by rising energy costs, fuel shortages and deforestation, which would suggest that technological interventions could increase the scale and profitability of these businesses. Since fuel is a significant cost

factor, there is a commercial motivation to improve the energy efficiency of the production processes. Furthermore, deforestation and increasing fuel costs force them to resort to inferior fuels, leading to adverse health impacts.

- **Role of complementary inputs:** Energy is one of the many factors of input that influence the performance of small and medium enterprises. This problem is greater in the case of women's enterprises because of the additional barriers they face in making best use of available opportunities. There are social and practical constraints related to ownership and control over productive resources, women are typically excluded/ marginalized from decision making and suffer barriers related to illiteracy, lack of exposure, information and training. The ability of the poor women to generate livelihoods from micro enterprises is constrained by a combination of energy and non-energy related factors, such as high marketing costs; and the informal nature of these industries, especially the home based ones run by women, which makes it difficult for them to access credit, equipment and other support services. When women are forced to close their enterprises, it is often for non-business reasons, and linked to factors associated with working from home. The low rates of return prevent inward investment, hindering innovation and expansion, which are regarded as key factors in enterprise sustainability (Grosh and Somolekae, 1996). There is little research to explain what forces drive these start-ups and shutdowns, and how gender influences these processes.

4. Recommendations on gender mainstreaming for PURE

Addressing gender issues proactively under PURE offers a unique opportunity for the programme to achieve its stated objectives of 'applying renewable energy technologies for creating goods/services for production of income or value', 'improving quality of life', and 'impacting HDIs positively'. Some specific ways in which energy scarcity poses a constraint in women's enterprises and how energy services can create opportunities for them are listed below:

Energy scarcity as a constraint (which if removed, can bolster other activities, reduce vulnerability, improve food security, increase well-being)

- Lack of transport for moving harvest products to storage and to market may be a disincentive to produce (increases vulnerability, and reduces food security).
- Lack of electricity may hold back development of services in rural areas (both public and private).
- Poor cooking technology results in unnecessary ill health for women and children reducing their productivity (and threatening well-being).
- Lack of cheap, easily available, fuel forces women to spend large amounts of time gathering fuel, and restricts the boiling of water and in some cases the adequate cooking of food resulting in ill health (threatens well-being, increases vulnerability) as well as limiting time available for other enterprises.

Energy availability that creates opportunities (increased income/more sustainable use of natural resources)

- Community-level sustainable management of forests can provide income through organised firewood production and sale.
- Energy entrepreneurship as a secondary activity for community service and income generation.
- Improved technologies for charcoal production can boost sustainability and incomes.
- Availability of mechanical and process heat technologies can be a stimulus to the start up of various small-scale enterprises (sewing, food processing etc.).
- Electricity may enable the start up or expansion of small-scale service enterprises such as tailoring, photocopying and Internet cafes.

Source: Clancy, Skutsch and Batchelor (2002)

4.1 Strategic initiatives: Empowering women through PURE

4.1.1 Energy services for meeting women’s practical needs: A necessary enabling condition

A general rule that can be learnt from attempts to introduce technology for women is that if it does not reduce the labour in household tasks, no matter how beneficial the technology, it is likely to have low acceptance. In the context of PURE, this means that it is a fallacy to expect women to be interested in undertaking productive enterprises unless some of their practical needs, especially those related to drudgery and time-saving are met. Biogas in water stressed areas is a good example of this type of failure: it substitutes wood collection by water hauling. What sort of mechanisms can assist women in gaining access to improved energy services? Grain mills, which are very popular with women, since they improve product quality as well as reducing women’s labour, are a possibility. A much more systematic approach is needed, possibly with some form of incentive to encourage the spread of mills to areas not yet served. The Mali platform gives a good example of the “killing two birds with one stone approach”: allowing women to provide their own services including operating the energy conversion technologies. Micro hydro plants installed under the REDP, Nepal have been instrumental in bringing down women’s workload considerably. Earlier, women used to wake up very early around 4 am in the morning and use *dhiki* and *janto* for at least two hours of grain processing which required their own physical energy. Now women spend only around half an hour on processing activities excluding travel and waiting times, which comprise around one hour (Mahat 2004).

Hence, addressing women’s basic subsistence needs and releasing their time and labour through technological interventions is a necessary first step in addressing mainstreaming gender concerns in PURE. The role for energy services in this context then becomes one of reducing drudgery, freeing time from domestic chores and to provide flexibility in women’s working day, and enabling them to participate in productive activities.

4.1.2 Energy for women’s enterprises: a mechanism for empowering women

Women’s enterprise development is often advocated as a means for women’s empowerment. How can energy help “empower” women? The following table gives some examples of how different forms can meet women’s strategic needs, which in turn contribute to women’s empowerment.

Possibilities for improving the position of women through energy¹

Energy Form	Women’s needs		
	Practical	Productive	Strategic
Electricity	<ul style="list-style-type: none"> - pumping water: reducing need to haul and carry - mills for grinding - lighting improves working conditions at home 	<ul style="list-style-type: none"> - increase possibility of activities during evening hours - provide refrigeration for food production and sale - power for specialised enterprises such as hairdressing and internet cafes 	<ul style="list-style-type: none"> - make streets safer: allowing participation in other activities (e.g. evening classes and women’s group meetings) - open horizons through radio, TV and internet
Improved biomass (supply and conversion technology)	<ul style="list-style-type: none"> - improved health through better stoves - less time and effort in gathering and carrying 	<ul style="list-style-type: none"> - more time for productive activities - lower cost of process heat for income generating 	<ul style="list-style-type: none"> - control of natural forests in community forestry management frameworks

¹ practical needs are for household tasks; productive needs are for enterprises; strategic needs are for women’s empowerment

	firewood	activities	
Mechanical	- milling and grinding - transporting water and crops	- increases variety of enterprises	- transport: allowing access to commercial and social/political opportunities

Source: Clancy, Skutsch and Batchelor (2002)

There are many positive examples of women taking up energy technologies that have contributed to increasing their incomes. Women are found among small-scale tree farmers; producers, distributors and vendors of fuelwood and charcoal. They also distribute and sell kerosene and related equipment such as stoves and lanterns. There are women's groups in Uganda who use solar dryers for fruit preservation which gives them a better quality product and enables them to export 50 tonnes annually which has significant positive impacts on the income they are able to earn (Annex 1). Another example is the Multi-Functional Platform used in more than 70 villages in Mali (Burn and Coche, 2001). The platform consists of a diesel engine to which a variety of end-use equipment can be attached, such as grain mills, battery chargers, oil presses, welding machines and carpentry tools. In Vietnam, the Vietnam Women's Union has been active in the promotion of solar home systems in rural areas through its extensive network of 11 million members. Women are ideal candidates to become renewable energy entrepreneurs for household and small-scale industry because they are users of these devices, so they may be more sensitive to customers' desires; they are known to be good entrepreneurs with a good credit record; and they can more effectively market to women, since access to female clients is not hindered by social constraints. There is an enormous need for agents in rural areas who can distribute energy equipment on a commercial basis, albeit with some support in the short term.

So why are women not taking up these new opportunities on a large scale? And what kind of mechanisms can women use to overcome the barriers to becoming energy entrepreneurs? Apart from the barriers related to energy sector, there are barriers to women's entrepreneurship in general, which must be addressed under PURE:

- *Supporting women's enterprises through appropriate training and skill building:* Women have traditionally only been seen, particularly by developers of technology, as passive users and consumers of renewable energy. Women have a lot of accumulated knowledge and experience gained from using technologies with a clear set of criteria on what meets their needs. Perhaps these are not expressed in the formal language of science and engineering. Drawing on women's experiences, and working in partnership with women to develop Renewable Energy Technologies (RETs), will provide technologies that have a sustained use and create a viable market since they match the needs of users who are prepared to invest scarce cash resources to acquire them. Many of the so-called "captains of industry" probably do not have a detailed scientific understanding of their business products and processes: they know how to produce an economic product, with a satisfied workforce and customers, while complying with local customs and regulations. Therefore, there can be no logical reason why women, with some appropriate training, cannot fill the role of energy entrepreneur just as adequately as men.
- *Promoting alternative institutional models:* There is a need to promote new institutional models that provide women more space to come together and articulate their concerns and needs. One option is to form co-operatives. Through co-operatives, strengths and abilities of members are synergised to achieve more than the sum total of individual efforts. As seen in the women's cooperative promoted by Prokaushali Sangsad Ltd in Bangladesh (annexure 1), co-operatives are particularly useful for marginalized and poorer members of the business community since they can increase the bargaining power of members and can force recognition of particular issues. Women also find that working together provides solidarity and support to overcome challenges. The case study from Western

Solomon Islands (annexure 1) demonstrates that women working together as energy entrepreneurs do not necessarily meet male resistance.

- *Addressing credit needs:* A lack of working capital is one of the two most common causes of enterprise failure (Grosh and Somolekae, 1996). One of the key areas for enabling women's participation in improved energy equipment is credit and finance. There are a number of microcredit programmes targeting women, Bangladesh's Grameen Bank being the most well known. The level of finance in these programmes is usually only around the level of a few dollars and certainly insufficient to purchase RETs, with the exception of an improved household stove. The Grameen Bank recognised the importance of energy financing and organised a special non-profit affiliate, Grameen Shakti, to act as a supplier of energy technologies – primarily solar home systems. Unlike the Grameen Bank, the Grameen Shakti finance programme is not particularly targeted towards women, and the customers are generally the wealthier members of the community. However, promotion of the systems for income-generating purposes, and adaptation of a credit scheme to reduce the down-payment requirements and extend the payment periods, could expand the market for the systems, bringing down costs and making them more accessible to women bank members and less affluent borrowers. Some factors that make credit programs accessible to women include:
 - Small loans with frequent and flexible repayment schedules
 - Alternative collateral requirements
 - Low transaction costs to the client (in money and time)
 - An informal banking atmosphere where women are respected
 - Simple loan application procedures to accommodate low literacy levels
 - The use of information channels accessible to women

An example of best practice in interventions for financing energy and income generating projects in rural and urban areas is the UNDP-financed ENSIGN project implemented in eight countries in Asia. Micro-credit banks and institutions were used as the channel for funds to reach micro-entrepreneurs. The vast majority of borrowers were women, although the project approach was gender neutral. The women were found to be enterprising, innovative, and creditworthy. Significant benefits for women, in addition to income impacts, were time saving and enhanced self-confidence from women's improved capabilities to contribute to household income and greater control over self-generated finances. In terms of what forms of energy enterprises require it is interesting to note that in both rural and urban contexts, process heat and motive power were more crucial to income-generation than lighting.

4.1.3 Focus on *process aspect* of technology dissemination

Women's empowerment is complex and many-sided, and energy one of the many resources. Usually implicit in the meaning of the term is that through empowerment, women would have more autonomy and be able to make decisions on issues that shape their lives, both at household level but also in society in general. This autonomy can be financial; if women as individuals have means of making money and can spend it as they chose. But it can also mean more social freedom. Empowerment of women might mean for example that educational and career opportunities are open to them where these were formerly restricted. Hence it is somewhat unrealistic to expect that a single technology can bring about women's empowerment.

In the context of PURE, it is better to envisage women's empowerment enabling women to be able to act upon energy choices open to them and this is linked to decision-making within households and often this requires social and political changes. In general, we can say that it is not a particular energy technology that has the potential to really empower women, but the *process* by which the energy technology is introduced or as a consequence of having the technology (saving time to do other things or increases status from increased income).

Projects need to be carried out in a way that women are properly represented in decision making, and given scope to take on decision making where they were previously ignored. This will depend not on the technology, but on the attitude and working practice of the implementing organization, which will have to be very sensitive to gender issues and to really involve women. In conclusion we can say that women are empowered as a planned or unplanned outcome of an energy intervention.

4.1.4 Projects specifically directed at addressing women's needs in productive uses of energy

In light of the fact that women, in the context of productive uses of energy, have very specific needs, interventions designed for them have to be very specific and encompassing a bundle of services that provide them with choices in terms of appropriate energy services and enable them to access those best suited to their needs. It is proposed that a separate line of projects specifically directed at this niche be taken up under PURE. This set of projects, while retaining the primary focus on energy services, should address practical problems that hinder women's access to modern energy services, such as lack of finance, information and training, and access to productive resources. This set of projects should make use of existing gender analytical tools to ensure that gender concerns are addressed adequately at all stages of the project cycle, right from project design until withdrawal and evaluation. A separate line of projects directed at women's needs will ensure that (a) the programme does not lose focus of this key area and gives it sufficient and well-directed attention and (b) the lessons drawn from PURE can be used for providing specific directions for integrating gender concerns in energy interventions in the future.

4.2 Technology areas to address gender concerns

4.2.1 Process Heat

Given that women's enterprises have a strong reliance on biomass, the sustainability of this energy supply needs attention. There is an urgent need to look at the efficiency of biomass use in micro and small industries. Until now, the attention in the biomass sector has been focused on improving the efficiency of use, i.e. at the end use device. Women are however involved at every stage of the biomass cycle, hence there is a need to expand the scope of interventions in the biomass sector and address gender issues related to collection and processing methods, health issues such as indoor air pollution caused by biomass burning etc.

4.2.2 Electricity in enterprises

As noted earlier, many women's income-generating activities are based around process heat, for which end-use electricity is not a realistic option. Therefore, the extent to which electricity can contribute significantly to income generation and poverty alleviation is not clear. Only a small proportion of households employs electricity in home-based micro-enterprises. Among them, poor households use it the least for such use because of the lack of capacity to acquire productive use appliances. Income from village enterprises and businesses depends on the quantity of electricity supply, the time lag since electrification, investment capacity, and access to markets.

Where electricity is available in rural areas, it is mainly used for lighting rather than powering machinery or introducing new income generating opportunities. Electric light can extend evening working hours with both positive and negative effects. Certainly, electric light can benefit small enterprises with greater efficiency and quality of work, better working environment and a more attractive and secure environment for customers (security is particularly important for women) (Barua, 1998 quoted in Cecelski, 2002). However, a number of researchers have expressed reservations that if electric light extends working hours into the evening, this adds to women's already long working day (see for example, Clancy, 2000). Unfortunately, there are insufficient empirical data on what use is actually made of the lighting to enable a definitive answer. One of the few detailed studies with gender-

disaggregated data on rural electrification reported that women in rural Bangladesh felt that while electricity had not brought a real reduction in their workload it had given them greater flexibility (through electric lighting) in the organisation of their work patterns (HDRC, 2002). The World Bank EnPoGen study in a number of countries in Asia showed that electric light in the household was not used by women for productive activities but for doing household chores.

More research needs to be done into what use is actually made of the lighting and electricity and how we can “move beyond the light bulb” and find other productive uses of electricity suitable for establishing in rural areas.

5. Concluding remarks

Addressing gender issues is a priority area for PURE. Energy services for productive uses can be used as an effective means for empowering women, an important vehicle for social transformation in the long run. However, given the kind of barriers women face and the fact that energy is one of the many inputs in the success of women’s enterprises, it is clear that an attention to energy technologies alone is unlikely to achieve the desired goals. There is an urgent need to expand the scope of interventions from technology focus to include a bundle of services ranging from entrepreneurial skills, training, credit availability, and creating institutional spaces and mechanisms for women to participate meaningfully in energy interventions.

Annex 1: Case studies on gender and energy

REDP: A gender mainstreamed project in Nepal

In 1996 the Rural Energy Development Programme (REDP) in Nepal established male and female community organisations with equal responsibilities to work on the project. The REDP project aims at enhancing rural livelihoods and preserving the environment by supporting the installation of micro hydro power systems. Every participating household sends a male member to the male community and a female member to the female community. The segregation of women and men into separate community organisations encourages men and women to discuss and analyse specific problems they face. The community organisations meet every week. By the end of 2000, total membership was 20,258 women and 19,125 men in 1,021 female and 1,000 male community organisations. Additionally, the project facilitates capacity building through training in reading and writing, management and leadership.

The equal opportunities have had a very visible and positive impact in mobilising women and integrating them into mainstream activities. The women in community organisations have a distinct voice in local affairs and self-confidence has increased, as has their capability for independent and collective action.

Source: Rana-Deuba, 2001

Energy Projects Increasing Women's Income Generation Potential

In Uganda, an FAO/UNDP post-harvest programme recommended small-scale solar dryers for long-term storage and eventual household consumption of fruit and vegetables. However rural women's groups were more interested in solar dryers for income generation than for food security. Subsequently, the 'Fruits of the Nile' company was formed in 1992 to link rural producers with the market for dried fruit in Europe. Within three years, more than 50 women's groups had taken up the solar drier technology, and in 1995 the company exported more than 50 tonnes of dried fruit. The original food security concerns are also being addressed: when they are not drying for profit, the women use the solar dryers to preserve vegetables and fruits for home storage and consumption.

Source: Okalebo & Hankins, 1997

Upesi stove project in Kenya

The Upesi project was initiated in 1995 to promote the adoption of more efficient stoves in rural areas of Western Kenya. Its goal was to improve living and working conditions of women in rural households by enabling a significant and increasing number of women and families to benefit from fuel-saving wood-burning stoves. The project has cooperated with women's groups and involved them in design and field-testing of the stove. The women have been trained in producing, distributing and installing the stoves. Additionally, their marketing skills have been improved as well. Therefore their ability to earn their own income from stove-related activities has increased. Over 16,000 stoves have been installed, providing significant poverty alleviation. The benefits to men and women in the project areas include improved health and time savings for users of the energy efficient stoves, as well as relief from pressures caused by wood fuel shortage.

Source: Khatami-Njenga, 2001

Financing Energy Services and Income-Generating Opportunities for the Poor (ENSIGN)

The ENSIGN project was implemented in eight countries in Asia in a UNDP-financed project by the Asia-Pacific Development Centre. Energy-linked micro-enterprise portfolios were developed through microcredit banks and institutions in each country. In urban areas, connecting to the grid and more-efficient appliances were the most important. In rural areas, however, renewable energy, coal briquettes, and diesel fuels were preferred. In both rural and urban contexts, process heat and motive power were more crucial to income-generation than lighting. The ENSIGN Revolving Fund provided 36 per cent of total loan funds, national financing institutions 50 per cent, and borrowers' equity 14 per cent. Interest rates were 15 to 20 per cent, somewhat below market rates, with repayment periods of 2 to 6 years. Both individuals and communities were financed, and the average increase in income was 124 per cent (higher for the community projects).

Myriad activities were financed including garment making, embroidery, felt and leather goods manufacturing, copper welding, utensil manufacturing, baking, cold storage, rubber stamp making, beauty salons, grain grinding, threshing, fish drying and powdering, soybean processing, rice husk cook stove, spice drying, beedi (flavored handmade cigarettes) wrapping, cinnamon peeling, and rice processing.

Following are some lessons from the ENSIGN project:

- Although this was not planned, the vast majority of borrowers were women, who proved enterprising, innovative, and creditworthy. Significant benefits for women, in addition to income impacts, were time saving and enhanced self-confidence from improved ability to support household income and greater control over self-generated finances.
- There is a need to account for the transaction costs of intermediaries. There is a need for a "Business Facilitator", possibly an NGO, in future replication efforts.
- Borrowers for ENSIGN-type loans are not usually the poorest of the poor; however, such people are often employed as labour in the pilot projects.

Source: Ramani 2002

Community-owned Microhydro System by Village Women in the Western Solomon Islands

The women in Bulelavata, a small, remote village in the Western Solomon Islands accessible only by sea, used to live a subsistence lifestyle typical of women in tens of thousands of other villages across the Pacific Islands. Then, in 1998, the community chose to begin the process of establishing an energy-for-development project. In 2001, the community-owned microhydro system, funded by the Australian International Greenhouse Partnerships, Caritas, and the Provincial Government, was officially opened by the Provincial Premier. The system produces 24kw and has 1.5 km of high voltage transmission line enabling the community to sell power to the Provincial Secondary School.

For the women of Bulelavata the energy project has had some significant and profound impacts ranging from the practical, quantifiable advantages of lighting and community income to qualitative outcomes such as solidarity and empowerment. The project design of the Bulelavata community microhydro scheme used a women's participatory action agenda, exploiting "action learning" (or learning-by-doing). They had the decided advantage of a context where a relevant project was happening in their lives, one in which workshops could be grounded. The facets encompassed project policy support, female project management, female role modelling at varying levels, specific women's awareness and training workshops (although community ones were also held in which women participated), visits by women to

other villages, management committee positions for women, a new village institution for women, technical team leadership by women, and logistical project support teams being given equal status to technical project teams.

The Bulelavata village men say that the electricity project has changed their women; that they are now more confident and outspoken and participate more in community development activities. The men think this is a good outcome in terms of the whole project, and rate it second only (by general consensus) to the community's understanding of "planning for tomorrow".

Source: Donnella Bryce and Chin Ching Soo, 2004

Women's micro-enterprise in Bangladesh

Prokaushali Sangsad Limited (PSL) is promoting a rural women's micro-enterprise in Bangladesh. The project is located at Char Montaz, an island in southern Bangladesh, a five-hour motorboat journey from the nearest commercial centre. Electric grid extension to this area will not be economically viable within at least the next 20 years, and therefore there is a high demand for alternative modern lighting.

Through a micro-enterprise, rural women are engaged in the construction and sale of fluorescent lamps that use direct current (DC) and rechargeable batteries. The women involved in the project run the manufacturing plant that produces the lamps, and are certified by the local government to run their business as a cooperative. Besides lamp construction, women are also learning about quality control, business development and marketing. If a woman constructs and sells two lamps a day, her daily income increases by 100 Taka (approximately US\$2). This is equivalent to the daily wages of a skilled labourer, and thus raises both her income and her social status.

The project advertised the lamps by organizing public meetings, distributing handbills, setting up billboards and posters and demonstrating at several locations. A detailed marketing plan was developed by the women covering factors such as business location, customer characteristics, target markets, competition, electricity demand, marketing goals and strategies, and budget considerations. More than one thousand rural households are using these lamps today in the remote islands of Bangladesh.

Source: Khan, 2001

Annex 2: Bibliography

1. Anon (1997), *GTZ-Household energy Projects: The Second Generation – Integration in Development Planning and Policy*. ENERGIA News No. 2, pp 6-7.
2. Anon (2002), *Productive Uses of Renewable Energy: Experience, Strategies and Project Development*. Report of a GEF-FAO workshop, Rome, Italy, 18-20 June 2002. <http://www.fao.org>
3. Barnett A (2000), *Energy and the Fight against Poverty*, Paper given as part of a series of Economic Research Seminars at Institute of Social Studies, The Hague, 29th June 2000.
4. Batliwala, S., and Reddy, A. (1996), “Energy for Women and Women for Energy: Empowering Women through Energy Entrepreneurship”, in: ENERGIA News, Vol. 1, No.
5. Bazile, D. (2002), *Improved cookstoves as a means of poverty alleviation*, Boiling Point No 48, pp 20-22, ITDG, Rugby, UK.
6. Burn N and Coche L (2001), *Multifunctional Platform for Village Power – Mali*, in “Generating Opportunities: Case Studies on Women and Energy, Misana S and Karlsson K (eds), UNDP, New York.
7. Cecelski, E. (2002), *Enabling Equitable Access to Rural Electrification: Current Thinking on Energy, Poverty and Gender*. Briefing Paper for the Asia Alternative Energy Policy and Project Development Support: Emphasis on Poverty Alleviation and Women, Asia Alternative Energy Unit, World Bank, Washington DC
8. Cecelski E (2000), *The Role of Women in Sustainable Energy Development*. Report prepared for the National Renewable Energy Laboratory, US Department of Energy, Golden, Colorado, USA. NREL/SR-550-26889.
9. Chaieb S and Ounalli A (2001), *Rural Electrification Benefits Women’s Health, Income And Status In Tunisia*. ENERGIA News Vol. 4 No. 4 pp18-20
10. Clancy J S (2000), *Policies, Projects and the Market - Empowering Women? Some initial reactions to developments in the energy sector*. Paper prepared for ENERGIA. <http://www.energia.org>
11. Clancy J S (2002), *Blowing the Smoke out of the Kitchen: Core Issues in Household Energy and Gender*, Brief for SPARKNET
12. Clancy J.S and Redeby L (2000), *Electricity for Households and Micro-enterprises*. One of a series of UNIFEM Energy Source Books. IT Publications, London.
13. Clancy J S, Skutsch M and Batchelor S (2003), *The Gender - Energy- Poverty Nexus: Finding the energy to address gender concerns in development*. Paper prepared for the UK Department for International Development (DFID), London. DFID Project CNTR998521. <http://www.utwente.nl/tdg>
14. DFID (2002), “Energy for the Poor. Underpinning the Millennium, Development Goals” Department for International Development, August 2002
15. Dhanapala K (1995), *Report on the Gender Related Impacts of Micro-Hydro Technology at the Village Level*, Intermediate Technology Development Group Study Group Report No2.
16. Dutta S (1997), *Role of Women in Rural Energy Programmes: Issues, Problems and Opportunities*, ENERGIA News No.4, p11-14.

17. Green M. G. (2001), Solar Cookers as a Mechanism for Women's Empowerment, ISES World Solar Congress, Adelaide, Australia. December 2001.
18. HDRC (2002), Economic and Social Impact Evaluation Study of the Rural Electrification Program, Human Development Research Centre, for NRECA International Ltd's Rural Power for Poverty Reduction Program (USAID CA388-A-00-97-0040-00), Dhaka, October 2002.
19. Heijndermans, E (2002), *Asia Alternative Energy Programme of the World Bank: Energy, Poverty, and Gender Work*. ENERIGA News vol. 5, nr 3, p4-5
20. ILO 2002. Women and men in the informal economy: A statistical picture. International Labour Organisation 2002.
21. Karlsson, G. and Clancy (2004), Gender and Energy: A Toolkit and Resource Guide. UNDP.
22. Kelkar, G and Nathan, D. 2005. Gender, Livelihoods & Resources in South Asia. Paper for the Fifth South Asia Regional Ministerial Conference, Celebrating Beijing plus Ten, Islamabad, Pakistan, 3-5 may 2005.
23. Khan H. (2001), Battery-Operated Lamps Produced by Rural Women, in: Misana, S. and G. Karlsson (eds), "Generating opportunities: Case studies on energy and women". New York: UNDP. ISBN 92-1-26124-4.
24. Khatami-Njenga, B. (2001). Upesi Rural Stoves Project, in: Misana, S. and G. Karlsson (eds), "Generating opportunities: Case studies on energy and women". New York: UNDP. ISBN 92-1-26124-4.
25. Maskia, R. and Joekes S. (1996), Employment and sustainable livelihoods: A gender perspective. BRIDGE Report No 37. IDS, University of Sussex, Brighton, UK. ISBN 1-85864-172-1.
26. Masse R and Samaranyake M R (2002), *EnPoGen Study in Sri Lanka*, ENERGIA News vol.5 no. 3, p14-16.
27. Okalebo, J. and Hankins, M. (1997), Why Women Adopt Solar Dryers, in: ENERGIA News, Vol. 1, No. 3: pp. 6-7.
28. Oxaal Z and Baden S (1997), *Gender and empowerment: definitions, approaches and implications for policy*, Briefing prepared for Swedish International Development Cooperation Agency (SIDA). Bridge Report No. 40. Institute of Development Studies, University of Sussex, Brighton, UK.
29. Panjwani A and Cecelski E (2002), *Major Activities and Actors in Energy, Poverty and Gender*. Report prepared for the World Bank ASTAE-EnPoGen Programme. <http://www.energia.org>
30. Ramani, K.V. and Heijndermans E (2003), *Energy, Poverty and Gender: A Synthesis*, The International Bank for Reconstruction and Development/The World Bank, Washington D.C
31. Rana-Deuba, A. (2001), Rural Micro Hydro Development Programme. in: Misana, S. and G. Karlsson (eds), "Generating Opportunities: Case Studies on Energy and Women". New York, UNDP.
32. Reddy A K N (2000), *Energy and Social Issues*, in "World Energy Assessment", UNPD, New York. ISBN 92-1-126-126-0.
33. Reddy A K N and B S Reddy (1994), *Substitution of Energy Carriers for Cooking in Bangalore*. Energy, 19(5): 561-71.

34. Sengendo, M. C. (2001), Photovoltaic Project for Rural Electrification, in: Misana, S. and G. Karlsson (eds), "Generating Opportunities: Case Studies on Energy and Women". New York, UNDP.
35. von Schirnding, Y (2001a), Gender Differences in the Impact of Biomass Fuel on Health. ENERGIA News Vol. 4 No. 4 pp10-11.
36. Wamykonya L. and Davis M. (1999), Socio-economic impacts of rural electrification in Namibia. Report 1: Comparisons between grid, solar and unelectrified households. EDRC, University of Cape Town, South Africa.
37. Wamukonya N and Skutsch M (2001), *CoP-6: The Gender Issue Forgotten?* ENERGIA News, vol. 4 no.1, p14
38. Wickramasinghe, A (2001) *Gendered Sights and Health Issues in the Paradigm of Biofuel in Sri Lanka*. ENERGIA News Vol.4 No. 4
39. Wilson M and Green J M (2000), *The Feasibility of Introducing Solar Ovens to Rural Women in Maphethe*, Tydskrif vir Gesinsekologie en Verbruikerswetenskappe, Vol 28, 54-61. ISSN 0378-5254
40. World Bank (1996), Rural Energy and Development: Improving Energy Supplies to Two Billion People, Washington DC. ISBN 0-8213-3806-4