GENDER AND SUSTAINABLE ENERGY

ENERGIA News

VOLUME 8 ➤ ISSUE 2 ➤ DECEMBER 2005

8.2

NEWSLETTER OF THE NETWORK FOR GENDER AND SUSTAINABLE ENERGY

Contents

Towards Gender-Sensitive Energy Policy Research and Practice 1
Editorial

Empirical Evidence for Linkages 6
Soma Dutta, Magi Matinga, Anja Panjwani and Elizabeth Cecelski

Gender, Modern Biomass Energy Technology and Poverty 9
Anoja Wickramasinghe

Gender and Renewable Energy – Two Cases from the Philippines 11
Feri G. Lumampao

Institutional and Gender Dimensions of Energy Service Provision in Uganda 13
May Sengendo

The Role of Gender Research in Influencing Power Sector Policy in Eastern and Southern Africa 15
Stephen Karekezi and Jennifer Wangeci

The Energy, Poverty, Health and Gender Nexus – A Case Study from India 18
Jyoti Parikh and Saudamini Sharma

Whose Turn Is it to Cook Tonight? Changing Gender Relations in a South African Township 20
Wendy Annecke

Gender Relations and the Energy Transition in Asia 22
Govind Kelkar and Dev Nathan

Women's Electrification 24
Michel Matly

News from the Secretariat 26

Next Issue 28

Gender-sensitive energy policy research should question the potential for transformation of gender roles in any energy transition or project (Photo: Bertus Haverkort)

Gender, Energy & the MDGs

Towards Gender-Sensitive Energy Policy Research and Practice

Elizabeth Cecelski

This special issue of ENERGIA News presents the results of an DFID KaR (Department for International Development UK) reseach project on "Gender as a key variable in energy interventions: are we asking the right questions?" The project brought together some of the world's foremost experts on gender and energy in a Collaborative Research Group on Gender and Energy (CRGGE). The group included policy researchers from France, Kenya, India, the Netherlands, the Philippines, South Africa, Uganda, the UK and the US, who further involved other researchers in their networks and countries. The challenge was to move towards a framework for gender and energy policy research and practice in the 21st century, a framework that would be credible both for energy and for gender researchers and practitioners. We also wanted to build capacity in our own institutions to do policy research on gender and energy, and to influence the international energy policy research agenda as well as practice. Working on the project was rewarding, because it provided the basis for continuous (and continuing) interaction among researchers, practitioners and networks on their research, and their practical policy and programme work, related to gender and energy.

Participants, including support staff from AFREPREN, at the CRGGE Meeting in Nairobi, Kenya, May 2005
Sitting (L to R) May Sengendo, Anoja Wickramasinghe, Govind Kelkar, Jyoti Parikh, Elizabeth Cecelski, Feri Lumampao, Maggie Matinga. Standing (L to R) Joy Clancy, Lizzie Chege, Monica Shio, Alex Ndiritu, Dorothy Mwera, Andrew Barnett, Yacine Diagne, Wendy Annecke, Dev Nathan, Sheila Oparaocha, Stephen Karekezi, Michel Matly

Bringing a gender perspective to energy policy research faced us with two intertwined challenges in credibility. First, what evidence is there that energy has a key role to play in gender and poverty? This question was addressed by an empirical review – from a gender perspective – of linkages between energy and the first seven Millennium Development Goals (MDGs): measurable progress on poverty, education, gender equality, child mortality, maternal health, HIV/AIDS, and environmental sustainability. The article by Dutta, Matinga, Panjwani and Cecelski summarises the findings of this study and identifies areas where there is "good evidence", "some evidence" and "insufficient evidence" to convince policy makers.

Development of a credible analytical framework for gender-sensitive energy policy research through an iterative process involving expert meetings and eight case studies by CRGGE members was the focus of the second part of the project, summarised as articles in this special issue. How can current research frameworks such as sustainable livelihoods and gender analysis be used to more effectively analyse gender as a key variable in energy interventions? What are the key elements and the "right questions" to ask in gender-sensitive energy policy research in the new millennium?

Most women and energy research from the 1970s through to the 1990s remained largely within a "women in development" framework. Energy services were presumed to benefit women as members of households and to contribute to their welfare, even if women did not participate in decision-making or implementation. Later, women began to be viewed instrumentally by the energy sector, as energy consumers whose views needed to be taken into account to ensure adoption of new energy sources, or as promoters who could contribute to meeting targets for dissemination of improved stoves or renewable energy technologies. Since 2000, the energy sector has been obliged by new development thinking including the MDGs to more seriously consider poverty alleviation and gender equality as goals in their own right to which energy access can contribute. Raising the visibility of gender in the sector has been a valuable outcome of earlier approaches, but recent energy, poverty and gender frameworks go further in asserting the transformation of gender relations and human rights as essential to the energy mandate. Sustainable livelihoods, gender analysis, and feminist political ecology offer new ways of understanding linkages among gender, energy and poverty, and new criteria for gender-sensitive energy policy research. These have been explored and applied in the eight case studies under this project.

In the eight case studies carried out by the CRGGE and presented in the articles in this special issue of ENERGIA News, creative research approaches are used by leading gender and energy researchers to explore a pressing policy issue in the gender-energy-poverty nexus in their country or region. Although the case studies were not planned to be comparative, and draw on diverse approaches, they can be loosely grouped into three thematic areas:

Impacts on Women and Men

Three case studies looked at the differential impacts on women and men of renewable energy projects that generate electricity. In **Sri Lanka**, new bioenergy initiatives based on using the country's large biomass resource for electricity generation, were examined by Anoja Wickramasinghe in terms of the effects on women and men in two schemes, one community-based and run by users, and the second providing feedstock for the national grid. The study reveals that modern "dendro-energy" plants can create enterprise opportunities for farm biomass production as well as generate clean energy for rural electrification. The impacts on the poor and women in these two cases

depend primarily on how supply of the feedstock is organised, but also on whether the local community receives the electricity supply themselves. In the commercial, grid-connected project, supply of biomass feedstock is handled by landowners and capital investors rather than by women who are the traditional suppliers of woodfuel. The community-level plant provides wider opportunities for women through the community organisation and its focus on households supplying feedstock for generating electricity for themselves. In this model, modern dendro-energy plants do have potential to provide a strategic means of reducing poverty while addressing women's needs.

In the **Philippines**, Approtech-Asia explored the interactions between gender and renewable energy. In a community micro-hydro project in an indigenous area of Kalinga, respondents reported effects on women's and men's economic roles, on their health and wellbeing, and on their socio-cultural and political situation. Two rice mills reduced women's drudgery in rice pounding, and cooperation with another village around the micro-hydro project is believed to have eased tribal conflicts. Women played leadership roles by being involved in the church organisation implementing the project. In a PV battery-charging project in Southern Leyte, electricity motivated women to better organise their household work at night and explore livelihood and income activities. It also made families feel more secure and safe.

In **Uganda**, a deliberate gender strategy improved the impact of solar home systems and a solar-PV battery charging station by ensuring that women were targeted for credit and sales, according to May Sengendo's study. Gender analysis by solar companies and village banks resulted in significant benefits for women as well as men, and supported women's empowerment, especially combined with support and encouragement to income-generating activities. Spouses often pooled resources and cooperated in order to finance loans and women became more active in joint businesses. Both men and women were trained in maintenance, battery charging and usage. Girls' education benefited as they were able to study later at night after completing domestic chores.

Gender in Energy Policy

Two case studies examined gender aspects of energy policy: the first, in Himachal Pradesh, India, studies the impact of clean fuel access policy on women's empowerment; and the second, in four countries in east and southern Africa, analyses the role of gender research in power sector policy.

In **Himachal Pradesh, India**, Jyoti Parikh examines the hypothesis that the state policy of kerosene and LPG subsidies is related to the empowerment of rural women and their health in the traditional fuel system. Empowerment level and access to energy are in fact correlated in Himachal Pradesh. Both of these are higher than the all-India averages. Even within Himachal Pradesh, the two districts with different access to fuels have correspondingly different levels of women's empowerment. But though there has been fuel-switching, especially in towns, women still largely bear the drudgery of cooking with traditional fuels. The main obstacle is affordability, not availability, and wood fuels are still cheaper. It is not possible to conclude that better access to energy has actually caused women's relatively high empowerment levels in Himachal Pradesh, since these depend on many factors.

In **eastern and southern Africa**, the inclusion (or not) of gender in national power sector policy is examined by AFREPREN researchers in four countries, and how gender and energy research can influence this. Power sector reform in the region has not considered differential impacts on women and men. A review of energy sector policy documents revealed a growing awareness among policy makers and in policy statements but that this is backed only by vague policy objectives. Policy making in the region's energy sector has been male dominated with little consultation of end users and producers. Gender research could have a more effective impact on the policy process through a thorough understanding of the sector and interests; credible, relevant messages; and appropriate alliances and "chains of legitimacy" between beneficiaries, gender researchers, NGOs, and policymakers.

Energy Transitions and Gender Relations

Three case studies explored changes in gender relations associated with the transition to modern fuels. In **China and other parts of rural Asia**, Govind Kelkar and Dev Nathan's study links women's and men's participation and status in the labour force to the adoption of new fuels and appliances. The low opportunity cost of women's labour limits the adoption of improved stoves, while women's entry into income-earning activities appears to promote a fuel transition. While the severely negative health impacts of biomass fuels make public subsidy of alternatives desirable, this will not necessarily result in fuel switching by households so long as the value of women's labour remains low. This is shown in fieldwork from Yunnan, China, and a number of other Asian countries. The critical area of intervention is likely to be in providing commercial fuels for women's income-earning activities.

In an urban township in **South Africa**, Wendy Annecke relates the changes in domestic roles including cooking to gender equity in the new constitution. Are women's domestic burdens released through saving women's labour (practical needs), or by sharing the gender division of labour within the household (strategic needs)? The findings of this study are that access to modern energy services (in this case, electricity) can facilitate shifts in gender roles and responsibilities in the domestic sphere – if backed by serious institutional support for gender equality. The reasons are two-fold: firstly, women know they have legal backing to assert their rights, and men are pushed by the legal system to accept this. Secondly, electricity makes it easier for men to perform domestic chores because they are not too burdensome or demeaning.

Michel Matly draws lessons from experience with rural electrification in **Europe and the US**, on the ideology of women's electrification and how this may apply to developing countries today. Rural electrification was 30 years later in the US than in Europe, but quickly reached urban levels. In Europe, rural electrification was used mainly for lighting, radio and some farm equipment. In the US, federal funding was used not only to develop grids, but also to provide access to electric productive equipment and domestic appliances. The latter quickly became the bigger success. Rural electric cooperatives were able to cut costs by 30-50% compared to the existing large private and public utilities, and showed that the poor could pay. Women's desire for home appliances drove the rural market and high load, bolstered by home economics, provided a ready-made ideology for the electricity industry. Electrical appliances relieved women of drudgery and allowed them to work more efficiently in their homes, and go out and get paid work. Developing countries should also consider this model of "women's electrification."

Conditions for Positive Impacts on Women

Positive impacts of the energy interventions on women were found in all the cases, ranging from time saving and drudgery reduction, to income generation, to social and economic empowerment; these impacts could be negative as well as positive however. Benefits for women as well as men were more likely to be found in the following instances, where:

ENERGIA News vol. 8 nr 2 • 2005

- A deliberate gender strategy is followed in project planning and implementation (Uganda);
- The policy environment supports energy policies and programmes favourable to women's needs (South Africa, Himachal Pradesh, eastern and southern Africa);
- A community-based organisation in which women already actively participate is involved in the project (Philippines, micro-hydro site; Sri Lanka, decentralised site);
- Existing or changing gender relations in the society values women's labour and favours women's equal participation in the energy intervention (Philippines, PV battery-charging site; Mosuo, Yunnan);
- Industry objectives coincide with women's interests (US rural electrification).

Where gender relations (or attention to gender relations) are a key variable in energy interventions, it is more likely that energy will have a significant impact on gender equality and indeed on household and community poverty as well. Where energy interventions address (or at least do not discourage) women's equal participation, the potential for benefits is much higher.

A Checklist for Gender-Sensitive Energy Research

There is no "ideal" gender-sensitive energy policy research framework. However these four elements provide our experience on what gender-sensitive energy policy research looks like:

1) Partnerships and a process for gender experts and energy experts to work together. A central part of the DFID KaR/ENERGIA research project was the creation of a Collaborative Research Group on Gender and Energy (CRGGE) of leading experts who were also involved in policy advocacy. Researchers included both women and men, and both energy researchers (with an interest in gender and poverty) and gender and poverty researchers (with an interest in energy), who had shown a long-term commitment - through the ENERGIA network - to policy research on gender and energy. The goal was to create a safe but challenging space to share experiences, give and receive mentoring, and contribute to the project research process through their own research and case studies. A key element in this effort was the engagement of the CRGGE in an active dialogue to "speak the same language". Two face-to-face meetings to develop methodology and review results together, technical and institutional backstopping by ENERGIA, peer review of outputs within the group, capacity-building of junior researchers, the integration of results into other institutional and network activities, and group definition of partnerships and research needs were all part of the process.

2) Linking research to policy by understanding the gender-energy-poverty nexus. Many studies on gender and energy have been at the micro- and household level, descriptive of women's problems and obstacles. While valuable, this information has not always been related to specific policy issues of relevance to energy policy in the given country. Fundamental in the CRGGE approach was how to link micro and household-level research on gender and energy with critical and current energy policy concerns for the governments, utilities and other big players in the country or region. The background and historical poverty-gender context had to be understood, as well as the energy supply, consumption and policy situation in the country, by first reviewing literature both on gender and on energy, and building on past research in these areas. Theses were then related to one another, to make clear how energy policy is influencing and could be influenced by the poverty-gender challenge.

3) Using appropriate research frameworks and methods from gender and from energy research. *Gender analysis* was the most commonly used framework for analysis in all of the case studies. Although this seems obvious, disaggregation of data by gender (men and women, boys and girls) has not routinely been used even in some gender and energy studies. Gender analysis methods started by gathering data about the gender division of labour and women's access to and control over resources and benefits. The *sustainable livelihoods framework* helped to focus attention on energy for women's productive uses, and their control over assets. The poverty and gender experts found it useful to take a fresh look at energy issues, as outsiders. The sustainable livelihoods framework was found to be weak though in understanding women's reproductive roles, and the interactions between reproductive and productive labour that may be mediated by energy access; and this may be because it is not systematic in using gender analysis tools including time allocation study and intra-household analysis. Combining elements of sustainable livelihoods with gender analysis proved effective. *Feminist political ecology* relates

Collaborative Research Group on Gender and Energy (CRGGE)

List of members

- Wendy Annecke, Gender and Energy Research and Training, South Africa
- Andrew Barnett, The Policy Practice Limited, United Kingdom
- Joy Clancy, Department of Technology and Sustainable Development Centre for Clean Technology and Environmental Policy, University of Twente, The Netherlands
- Fatma Denton, UNEP Risoe Centre on Energy, Climate and Sustainable Development (URC), Denmark
- Feri Lumampao, The Asian Alliance of Appropriate Technology Practitioners Inc., (APPROTECH-ASIA), The Philippines
- Stephen Karekezi, African Energy Policy Research Network (AFREPREN/FWD), Kenya
- Govind Kelkar, International Fund for Agricultural Development - United Nations Development Fund for Women (IFAD-UNIFEM) Gender Mainstreaming Programme in Asia, India
- Michel Matly, Marchéage et Gestion de l'Environnement (MARGE), France
- Dev Nathan, Institute for Human Development, India
- Jyoti Parikh, Integrated Research and Action for Development (IRADe), India
- May Sengendo, East African Energy Technology Development Network (EAETDN), Uganda
- Jennifer Wangeci, African Energy Policy Research Network (AFREPREN/FWD), Kenya
- Anoja Wickramasinghe, Department of Geography, The University of Peradeniya, Sri Lanka

MDG paper authors and review meeting participants

- Khamarunga Banda, Novafrica Centre for Innovation in Development, South Africa
- Soma Dutta, ENERGIA-Asia, India
- Yacine Diagne Gueye, Environmental Development Action in the Third World (ENDA TW), Senegal
- Margaret Matinga, Department of Technology and Sustainable Development, Centre for Clean Technology and Environmental Policy, University of Twente, The Netherlands
- Anja Panjwani, ETC Foundation, The Netherlands

ENERGIA International Network on Gender and Sustainable Energy, The Netherlands

- Elizabeth Cecelski, Principal Investigator DFID KaR R8346/ENERGIA, and Technical Adviser on Research and Advocacy, ENERGIA
- Sheila Oparaocha, Coordinator DFID KaR R8346/ENERGIA, and Coordinator ENERGIA

the gendered use of natural resources to institutions, policy, and macro-economic systems. Some elements were taken for use in specific case studies as relevant.
CRGGE researchers used a wide variety of tools and methods. Most important in all of the studies were policy and institutional analysis, the use of both qualitative and quantitative data, and the inclusion of people's perceptions. The importance of drawing on a range of methods from a number of disciplines through the use of interdisciplinary teams was evident to the group, but case studies were sometimes weak in terms of their economic and financial analysis on the one hand, and their energy analysis on the other. This would need to be strengthened in future research. Some of the case studies showed how important insights could be gained from analysis of the energy supply chain, in addition to the more common end-use analyses in gender and energy research (e.g., analysis of biomass feedstock supply in Sri Lanka, kerosene depots in India).

4) "Asking the right questions" about gender, energy and poverty.
What are the "right questions? At the final review meeting, CRGGE researchers contributed to developing a set of "right questions" that can be an agenda for gender-sensitive policy research in the future, and included aspects such as:

• *Evidence about impacts of energy projects and changing access on women and men.* Gender-sensitive "research" should be an operational part of every energy project's monitoring and evaluation design. Have energy projects or better access improved the wellbeing of women as well as men? Have they met women's welfare and practical needs? Have they gone beyond this and transformed gender relations at the household, community and/or national level? Has energy had an impact on gender equality and women's empowerment? Up to now, there are only a few good models of gender-sensitive approaches in large-scale or mainstream energy projects that practitioners can draw on and replicate.

• *Rhetoric gap between policy and practice on gender and energy.* Exposing the gap between energy policy rhetoric and the reality of women's lives is a critical function of gender-sensitive energy policy research – do energy budgets, policy statements and project practice reflect women's needs? Do poverty documents such as Poverty Reduction Strategy Papers reflect the reality of women's energy situation? The CRGGE research found the collection of gender-disaggregated data to be the single most powerful and essential tool in providing evidence to policymakers to motivate them to engender energy policy, as well as for the actual process of integrating gender into energy planning and implementation.

• *Culture and ideology in gender relations in energy.* What are the ideologies that influence gender relations and women's empowerment in the energy sector? That is, what are the reasons behind changes in gender relations and how does energy access affect or how is it affected by these changes? In the case studies, these ranged from the way that women's labour is economically valued, to the political climate and legislation on human rights, to the home economics ideology in rural electrification, to sexual violence and the power relations between women and men.

• *Political economy of change in gender and energy.* What are the "Drivers of Change" (a DFID research methodology on the political economy of change) in gender and energy? What incentives and disincentives do the various participants face and how can these be modified? What coalitions or alliances for "pro-poor" and "pro-women" change can be effective in the energy sector? In terms of research methods this might lead to the need to examine the concerns of the opposing factions and to "put our work in their language". In terms of policy impact, gender and energy researchers and advocates need to be active participants in direct and formal energy decision-making processes and structures. Networks such as ENERGIA and other women's networks and organisations can help nurture a "new deal" for women's representation in the energy sector. As elsewhere, bringing men on board will be key to them accepting gender equality in the energy sector.

In all the "right questions" above, the "potential for transformation" is the critical element. A bargaining model of the household and society is assumed in the gender analysis, with both conflict and cooperation analysed as important forces. Property relations, social relations, labour relations, and decision-making relations are important at the household, community and national level. Possibilities for women to change their power and position through negotiation are explored. What is the potential for transformation of gender roles in any energy transition or project? That is the fundamental question in gender-sensitive energy policy research in the new millennium. ■

Based on: E. Cecelski and the CRGGE, "From the Millennium Development Goals Towards a Gender-Sensitive Energy Policy Research and Practice: Empirical Evidence and Case Studies", Draft Synthesis Report to DFID KaR on Research Project R8346, December 2005.

◆ Elizabeth Cecelski is a founding member and presently Technical Adviser for Advocacy and Research of ENERGIA, the International Network on Gender and Sustainable Energy, and is the author of several standard references on gender and energy. She has worked for more than twenty years on problems of energy and developing countries, specialising in energy, poverty and gender issues, especially in household and rural energy; and in rural electrification and rural development. She was Principal Investigator of the DFID KaR/ENERGIA project on "Gender as a Key Variable in Energy Interventions: Are We Asking the Right Questions?", working together with partner institutions in nine countries. She is also a member of theTechnical Advisory Group for the Energy Trust Funded Programs of the World Bank.

◆ c/o ENERGIA Secretariat, P.O. Box 64, 3830 AB Leusden, The Netherlands. E-mail: ececelski@yahoo.com

Empirical Evidence for Linkages: Energy, Gender and the MDGs

Soma Dutta, Magi Matinga, Anja Panjwani and Elizabeth Cecelski

The Millennium Development Goals (MDGs) were adopted in 2000 at a United Nations Assembly summit as a set of time-bound, measurable goals and targets to be achieved by 2015. In September 2005, they were re-endorsed at a World Summit to review progress. Although there is no MDG on energy, the independent commission UN Millennium Project report has identified energy, including electricity and safe cooking fuels, as an essential infrastructure service and part of the "means to a productive life."

While many assumptions have been made about the linkages between energy and the MDGs, few empirical studies are available that provide convincing evidence for policymaking. The present study sought to conceptualise indicators and then to collect empirical evidence – preferably quantitative data – on linkages among gender, energy and the individual MDGs on poverty, education, gender equality, child mortality, maternal health, HIV/AIDS and major diseases, and environmental sustainability. Table 1 shows the indicators that were assessed in this empirical review.

MDG 1: Extreme Poverty and Hunger

Women's time is a key constraint to agricultural production, income-earning and family nutritional status of the poor. There is good evidence in the studies reviewed for time and effort savings of 1 to 4 hours daily in cooking, fuel collection and food processing, when energy is made available for these tasks; but there is insufficient evidence on how these time savings are used. There seems to be a

Table 1: Indicators of energy as a key variable from a gender perspective for the Millennium Development Goals

Millennium Development Goals	Gender & energy perspective indicators relate energy access with impact on:
Goal 1. Eradicate extreme poverty hunger by 50%	1. Time & effort spent (Male/Female, Boy/Girl) in cooking & fuel collection and in food processing; and use of time saved 2. Income generation (M/F): direct applications in agriculture, home industry, extension in work hours through lighting, energy entrepreneurs 3. Reduction in household expenditures on energy 4. Improvement in social capital, income generation
Goal 2. Achieve universal primary education of boys and girls	1. School attendance (B/G) 2. Hours of study (B/G) 3. School performance (B/G)
Goal 3. Promote gender equality and empower women	1. Literacy (M/F) 2. Leisure time (M/F) 3. Access to information through media & telecommunications 4. Transformation of gender roles in the household (M/F) 5. Control over & access to energy services (M/F) 6. Voice and participation of women 7. Violence against women in energy sector 8. Employment of women in the energy sector
Goal 4. Reduce child mortality (by $^2/_3$ the <5 mortality rate) Goal 5. Improve maternal health (reduce mortality by $^3/_4$)	1. Indoor air pollution (IAP) exposures and acute respiratory diseases due to biomass fuel use (M/F, B/G) 2. Low birth weight due to maternal overwork 3. Quality of primary health care and vaccination 4. Women's workload and child care 5. Burns and kerosene poisoning 6. Fuel scarcity, water boiling and cooked foods
Goal 6. Combat HIV/AIDS, malaria, and other diseases	1. Recommended health behaviours (e.g. cooking food) for persons living with HIV/AIDS (PLWHA) 2. Reduced women's burden of care for PLWHA 3. Reduced drudgery for women LWHA 4. Reduced exposure to disease vectors for women LWHA 5. Sterilisation of equipment 6. Risk of infection from violence during fuel collection 7. HIV/AIDS induced poverty and deforestation from increased natural resources dependancy
Goal 7. Ensure environmental sustainability incl safe drinking water and slum dwellers	1. Deforestation & fuel collection 2. Climate change & traditional biomass use 3. Access to clean water & sanitation 4. Access to cooking energy and electricity by slum dwellers (M/F)

positive correlation between the availability of electricity and time spent on fuel collection and cooking – but we don't understand exactly why.

Better energy access could directly help women's income-earning activities. We know from anecdotal evidence that women use biomass energy in their micro-enterprises, especially food processing, and use electricity to extend the working day for home industries and agriculture. But we don't know how much income these improved fuels and lighting result in generating, nor how much control women have in decisions on the use of increased incomes. Donor-supported projects have illustrated how "energy enterprises" that manufacture or sell energy equipment, such as cook stoves, or produce energy for sale, such as the multi-purpose platform, can be successfully owned and operated by women. But mostly, women's energy enterprises have operated at small scale and their sustainability under market conditions is not known.

Savings in energy costs and energy efficiency could effectively increase household income and food consumption. There is good evidence for reduction in household expenditures on energy of 20-50% with more efficient and lower cost cook stoves and lighting fuels. But it is not clear whether these savings are used to increase food consumption or are rather offset by increased energy use.

MDG 2: Universal Primary Education

Access to modern energy could free up time for girls to go to school or to spend time on homework. Most studies found focused on electrification. Increased school attendance by girls is associated with electrification, and there is some evidence too of better school performance by girls. Hours of study are also possibly increased, but the latter data is not available for boys and girls separately.
There is some evidence for an increase in girls' schooling when their time in domestic chores, especially water fetching, is reduced. The effects of saving women's time (in general) and of adoption of improved stoves and cooking fuels (specifically) on girls' education are not known though.

MDG 3: Gender Equality and Women's Empowerment

Women's wellbeing, empowerment, and education are driving factors in other MDGs, such as reducing children's malnutrition. There are good examples where energy access has empowered women by giving them more choices about how to organise their work more effectively. Most studies show that women usually choose to devote their extra time (due to reduced drudgery or a longer day with electric lighting) to increasing their other productive and reproductive work hours. Although women do sometimes increase their time in leisure (an important indicator of women's empowerment), entertainment or social recreation, the studies reviewed show that this is more likely for men.

There is good evidence that in electrified households, women's access to information has been increased through TV and other media, and there are cases where this can be said to have led to empowerment. There is a little evidence for increased reading by women with electrification, too. It would be useful to know more about this and also the potential for TV and media to promote family bonding and gender cooperation, as hinted by some studies.

Changing gender roles in the household and voice and participation by women in the community in energy transitions tend to be extremely variable and likely depend on many factors that we would like to know more about. There are examples of changing gender roles in the household with new energy sources, with men sharing domestic technology use more. But there are many examples of the opposite. There is mixed evidence on control over and access to energy equipment, with men normally remaining in the decision making seat. In energy projects where a strategy to involve women has been deliberately pursued, this has often improved their status and voice in the community as well. There is little evidence of an association between modern energy and indicators of women's empowerment such as increased access to paid work, or better representation of women as energy professionals or in energy decision-making bodies. There are few studies on women professionals in the energy sector, but evidence is that women face the same obstacles as in other scientific and technological professions: they are greatly outnumbered by men, who take up most management and leadership positions, and face sexual harassment, both in the North and South. However this has been little studied.
Evidence on sexual violence in fuel collection is anecdotal, but this is a problem that deserves further investigation.

MDGs 4 and 5: Child Mortality and Maternal Health

Child mortality and maternal health are clearly improved by modern cooking fuels, with good evidence on reduced acute respiratory infections (ARI) and reduced drudgery affecting neonatal survival (though the latter has not been specifically related to energy). There is some evidence too on their association with lower birth weights. The reasons for differences in ARIs between men and women, boys and girls, are still speculative, though. Access to electricity and to modern cooking fuels both correlate in macro studies with reduced infant mortality, even controlling for income.

Electricity's role in the provision of primary health services has been documented, but not specifically related to health outcomes. One study in Uganda did relate better communications through solar energy, with improved maternal health. There is little evidence that electrification makes rural health clinics more attractive to staff.
Little is known about the importance of energy in avoiding diarrhoea (by boiling water), nor its role in nutrition (e.g. making nutrients in cooked food more available, affecting food choice), beyond anecdotal evidence.

MDG 6: HIV/AIDS, Malaria and Other Major Diseases

There were virtually no studies found on the relation between energy availability and gender issues in HIV/AIDS, malaria and other major diseases, but the possible links are highly suggestive and worthy of investigation, especially in Africa. Acute respiratory infection (associated with biomass cooking) is known to activate tuberculosis, the most common HIV/AIDS opportunistic infection. Inadequate

Cooking on woodstoves exposes women and children to indoor air pollution resulting in acute respiratory diseases (Photo: Mangrove Service Network, Myanmar)

sterilisation may be a factor behind the transmission of HIV/AIDS, especially to pregnant women, in health clinics, that is being documented. Fuelwood collection rape may also be a transmission vector.

Given the importance of rest, hygiene, and practices such as eating cooked foods and boiling water, adequate energy availability is likely to be important in improving the quality of life for persons living with HIV/AIDS (PLWHA); in reducing women's burden of care for PLWHA; and in enabling self-care for women LWHA. Work by GTZ ProBEC in Malawi with improved stoves uses an integrated framework to help alleviate impacts of HIV/AIDS on households and women in particular.

MDG 7: Environmental Sustainability

There is good evidence that improved stoves save thousands of tonnes of fuelwood, and in urban and locally-deforested rural areas where large quantities of wood are used, this could be significant in reducing deforestation (target 9). The evidence is that in most rural areas though, women's collection of household fuel does not cause deforestation. More importantly, women in their role as forest managers and in tree planting, do contribute to reforestation. The use of more efficient household cooking fuels has been estimated to contribute to greenhouse gas reductions, though this is insignificant compared to overall emission figures from other sources. Some correlation of access to clean water (target 10) with electrification has been found, but the role of energy specifically in the provision of safe drinking water in relation to women's roles has been little studied. Energy has also been linked with improving the lives of women slum dwellers (target 11), but again, its precise role is not well understood.

Conclusion

There is good evidence for a number of linkages between energy, gender and the MDGs, ranging from time savings and reduced household expenditures, to increased school attendance by girls, empowerment through having more choice in organising work and through access to TV and media, to acute respiratory illness, maternal health and reduced infant mortality, to deforestation and green house gas emissions. There are many areas though where evidence is suggestive but needs to be more convincing for policy and planning, including on HIV/AIDS, energy's role in women's income generation, maternal and child health outcomes, and voice and participation of women.

A major challenge in carrying out the empirical review was that the emphasis on incorporating gender concerns in energy projects and reporting on the impacts of energy interventions on MDG indicators is very recent. Even worse, data has seldom been disaggregated to show the differential impacts on women and men. For every study that showed the impacts of an energy project on women and men, perhaps ten others were reviewed that either did not provide quantitative information on impacts at all, or mentioned only "people", "households" or "children", and did not give the impacts on women and men or boys and girls separately. In many "studies", generalisations about benefits for women were made without data or empirical support.

From a gender perspective, what emerges most strongly from the evidence, in fact, is that while energy may have important effects on women in relation to the MDGs, this varies greatly according to the social and economic environment, which necessitates a different strategy for women's involvement in the energy intervention. It is critical therefore to delve more deeply into the dynamics of *under what conditions* energy "makes a difference" in the linkages between gender and energy, in case studies and operational project implementation. ■

Based on: E. Cecelski and the CRGGE, "From the Millennium Development Goals towards a gender-sensitive energy policy research and practice: Empirical evidence and case studies", Draft synthesis Report to DFID KaR on Research Project R 8346, December 2005.

◆ Soma Dutta is ENERGIA's Regional Network Coordinator for Asia since January 2004. She holds a Bachelor's degree in Economics and a Postgraduate Diploma in Rural Management. Since 1996, she has been providing consultancy services to a range of organizations in the areas of rural and renewable energy, gender and energy, and rural livelihoods. Soma has been involved in capacity building and training, project management, monitoring and evaluation, and documentation related to rural energy projects and programmes.

◆ E-159, Sector 21, Jalvayu Vihar, Noida – 201301, India. Tel:+91(0)120.253 2932; E-mail: somadutta@vsnl.com

◆ Anja Panjwani holds a MA degree in Development Studies from the Third World Centre of the Catholic University of Nijmegen in the Netherlands. She has been working with the Energy Unit of ETC Foundation in the Netherlands since 2000 in a variety of information/knowledge management activities.

◆ ETC – Energy, P.O. Box 64, 3830 AB Leusden, The Netherlands. Tel: +31(0)33.432 6072; Fax: +31(0)33.494 0791; E-mail: a.panjwani@etcnl.nl

◆ Magi Matinga pursued her BSc in Mechanical Engineering at the University of Malawi-The Polytechnic. Magi completed her Masters of Science (Engineering) in Energy Studies at the University of Cape Town's Energy and Development Research Centre. Her thesis looked at the supply and demand side impacts of low cost urban electrification in Mbayani township in Blantyre, Malawi. She is now based in the Netherlands at the University of Twente as a lecturer.

◆ University of Twente, KPMG Building, P.O. Box 217, 7500 AE Enschede, The Netherlands. E-mail: m.n.matinga@bbt.utwente.nl

◆ Contact details of Elizabeth Cecelski are found on page 5

Gender, Modern Biomass Energy Technology and Poverty

Anoja Wickramasinghe

In rural Sri Lanka, biomass is the primary source of energy and almost without exception the sole source of cooking energy. It is an important element in the agriculture-based rural livelihood system. The non-forest production systems, mainly the mosaics of homegardens including individual gardens, living fences, hedges, riparian agroforests and ribbon belts of planted trees are major sources of biomass supply. Due to the high cost of fossil fuels and the limited hydropower potential, renewable energies including biomass are being explored as a means to expand beyond the 65% of the population presently connected to the national grid. Two modes of biomass electricity generation are supported by state policy: generation for the national grid through private sector partnerships, and community level off-grid generation for village electrification.

This move towards promoting modern biomass energy – technically called dendro energy – breaks important new ground. It could lead to the commercialisation of woodfuel that has traditionally been used for domestic cooking, and introduces a mechanism for linking rural biomass supply sources and the producers thereof with the energy sector. It also connects the rural society, its economy and livelihoods with the modern energy sector. The gender implications of this transition are of tremendous importance. Therefore, this study addresses two main research questions: a) do gender relationships constitute a key variable in designing dendro-energy interventions and contribute to achieving the goals of the intervention? and b) does dendro energy effectively contribute to improving the wellbeing of women and to their empowerment, and how can it best do this?

The Field Study Outlined

Answers to these research questions were sought by studying three cases. Two of these are on modern biomass energy: a grid-connected energy supply project located in Kumbalgamuwa village and a community-level dendro energy project located in Wadagahakiwla village for generating electricity for the community. The third area studied, as a baseline, is Hapuwala village, where the traditional biomass system and combustion technology is continuing to be used.
The study uses gender analysis as a framework as well as a cross-cutting variable in the biomass energy system. A wide range of criteria and indicators on gender relations, energy interventions, well-being, and resource stewardship are assessed through a variety of data collection methods, ranging from field surveys including a questionnaire to various RRA methods and focus groups, with all data gender-disaggregated.

Findings from the Three Sites

The Kumabalgamuwa grid-connected energy supply project is a commercial enterprise run by the Bio-Energy Association of Sri Lanka. It involves rural farm households as providers of feedstock for the dendro energy plant. The study revealed that men dominate the feedstock supply chain, and that their decisions have marginalised women to their conventional role as biomass suppliers for household needs. Landowners with relatively large farm holdings have benefited as suppliers, whereas the poor with small farmlands have not been involved in providing feedstock, and the landless have not benefited at all. And even in the beneficiary households, it is the men who reap

Feedstock supplied by the community at a dendro energy plant in Sri Lanka (Photo: Anoja Wickramasinghe)

most of the benefits, also of the stocks maintained by women on family lands, and gain from the labour opportunities in preparing and selling feedstock to the electricity plant. Women show low interest in the project since it does not contribute to the local energy needs and fails to enhance food production and energy services. In fact, by shifting control over woodfuel to the cash economy, women have lost their sources of woodfuel and their decision-making role over farms and biomass output. Thus, the contribution of this intervention to alleviating poverty and empowering women is insignificant.

The community level, off-grid dendro energy development project in Wadagahakiwla is a pilot implemented by an NGO called The Energy Forum. It is the first community-level project designed to provide 250W of electricity to 100 households as a private-public-civil society partnership. The project has involved the community in successfully assessing their energy needs and then in providing feedstock. The 'Wadagahakiwla Dendro Power Electricity Consumer Society' is a community-level organisation that has been established to facilitate and manage the off-grid dendro project. All the households are responsible for supplying feedstock from their own farms and for making decisions on management and service supply. Women are represented in the community organisation and play a role as producers and suppliers of feedstock (Nanchi) to the energy plant. The generation of electricity for household lighting and the ability to cover the cost of this electricity through their share of feedstock gives them a feeling of ownership and control over the intervention. This initiative has contributed directly and indirectly to poverty reduction and community empowerment as indicated in Table 1.
Observing the traditional biomass energy system in Hapuwala provides a control. The lack of technological interventions in this village results in women's continuing dependence on multiple sources of fuelwood and them collecting wood from distant forests for cooking. Very limited adoption of improved stoves was noted, and biomass shortages are appearing as a result of the increasing pressure on supply sources. Women do not control the resources that they depend on for biomass fuels, and nor are they involved in the management of these sources. Women from poor families appear to spend more time collecting fuel and have to depend on riskier resources.
The study reveals that dendro-energy interventions create enterprise opportunities in villages in terms of farm biomass production. These also generate clean energy out of farm biomass by rural electrification. However, in the commercial grid-connected project, the supply of biomass feedstock to the dendro plant is handled by landowners and capital investors rather than the women who are the traditional domestic woodfuel suppliers. The community-level intervention has

Aspect /category	Nature of benefit	% endorsed	
		Men	Women
Energy services	**Lighting** – from 5 p.m.-7 p.m.		
	• Increased efficiency in attending to domestic chores	21	96
	• Reduced risks of using kerosene lamps	100	100
	• Enhanced mobility inside the house	100	100
	• Stimulating children for education	100	100
	• Reading/learning opportunities	82	61
	• Social interactions/work	86	41
	Accessing Media		
	• Receiving information/news	63	63
	• Leisure	78	56
	Use of household electrical appliances		
	• Ironing	31	82
	• Boiling water	4	4
Social	**Building social capital**		
	• Community level organisation for common goals	100	100
	• Equal opportunities for men and women	82	31
	• Building reciprocity	100	100
	• Building managerial skills	80	60
	• Equal opportunities for the villagers in improving quality of life	42	30
	• Membership of energy-focused organisation	91	9
	• Organising production as suppliers	100	81
	• Building cohesiveness	72	92
	Empowerment		
	• Cash returns for family	82	82
	• Equal opportunities for all households	100	100
	• Democratic decisions on leadership	42	63
	• Building competencies	64	98
	Economic benefits		
	• Getting value for farm/household produce (Nanchi)	100	100
	• Potential for starting village/home-based industries	60	20
	• Farm intensification by growing more Nanchi	44	30
	• Added income by growing pepper vines on the Nanchi	56	60
	• Eliminating expenditure on Kerosene	53	64
	• Income from Nanchi covers energy costs	100	100
Environ-mental	• Reducing kerosene smells and smoke in households	100	100
	• Enhanced perennial vegetal cover	63	80
	• Potentials to enrich soil	90	90
	• Potentials to conserve water and reduce water scarcity	72	60
	• Reducing soil erosion	96	93

Table 1. Some gender-specific impacts/implications of the project as perceived by men and women

provided wider opportunities for women through the community organisation with its focus on households supplying feedstock for generating electricity for themselves. Comparison between the cases suggests that dendro-energy interventions have the potential to provide a strategic means of reducing poverty while addressing women's needs provided that these needs are given attention at the project planning stage.

Recommendations

Referring to the Millenium Development Goals, and considering the results emerging at this early stage of placing modern biomass energy technologies in rural areas, a number of recommendations can be made:

• **Engendering energy policy and programmes** Dendro-energy development projects and programmes should use gender as a key variable in introducing modern energy technology. Gender should be used as a framework for gathering and analysing information on energy use and needs, as a variable in researching into the energy system and consequences of intended output, and as a tool to mobilise men and women to become involved in the process.

• **Gender-integrated planning and guidelines** Modern energy technology projects should incorporate gender-integrated planning procedures. Policymakers and planners should therefore be trained to undertake such planning, and guidelines for promoting gender sensitive interventions should be made available.

• **Mobilisation to build social capital and local organisations** A strong and sound social mobilisation process should accompany such projects in order to mobilise women to be involved as suppliers and as active members of dendro supplier organisations at village level. An externally enforced supply chain leads to the marginalisation of women, resource conflicts and divisions at the village level.

• **Gender-disaggregated information for planning** The comparison of two models of dendro-energy projects makes it clear that there are demoralising and disempowering effects on women when they are not recognised as partners, traditional biomass managers and key players. To avoid these dangers, pre-feasibility studies should prepare a base of gender-disaggregated information on which projects are then designed, implemented and monitored.

• **Gender-sensitive renewable energy policy** It is quite clear that dendro energy is a promising renewable source for both grid and off-grid energy supply. However, renewable options need to consider the major concern of women – the key stakeholders in the energy sector – and include policy measures to tackle their need for energy with which to cook. Clean energy technologies for domestic cooking should be an integral part of national policy. Policy planning on the wider scale needs to create opportunities for women to contribute to economic growth through their access to clean energy.

• **Energy enterprise and services** The community-level dendro-energy initiative demonstrates that when woodfuel is diverted to an energy enterprise, the cash returns to a household could be sufficient to meet most of their recurrent electricity costs. A further expansion in the supply is essential if cooking energy needs are also to be met. The scope and services of dendro-energy projects should be expanded, enabling women to produce woodfuel on state lands on a community basis, and so use dendro-energy for cooking, and also to generate income from selling this woodfuel to pay for electricity.

• **Integrated energy technology** Avenues for economic growth, poverty alleviation, equity and economic opportunities for women to use their labour, and building capacity to organise and manage technology interventions as key elements all need to be integrated. It is essential to include indicators in a project design to measure its achievements – and not only in terms of energy units, but also in relation to socioeconomic changes.

• **Training** Village/community level training for men and women on energy development and management, and training on gender-integrated energy planning for staff of regional and local administrations, NGOs and civil society organisations are also prerequisites for ensuring that gender aspects are given due attention in modern energy interventions for rural areas. ■

This article is based on the full report of the research study titled, *"Gender, Modern Biomass Energy Technology and Poverty: A Case Study in Sri Lanka"* by the author to be made available at: www.energia.org

◆ Anoja Wickramasinghe is a Professor and Head of Geography at the University of Peradeniya, and Coordinator of the Collaborative Regional Research Network in South Asia (CORRENSA). She also coordinates NANEGE – the National Network on Gender and Energy, ENERGIA's focal point in Sri Lanka. Anoja is an expert on the subject of gender, biomass energy and poverty, on which she has authored many publications.

◆ Department of Geography, University of Peradeniya, Peradeniya, Sri Lanka. Tel: +94.(0)81.288301 E-Mail: niluwick@slt.lk

Gender and Renewable Energy – Two Cases from the Philippines

Feri G. Lumampao

Community-based renewable energy projects have been proven to provide accessibility to energy services for people in rural and remote areas of the Philippines. The ability of such systems to provide multiple benefits to the communities has been observed. Today, there are several successful micro-power systems with capacities ranging from less than 1kW to 99 kW installed in the country, facilitated by government agencies led by the Department of Energy (DOE), non-governmental organisations (NGOs) and banking institutions.

The Study's Focus and Methods Used

This study attempted to document the role of women in such community-based renewable energy projects and the impacts of such projects on women in the spheres of production, reproduction and community participation. For this purpose, the study used two sites: a) a community-based micro-hydro project in Tulgao, Tinglayan, Kalinga; and b) a Photovoltaic Battery Charging Station in Malitbog, Southern Leyte. The two Tulgao villages (East and West) in Kalinga are populated by indigenous peoples belonging to the Tulgao tribe of the Cordillera Administrative Region. New Katipunan and Cadaruhan Sur in Malitbog are populated by native Visayans.

Neither case study site had been reached by the rural electrification programmes of the government and local electric cooperatives, or by local public/private power distributors due either to the distance or the rugged terrain that separated them from the power grids. Therefore, in Tulgao in 2000, an alternative source in the form of micro-hydro was tapped through community mobilisation led by NGOs such as SIBAT (Sibol ng Agham at Teknolohiya) and religious organisations active in the communities. Since then, the project has provided electricity for lighting and small appliances for over 300 households and community buildings such as the church, the school and the health clinic. In New Katipunan and Cadaruhan Sur, Malitbog, a photovoltaic battery charging station and residential lighting systems were installed in 2001 through a grant from the DOE and counterpart funding from the Municipality of Malitbog. More recently, New Katipunan village centre has been connected to the grid.

Women participating at a community meeting in Malitbog (Photo: Approtech)

PV battery charging station at Malitbog (Photo: Approtech)

Qualitative methods such as semi-structured, in-depth household interviews with husbands and wives, key informant interviews with selected key people involved in the project, and focus group discussions were used to gather data in the micro-hydro case study in Tulgao. The focus group discussions were conducted in women's groups, in men's groups, and in mixed groups of both sexes from the two villages.

In the photovoltaic battery charging study, assessment tools focused on the attitudes of the project beneficiaries towards their solar lighting system in relation to livelihood activities and other aspects of living. Purposive cluster sampling was used to select participants. Focus group discussions and key informant interviews were conducted to gather information. Rapid rural appraisal (RRA) results that had been gathered before the installation of the energy equipment were incorporated into the data.

Women's Participation in the Projects

Despite the traditionally dominant role of men in water works, women contributed quite substantially to the micro-hydro project in its construction phase. Men and women shared the work; men doing the heaviest tasks and women hauling sand from the river, fetching water and preparing food for the workers. Although the women had not been present during the planning meetings, the focus group discussions revealed that the men had consulted with their wives at home and brought their views into the discussions. Three of the seven members of the project management team are women and are thus involved in making decisions regarding the micro-hydro project. In terms of operation and maintenance, men are involved in the technical troubleshooting and repairs, while the women take care of administrative matters such as book keeping and payment collection. Women have not participated in any of the related technical training programmes and therefore have only very limited knowledge of the technical workings of the micro-hydro project.

In the case of the photovoltaic battery charging project, both the men and women were consulted during the planning stage. They saw the benefits of the project for themselves and their children (e.g. lights to work longer in the evening and for studying, listening to the radio, watching TV). The supplier was responsible for the installation of the system as well as for repairs. Mostly men were involved in providing

Women have more time to help in the planting of rice (Photo: Approtech)

assistance due to the heavy nature of the work – hauling material and equipment, setting up lighting fixtures etc. The women contributed by preparing meals for the workers. Women are now involved in simple operation and maintenance tasks such as cleaning the components (surfaces, terminals), monitoring the battery, switching the lights on and off. They also collect charging fees, monthly dues and keep records.

Some Benefits and Impacts of the Renewable Energy Projects

The case studies confirmed that both projects have contributed to improving the lives of the residents through increased economic resources, environmental protection, improved health and wellbeing and better socio-cultural and political activities.

Lighting is one of the major benefits of the projects mentioned by both men and women. Kerosene and pine pith traditionally used for lighting have been replaced by electric lights. Economically, electricity with the current tariff is cheaper than kerosene or pine pith. The working day has been extended and women are able to do some of their chores at night. This gives them more time for farm work during the day. The women also say that the better lighting in the home has helped them work easier and faster as they can better see what they are doing. For example, peeling sweet potato for daily cooking goes much quicker and is easier.

Lighting has brought health benefits too - reduced incidences of eye and respiratory diseases are reported due to reduced exposure to wood and kerosene soot. Lighting has also allowed the communities to hold meetings and festivals for longer hours in the evenings.

In terms of electrical appliances and equipment, many families have invested in televisions and radios. They mention not only entertainment, but also education through increased access to news and information. Sitting together with the whole family in the evening to watch a TV programme or talking with each other, according to the women, helps strengthen family bonds. Appliances that assist in household work have been less popular, although rice cookers, grinders and washing machines have been acquired in limited numbers.

In Tulgao, a rice mill has made a great difference, especially to the women. Before the construction of the micro-hydro plant, women and girls used to spend tiring hours pounding rice for the daily meal. Now, the women have been relieved of this exhausting task and use their time and energy for other household activities, and can even afford to take short rest breaks. Women have also found more time to help men in the planting of rice and the management of the rice fields. More women now get a cash income from planting high-value cash crops, such as vegetables and beans, along the dikes and around the rice fields.

In Malitbog, women would have to walk over two kilometres or take a risky motorbike ride and spend more than a US dollar for transport and charging fees when going to town for charging batteries for lighting. Now, they only walk a few minutes to the solar PV-charging station and pay a little over US 50 cents to charge their batteries. Thus women save time to work on other productive activities such as cropping and making abaca twine.

Both renewable energy projects have boosted income generation in the villages. The men in Tulgao who weave baskets are now able to make more baskets in a month with access to lighting. In Malitbog, there is a marked increase in the volume of agricultural products such as copra, abaca twine, cut flowers and vegetables, particularly because women have more time to spend on these activities. A community bakery and several retail grocery stores have also been established.

In both communities, women find time to participate in community meetings and other activities, especially in gatherings related to improving family health, income, and technology-based livelihood activities. Their experience of saving time and finding other enterprises to augment family income from these projects motivates them to get actively involved in meetings and community development initiatives.

Recommendations

The study recommends the following: 1) Involvement of women in needs assessment and planning so that their concerns can be incorporated in the project development processes, especially in resource allocation; 2) NGOs develop methodologies that consciously address the participation, access, and benefits of women in community-based systems so that economic gains consider gender diversity; 3) Development plans broaden the stereotyped roles of women by increasing their knowledge, skills, and participation in technical tasks and operations of community-based projects, especially in water and energy technologies; 4) Gender should be mainstreamed in policies on renewable energy; and 5) Enhancing women's leadership and management skills and enabling an environment for them to put these into practice.

To highlight gains in renewable energy in general, and empowering women in particular, there should be more studies and documentation of women and renewable energy. Further, the success and opportunities created by renewable energy as demonstrated through this study also suggest that scaling up community-based projects on renewable energy will ensure development and empowerment of all stakeholders in the community, especially women who are so often overlooked. ■

This article is based on the full report of the research study titled, *"Gender and Renewable Energy: Philippine Case Studies"*, by the author to be made available at: www.energia.org

◆ Feri G. Lumampao is Executive Director of Approtech Asia (The Asian Alliance of Appropriate Technology Practitioners, Inc.) based in the Philippines, and facilitates networking of more than forty member organisations of The Alliance in the region. She is a leading researcher and has led several research studies in gender, energy and poverty. Feri is also a very accomplished trainer and conducts various training programmes related to energy, technology and gender.

◆ **Approtech Asia, PSDC Bldg, Magallanes corner Real Street, Intramuros, Manila 1002, Philippines;**
Tel: +63.(0)2.527 6514, Fax: +63.(0)2.527 3744.
E-mail: fglumampao@yahoo.com, fglumampao@approtech.org

Institutional and Gender Dimensions of Energy Service Provision in Uganda

May Sengendo

Access to energy services, including considering the differing needs of women and men, is a key concern in efforts to develop sustainable outcomes for the energy sector in developing countries. However, as indicated in the story below, and in most cases, decision-making rights do not balance with the responsibilities and tasks that women rather than men undertake.

"I wish I had been consulted about the acquisition of the solar panel and the places where the lights could be installed. My decisions would have favoured the tasks I do, and where I spend more time. The solar company involved only my husband in discussions and provided him with information about solar energy services. I have managed to influence my husband to put light where I operate the poultry business. Now we save more money on heating and lighting in the poultry business and there is increased income for me as well as benefits for the whole family".
A story told by a female respondent from Kabwohe in Uganda

While women and men may have different ways of searching for income-earning ventures, these need to be raised as a priority when demanding energy services. Energy service providers[1] consequently need to devise ways of integrating gender into their planning and implementation activities. As indicated in the story above, such needs related to income-earning could easily be among the priorities if women, who provide most of the labour, are considered as key actors and guided in demanding such services.

Objectives of the Study

The research reported here was undertaken in Uganda and examines how energy service interventions by energy service providers can most effectively contribute to the process of empowerment of women as well as taking into consideration the different needs of women and men. It analyses gender in order to examine how energy service provision can enable women to increase their incomes and influence decision-making so as to gain access to such services in various ways that may be different from those pursued by men. The study considers both the household level as well as the small-scale enterprises found in such structures. The shift from public sector provision of energy services to collaborative and partnership ventures between the public and the private sectors is reflected upon as part of the institutional arrangements that now operate in Uganda. The study further highlights the prospects and challenges that the private sector energy service providers face in considering gender as a key change agent in their activities. The study was based on two projects: the Uganda Photovoltaic Pilot Project for Rural Electrification (UPPPRE) with significant government involvement, and the solar-wind battery-charging project on the Lake Victoria Islands which relied more heavily on the private sector. The latter project paid explicit attention to the involvement of women, while the former did not.

Payphone using solar charged battery (Photo: May Sengendo)

The UPPPRE project and Replication Efforts in the Lake Victoria Islands

The UPPPRE project was undertaken to establish effective mechanisms for delivering energy services through involving private sector providers. These, it was believed, would work directly with the energy users. The project dealt with establishing financial mechanisms and institutional methodologies that could be used to enable poor women and men in urban and rural areas to have access to energy services. Having realised that gender was one of the key elements for effective project implementation, capacity building for gender planning in energy service provision was one of the interventions employed. Through the establishment of a financial mechanism, the project worked on creating linkages with micro-finance institutions and village banks to enable access to credit by female and male solar users. Solar companies were also facilitated to scale up their operations with loans that would enable them to cope with the demand for solar panels.

These financial and institutional mechanisms were replicated in a solar-wind project - the Bufumira Islands Alternative Energy Demonstration Project - in the Lake Victoria Islands. This project was designed to set up a demonstration wind–solar electricity generation system to provide power for a range of uses including battery charging, lighting for households and schools, and fish preservation. However, the situation was not as simple as it first appeared to the energy service providers. This was due to the fact that, as energy initiatives were planned to address poverty and gender concerns, it became apparent that the energy users were not only the women and men in households. Access to credit for solar energy led to an emerging trend of women becoming involved in small-scale urban and rural enterprises, just like the men. The relationships between women and men were therefore more complex than first thought, since these involved not only household decision-making arrangements. Rather, this situation also involved the way women were engaging in enterprise-related activities and their participation in decision-making on issues of acquisition and utilisation of energy services.

Findings of the study

The level of awareness about energy technologies was high among both men and women, with much of the information gained from radio/TV programmes and from the local credit institution. The main reasons for choosing solar energy were that it was cost efficient and credit was available. For potential low-income users, the initial costs were lower than those for a grid connection, and credit made solar energy more accessible than the grid. Couples often pooled their resources to raise the 30% down payment and to pay off the loan since the income from one person in the household was not sufficient. Both men and women received training in maintenance, battery charging and usage, but most of the solar energy technicians trained for repair work were men as this was considered "men's work".

External house lighting, entertainment and reading at night were perceived somewhat more as men's household energy needs, while

Solar panel used to power a radio (Photo: May Sengendo)

lighting for cooking was more of a woman's need, and lighting for income generation and indoor lighting was used by both. In Bufumira, battery charging was used to provide electricity for a variety of household, income-generating and community uses.

The study found both direct and indirect benefits in family relationships from solar energy. Direct benefits included improved lighting, reduced expenditures, and increased access to the mass media including to programmes on women's empowerment and income-generating project ideas. These led to an increase in household-level income generating activities, often run cooperatively by both partners, and this led to increased trust and sense of co-ownership. Indirect benefits included reduced expenditure by men on entertainment outside the home and more time spent with the family, and so better family relationships, which likely contributed to the above developments.

Girls' academic performance (the number passing in the first grade) improved during this period, catching up with that of the boys, and this was attributed to the extension of the working day so that girls, once they had completed their domestic work, could still have light to study (whereas boys, who have few domestic responsibilities, could always study earlier in daylight). The school also saved considerably in its expenditure on lighting.

Several commercial enterprises were set up following the availability of solar energy, including two widow-owned shops using lighting at night and refrigeration to attract customers, and three household enterprises, jointly owned and operated by husbands and wives, providing battery and phone charging services.

Village banks also benefited by increasing their number of clients and share capital, and gaining roles in other district projects, as well as earning "a good public reputation and trust". Staff members were trained to educate female clients about savings, women's empowerment, and how to start up their own small income-generating activities and obtain credit. This was encouraged based on women's existing good credit payment record (of 51 defaulters, only nine were women).

Expenditure on transport to get batteries charged was reduced (as well as the risk of loss and damage during transport) at one location; and at the other there were similar savings through a reduced need to go and buy paraffin and batteries for radios.

Income generating activities increased and diversified. In the battery-charging area, men took up night-time fishing using solar lighting, and many other household-level activities were taken up by women such as shop/bar/eating place management, poultry and pig keeping, hairdressing and craft making. Both men and women contributed start-up capital but women generally did the work as the men were often absent. The improvement in reliability of supply through having battery-charging facilities near to hand was important for business sustainability. Women generally used their increased income to improve housing.

The income gaps between men and women decreased, with the solar installations nearly equalising their incomes. This is attributed to increased co-ownership and the increased number of household income-generating activities. New activities included shops, zero grazing of cattle, and goat, poultry and pig keeping. Poultry keeping switched from being a largely male-owned activity to a jointly-owned and managed one when solar energy became available for chick brooding.

Spending on health also decreased for both men and women following solar installations: the clean solar lighting reduced diseases related to indoor air pollution.

Although the solar energy was very welcome there were complaints about the theft of solar panels and the lack of the electric capacity needed for other uses. No-one had solar lighting in their kitchen. Some households planned to expand the lighting system inside the house, and would include the kitchen. Women especially were also very keen on using solar energy to run small-scale economic activities such as poultry keeping, welding and groundnut grinding.

Conclusions

The study presents several conclusions related to policy and programmes:

- Gender is a key variable in energy service interventions.
- Benefits identified by women include consumer-lighting; women staff in solar companies and village banks; and women as entrepreneurs in home-based activities. These latter benefits became possible through a deliberate gender strategy adopted by the solar companies and village bank in the project.
- Providing equal access by women and men to information and technical assistance as well as taking into consideration their different roles in the households were keys to the success.
- Attention to employment creation is critical in enabling changes in the gendered division of labour.
- The new energy services provided grounds for both cooperation and potential conflict between women and men, and bargaining and negotiation were key issues in the households. Men spending more time at home, and watching TV together, provided more opportunities for discussion of household issues (although women's participation in decision-making did not necessarily increase).
- Access to information helps women make more inputs to decision-making on energy services.
- Institutions play a critical role in determining whether energy services will be effective in meeting women's needs, by how they take into consideration gendered rights and responsibilities, and by using strategies that link energy service provision to activities that improve the livelihoods of both women and men.
- Energy services can also aggravate gender inequalities.
- Institutional arrangements that use gender analysis in planning and implementing energy service provision can contribute to women's empowerment. ■

This article is based on the full report of the research study titled, *"Institutional and Gender Dimensions of Energy Service Provision for Empowerment of the Rural poor in Uganda"*, by the same author to be made available at: www.energia.org

◆ May Sengendo is chairperson of the East African Energy Technology Development Network (regional level) and lecturer in the Department of Women and Gender Studies, Makerere University, Uganda. She is also the Regional Network Coordinator for ENERGIA in Africa.

◆ EAETDN-U, P.O. Box 5593 Kampala, Uganda.
Tel: +256.(0)41.531520. E-mail: Sengendo@infocom.co.ug

1. In this case study, energy service providers include the solar companies and the village banks that provide solar credit services.

The Role of Gender Research in Influencing Power Sector Policy in Eastern and Southern Africa

Stephen Karekezi and Jennifer Wangeci

Access to energy in Eastern and Southern Africa is not only constrained by physical shortages but by the unequal power relationships between women and men. Policymakers have often failed to recognise gender inequalities with the result that supposedly gender-neutral energy policies discriminate against women (Clancy and Feenstra, 2004).

This article summarises a regional DFiD KaR/ENERGIA/AFREPREN[1] study that reviewed energy policy documents and energy policymaking processes in Botswana, Kenya, Tanzania and Zimbabwe to assess the gender dimension. The study focused on the overall energy sector and then narrowed down to the power subsector. It examined how gender research could best influence power-sector policymaking in Eastern and Southern Africa.

A perceived need for power sector reform in Africa arose from the widespread dissatisfaction with the poor technical and financial performances of state-owned electricity utilities and their inability to mobilise sufficient investment capital for the electricity subsector's development and expansion. Little consideration has been given to the differential impact of reform on women and men (Karekezi and Kimani, 2002).

On the assumption that electricity is necessary for development, governments have tended to finance the power sector and, in many countries, subsidise electricity to keep prices low, despite the benefits accruing to less than 30% of the population (Karekezi et al., 2004). The provision of electricity in ESA is largely confined to the privileged urban middle and upper income groups, as well as to the commercial and industrial subsectors, with household electrification in rural areas lagging far behind. (AFREPREN, 2003; Okumu, 2003; Kinuthia, 2003).

Energy/Power Sector Policy Documents and Policymaking Processes

A review of the energy sector policy documents revealed that there appears to be a growing awareness among policymakers (see Table 1) that the integration of gender analysis into power sector policy would enhance the electricity industry's contribution to sustainable development. However, this growing awareness is only backed by either (a) **vague** policy objectives that are difficult to measure, or (b) **narrow**, practical and welfare-oriented policy objectives that are neither strategic nor integrated into a comprehensive gender framework. Interviews with policymakers demonstrated that they either failed to perceive a need for gender mainstreaming or were constrained by their unfamiliarity with gender issues. This made it difficult for them to formulate specific, measurable objectives and strategies within an integrated gender framework.

Evidence from the regional study demonstrated that, to date, policymaking in the energy sector in ESA has been male-dominated and that there has been insufficient consultation with end-users and producers. The result has been that women's needs and interests have been neglected.

Table 1: Summary of the gender dimension in national energy policy documents

Country and Summary of Gender Policy	Number of Times Gender/Women is Mentioned	Number of Gender-Specific Policy Statements/Measures
Botswana Strong statements of commitment to gender equity. Acknowledgement of women's roles and problems, but no framework to address them.	Gender (5) Women (14)	Policy statements (1) Policy measures (1)
Kenya Strong statements of commitment to redressing gender imbalance. Limited educational and welfare goals planned.	Gender (6) Women (6)	Policy statements (0) Policy measures (1)
Tanzania Strong statements of commitment to gender equality. Welfare measures planned. Participation of women encouraged but not required.	Gender (11) Women (16) Female (1)	Policy statements (5) Policy measures (0)
Zimbabwe Limited mention of gender issues in energy documents. No explicit policy measures to address gender issues or women's interests.	Gender (0) Women (0)	Policy statement (1) Policy measures (0)

Sources: Ministry of Energy, Kenya, 2002; Ministry of Energy and Minerals, Tanzania, 2003; Ministry of Energy and Power Development, Zimbabwe, 2000; Ministry of Minerals, Energy and Water Resources, Botswana, 2004

In an ideal power-sector policymaking process, both women's practical and strategic interests would have to be represented during policy formulation. This would involve the direct representation of women's interests by individual women users and producers themselves, as well as indirect representation by elected representatives, representatives of community-based groups, non-government organisations and researchers. In each step of policymaking, consideration has to be given to how decisions will impact differently on the various subgroups of the population – including women, men, girls and boys – and on the relationships between them.

Gender Research Influences on Power Sector Policy

The DFID KaR/ENERGIA/AFREPREN study showed that the direct influence of research to date, and especially of gender research, on

Medium voltage power cables used in Njambine, a rural town in central Kenya (Photo: AFREPREN)

power sector policy formulation has been limited. Any major shifts in power sector policy in the four countries appear to have emerged from political and ideological changes rather than as a result of research.

The few specific research influences that were identified varied in the different countries: Botswana's energy policy documents cite research references, and the government relies on consultants' studies to inform its policy formulation; in Kenya, market research was used to shed light on household electricity consumption; and, in Zimbabwe, research has been used to design efficient energy strategies. Despite these influences, researchers usually had little control over outcomes.

What Role Can Gender Research Play in Influencing Power Sector Policy?

A careful assessment of the few examples of research influencing policy showed that the role of gender research in power-sector policymaking could be considerably enhanced. It is probable that gender researchers would have a more effective impact on the policy process if they planned a strategy based upon a thorough understanding of external influences, national vested interests and attitudes, and windows of opportunity. Their key messages need to be relevant, credible, convincing and well-presented; and appropriate links, alliances and 'chains of legitimacy' should be established between beneficiaries, gender researchers, NGOs, policymakers and other stakeholders.

Evidence on Gender: Credibility and Communication

A critical question for researchers to ask and then answer is 'what evidence is required for: (a) motivating policymakers to engender power sector policy, and (b) for the actual process of integrating gender into power sector planning and implementation?' An important tool for answering this is the collection of gender-disaggregated data. While the general principle of disaggregating data by gender can be made for all countries, the resulting data will vary across nations and localities. Timely, relevant and practical information that can motivate or solve problems will help to influence policymakers. It may, however, be ignored unless packaged and presented in appropriate ways. Clear and informed guidance should be presented in simple, non-technical language, and a multimedia strategy, using appropriate communication channels for the different audiences, used.

Links, Legitimacy and Women's Representation

Appropriate links need to be forged between the various stakeholders before gender can be integrated into power-sector policy. Firstly, because policymakers will not take any notice of researchers advocating a gender agenda if they do so entirely from a distance. Secondly, since the power sector has been male-dominated to date, the representation of women's interests will require the fuller participation of women in decision-making processes on various levels. There is the need to improve women's representation: in the power sector directly, in associated task forces, in intermediate bodies, in scientific and technical institutions, and in policymaking bodies. Mechanisms are also needed to ensure that the views and demands of all women stakeholders are centre-staged, particularly those of the poorer women in rural areas who are usually marginalised from decision-making, through various options such as:

- Establishing power sector structures that formally include women's organisations, for example those that represent women at the grassroots, in planning, in implementation and in evaluation;
- Joining and nurturing networks that promote the integration of gender into the power sector;
- Institutionalising relationships between the power sector and gender researchers that have legitimate links with women's organisations and/or women stakeholders and who can thus act as intermediaries in voicing their concerns. ■

This article is based on the full report of the research study titled, *"Engendering Power Sector Policy in Eastern and Southern Africa"* authored by Stephen Karekezi, Jennifer Wangeci, Emma Crewe, Nozipho Wright, Dorcas Kayo, Florence Gwang'ombe, Joy Dunkerley and Matthew Wright to be made available at: www.energia.org

Children carrying fuelwood in Kendu Bay, western Kenya (Photo: AFREPREN)

References

- AFREPREN, 2003. African Energy Database: Updated Occasional paper 13. AFREPREN, Nairobi, Kenya
- Clancy J. and M. Feenstra, 2004, How to Engender Energy Policy, Sustainable Development and Technology Section, University of Twente, the Netherlands
- Karekezi, S and J. Kimani, 2002. Status of Power Sector Reform in Africa: Impact on the Poor, in *Energy Policy, Vol. 30 Numbers 11-12. Special Issue – Africa: Improving Modern Energy Services for the Poor*. Elsevier Science Ltd., Oxford, United Kingdom
- Karekezi, S., J. Kimani and S. Amenya, 2004. An Overview of Power Sector Reform in Africa, in *The Regulation of the Power Sector in Africa. Zed Books Ltd.,* London, United Kingdom and AFREPREN, Nairobi, Kenya
- Kinuthia P., 2003. Kenya Country Data and Statistics Compilation. AFREPREN, Nairobi
- Ministry of Energy, 2004. Draft National Energy Policy (Sessional Paper No. 4). Ministry of Energy, Nairobi, Kenya
- Ministry of Energy and Minerals, 2003. The National Energy Policy. Ministry of Energy and Minerals, Dar es Salaam, Tanzania
- Ministry of Energy and Power Development, 2000. Draft National Energy Policy. Department of Energy, Ministry of Energy and Power Development, Harare, Zimbabwe
- Ministry of Minerals, Energy and Water Resources, 2004. Draft White Paper on Energy Policy. Department of Energy, Ministry of Minerals, Energy and Water Resources, Gaborone, Botswana
- Okumu D, 2003. Assessment of the Impact of Reforms on the Poor. AFREPREN, Nairobi, Kenya

◆ Stephen Karekezi is the Director of AFREPREN/FWD, Nairobi, Kenya. Stephen graduated as an engineer and has postgraduate qualifications in management and economics. In 1995, he was appointed to the Scientific and Technical Advisory Panel (STAP) of the Global Environment Facility (GEF); co-managed by the World Bank, UNDP and UNEP. He has written, co-authored, and edited some 87 publications, journal articles, papers and reports on sustainable energy development. In 1990, he received the Development Association Award in Stockholm, Sweden in recognition of his work on the development and dissemination of the Kenya Ceramic Jiko (KCJ), an energy-efficient cooking stove.

◆Jennifer Wangeci is a programme manager at the AFREPREN/FWD Secretariat in Nairobi. Jennifer has been involved in research on energy from urban waste, gender and energy, and renewables. She has a BA in Economics and has undergone further training in research skills, report writing, and project management. She has co-edited a number of AFREPREN/FWD publications and also heads the Library Department, which is responsible for maintaining the AFREPREN/FWD documentation unit.

◆ AFREPREN/FWD, Elgeyo Marakwet Close, Kilimani, P. O. Box 30979, 00100 GPO, Nairobi, Kenya.
Tel: +254 20 3866032/3871467/3872144.
E-mail: afrepren@africaonline.co.ke;
stephenk@africaonline.co.ke; skarekezi@kenyaweb.com

[1]*AFREPREN – African Energy Policy Research Network; DFID – Department for International Development, UK*

UPCOMING EVENTS

World Bank Group Energy Week, March 6-8 2006, Washington D.C., USA

The World Bank Group's Energy Week 2006 will be held in Washington D.C. on March 6-8, 2006 and bring together policy makers and practitioners engaged in strategic issues of energy and development. Energy Week 2006 will comprise of a three-day executive conference at which senior-level energy and finance industry executives, senior donor and developing country government officials, stakeholders and leading-edge thinkers will offer new ideas and insights on issues of clean energy development. Energy Week 2006 is also an information sharing event on the lessons of experience from energy projects and programmes in developing countries and it provides an opportunity for World Bank Group staff, developing country practitioners and partners to network and share their operational experience and enhance their cutting-edge knowledge and skills. Participation is by application and invitation. For further information, please visit http://www.worldbank.org/energyweek/

World Renewable Energy Congress (WREC) IX, 19-25 August 2006, Florence, Italy

WREC IX is being organised by the World Renewable Energy Congress, UK, and hosted by the University of Florence, Italy. The WREC is a major forum that brings together those who represent the supply, distribution, consumption and development of energy sources that are benign, accessible, sustainable and economically viable. Energy, Poverty Reduction and Gender features as a theme of the congress in which gender and sustainable energy in Latin America, in developing countries, and in the North are topics. The call for papers is open and abstracts not exceeding 200 words prepared according to the instructions provided can be submitted before 8 February 2006. More details and instructions for submitting abstracts are available at: http://www.wrenuk.co.uk/wrecix.html#papers

Conference of International Association Impact Assessment (IAIA) 2006

The 26th conference of IAIA will take place in Stavanger, Norway, from 23-26 May 2006. The theme of the conference is "Power, Poverty and Sustainability – The Role of Impact Assessments". Gender and energy is on the agenda of this conference with a panel titled, "Bottlenecks to Sustainable Development: Assessing the Gender-Energy Link on the Ground". This panel is proposed to present methods for analysing energy and its impacts through a gender lens. It will explore the challenges scientists' face, methodologies that can help disaggregate impacts on men versus women, and difficulties analysts face in incorporating disaggregated energy impacts into useful policy recommendations. Panellists are expected to discuss what field-based methods they have used to address the gender-energy link in practical, real-world assessments, and present recommendations for incorporating a gender analysis into social and environmental assessments in the developed and the developing world. If you wish to share your experience on this topic as a panellist, then please contact Barbara Bamberger at: bambergerb@edaw.com

The Energy, Poverty, Health and Gender Nexus – A Case Study from India

Jyoti Parikh and Saudamini Sharma

India, with a population of slightly more than one billion people, uses a variety of both commercial and non-commercial energy sources. However, 625 million people do not have access to modern cooking fuels and 296 million do not have access to electricity (Census 2001), and this lack of access affects especially women. This article explores the linkages between gender, energy, poverty and health in the State of Himachal Pradesh in India while explaining the connections with empowerment and emphasising the need for management, investment and technology support.

Why Himachal Pradesh?

Himachal Pradesh (HP) was selected for the study because it is a mountainous state that requires energy for space and water heating for which biofuels are the primary source. Further, there is lot of physical effort involved in carrying heavy headloads of fuel over a hilly terrain in the absence of mechanised transport and access to modern energy. There are also negative health effects from indoor cooking and fires for heating (Parikh et al., 1999). Moreover, the time spent could otherwise be used for some economically productive work. The issues investigated in the study are whether access to energy on a sustainable basis empowers women by freeing them from daily drudgery enabling them to surge ahead in life, appropriate indicators of energy consumption, household assets, health, literacy etc., and how women view this problem in terms of their own economic, environmental and health priorities.

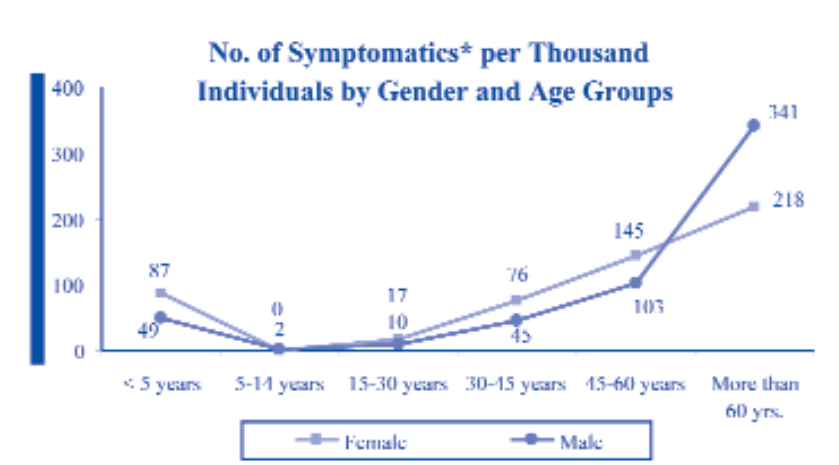

Figure 1: Vulnerability by age group in Himachal Pradesh
**Symptomatic signifies indicative of a particular disease or symptom*

Women Are Particularly Affected by Energy Poverty

Limited access to energy has a disproportionate effect on women in general and especially economically, and the women in HP are no exception. Biofuels are still the primary source of energy in the State, with 93% of the population using them for cooking and other purposes. There is a large difference in the average consumptions of biofuels and clean fuels in the state: the average household uses 222 kg per month of biofuels compared to a meagre 7.8 litres (6.5 kg) of cleaner fuels. In HP, women spend on average, each month, 40 hours collecting fuelwood. This breaks down to 15 round trips, each of 2.7 hours, and a monthly distance walked of some 30 km. The results of the study give a clear indication that although the state has progressed in terms of education, asset ownership etc., in terms of access to clean fuels and energy technology it continues to lag. It should, however, not be overlooked that LPG and kerosene penetration has increased in the last few years.

Traditional Fuels Negatively Affect Human Health

This paper brings out, for the first time, the linkages between health impacts and gender for various age groups. The study has revealed that girls below the age of five years and females in the 30-60 age group (who are usually the chief cooks in a family) are at higher risks than males in the same age groups (Figure 1). Illiteracy and smoking habits have also affected the respiratory health of individuals in the State.

What Do Women Want?

For effective intervention, it is essential to know how women rank their priorities, what their aspirations are, and what they think about their empowerment status. The women in HP still suffer the drudgery of using biofuels. In the process of collecting and transporting fuelwood, women were found to face numerous difficulties including the strenuous physical exercise in procurement and the time involved in the overall process. The study revealed that about 70% of the women in the 30-45 age group are involved in cooking, and about 53% of women who are above 46 years are not involved in cooking. The women in the age group of 30-45 years, who are usually the main household cooks, are thus more exposed to smoke and indoor air pollution than other family members. However, it is the women now over 45 years of age who are most likely to suffer from respiratory diseases, presumably due to accumulated exposure over many decades. Women cited coughing, backache, headache, neck ache, bruises and burning eyes as the main health problems related to fuelwood use. Figures 2 shows comparative graphs for two districts in HP, Shimla and Sirmour, depicting the main health problems that occur daily due to fuelwood. In the two districts studied, 64% and 39% of women suffer daily occurrences of backache compared to

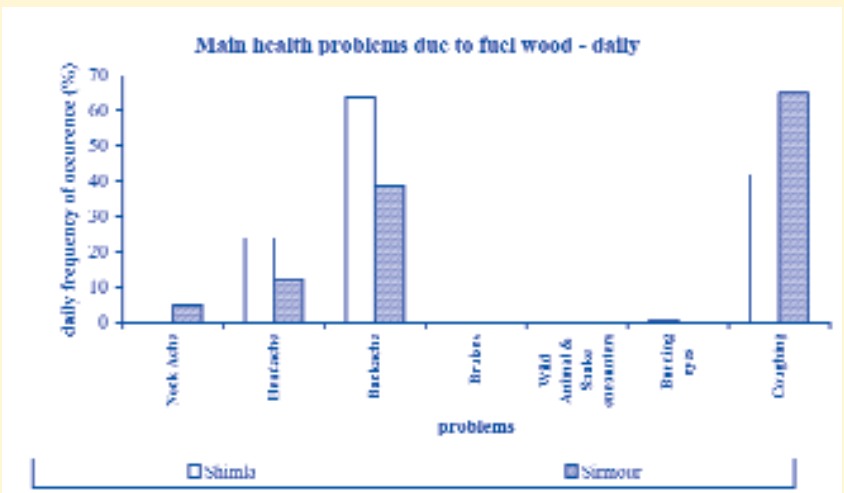

Figure 2: Comparative graph of two districts of daily occurrence of health problems

42% and 65% who have daily coughing attacks (first quoted figures for Shimla throughout).
The survey attempted to gain an insight into the view of respondents regarding willingness to shift to clean fuels and found that in urban places like Shimla an overwhelming 83% are ready to shift to clean fuels as compared to 43% in Sirmour, which is poorer and more remote. People cited time saving being the chief reason to shift to clean fuels. Also, respondents had a higher willingness (94%) to pay for ventilation in houses rather than for improved stoves (34%).

Impact of Clean Fuel Access Policy and Empowerment

Himachal Pradesh has a Government policy to allocate an additional quota of clean fuels (LPG, kerosene) in hilly areas to prevent deforestation, i.e. 20 litres per household as against 5 litres elsewhere in India. In addition, a healthy trend of increased use of LPG in HP was observed. Higher clean fuel access may have led to more empowerment as was observed in the National Family Heath Survey-2 (1998-99). For example, women aged 15-49 years are regularly exposed to some form of media in HP, more than 70% of the women watch TV at least once a week. As many as 80% of the women in HP have access to money compared to a lowly 59% in the rest of India. Domestic violence is not a major issue in HP. Participation in women's organisations is high and that generates awareness of various development programmes. However, strict causality is difficult to establish.

Conclusions

The link between energy and poverty has a pronounced gender bias. The following conclusions emerge from, or are supported by, the study:

- Women are the main energy users as well as primary energy suppliers. Parikh [1995] previously observed that, apart from being the main energy users, women supply biomass energy that amounts to 10% to 80% of total energy supply in various developing countries.
- Long distances are walked to collect biomass. There is an economic burden on the poor in terms of the equivalent number of days spent in fuel collection and suffering from ill health.
- Regular exposure to harmful indoor air pollution has negative health effects. Exposure to this type of pollution is associated with a number of health risks, and increased mortality rates are now well documented (Smith, 1999 and Parikh et al., 1999). However, other diseases and discomforts, such as backache, bruising, headaches and neck ache, regularly result from transporting fuels and should receive similar attention.

Recommendations

On the basis of observations from the study, the following steps could be taken to improve the situation:

- At present women manage one-third of the energy system in India through gathering fuels. They need to be supported through management, investment and technology so as to manage it sustainably and with minimum hardship.
- Energy, health and the transport of fuels need to be addressed in order to reduce energy poverty, and this can be done by management and policy initiatives.
- Capacity building is needed to promote the use of efficient energy appliances and their availability.
- An emphasis needs to be placed on the education of women and spreading awareness.
- A national mission on "having cooking fuel available for rural women within one kilometre" is needed to reduce the hardships of carrying heavy loads. In addition, transportation should be made easier by enabling access to transportation solutions such as wheelbarrows, better pathways, and small motorised transport with community arrangements for carrying heavy biofuel loads.
- Women could form co-operatives to grow trees for fuelwood or plant oil seeds. And rural fuel markets can be created by establishing a value for the fuelwood collected or grown.
- Continue to provide subsidies to promote clean fuels.
- Mass awareness programmes for popularising clean fuels.
- Promote Self Help Groups for empowering women.
- Shift from government initiatives to public–private partnerships needed.
- Access to energy should be linked as a promotional incentive to running small-scale energy business units for livelihood security and creating more employment opportunities for women.
- Health centres should be sensitised to the issues associated with indoor air pollution and the workers trained to spot and address respiratory diseases as well as problems linked to transporting fuels.
- Policy initiatives require a shift of focus from energy supply to end-use services.
- There is a need to look beyond cooking fuels, and at energy for livelihoods, lighting, transport, agriculture, and also water and sanitation. ■

This article is based on the full report of the research study titled, *"The Energy Poverty and Gender Nexus in Himachal Pradesh, India: The Impact of Clean Fuel Access Policy on Women's Empowerment"*, by the authors to be made available at: www.energia.org

References

- Parikh, J., 2005. Home and Hearth, Business Standard, Oct 13.
- Parikh, J., Smith, K., and Laxmi, V., 1999. Indoor air pollution: a reflection on gender bias, in *Economic and Political Weekly*, Feb. 27.
- Smith, K.R., 1999. Indoor Air Pollution, Pollution Management in *Focus*, Discussion Note No. 4, World Bank, Washington, USA.
- Parikh, J.K., 1995. Gender issues in energy policy, in *Energy Policy*, Vol. 23, P.745.

◆ Professor Jyoti K Parikh is Executive Director of Integrated Research and Action for Development (IRADe). She has nearly thirty years of experience on energy and environmental problems in developing countries. She has served as an energy consultant to the World Bank, the U.S. Department of Energy, the European Economic Community and UN agencies such as UNIDO, FAO, UNU and UNESCO; and as an environment consultant to UNDP, the World Bank and others. She has published nearly 200 research papers, books and monographs in the field of environment, energy and physics.

◆ Saudamini Sharma is a Research Associate at IRADe with a background in environment and water management. She is involved in several on-going projects related to fuel and the poor.

◆ Integrated Research and Action for Development (IRADe), 50, Chhota Singh Block, Asian Games Village Complex, Khel Gaon, New Delhi – 110049, India. Tel: +91.(0)11.2649 5522/23. E-mail: jparikh@irade.org

Whose Turn Is it to Cook Tonight? Changing Gender Relationships in a South African Township

ENERGIA News vol. 8 nr 2 • 2005

Wendy Annecke

Electrified and non-electrified shacks on the sand dunes of Monwabisi Park, bordering Khayelitsha (Photo: Wendy Annecke)

This gender and energy study is set in an urban area, in a township called Khayelitsha in South Africa, where poverty, violence and unemployment are endemic. Since the new democratic order came to power in South Africa in 1994, there have been efforts made to deliver basic services to such areas, and an extensive electrification programme has ensured that 75% of the formal houses and shacks in Khayelitsha are now electrified. All new connections are made on a prepayment meter system. The other important change since 1994 has been the introduction of legislated gender equality with some machinery to enforce this. The impact of national macro-level policies on gender equality and electrification are examined in this article as they play themselves out in the politics of household relationships.

This study uses cooking as the domestic chore that epitomises traditional gendered domestic relations in order to explore the hypothesis that when women have access to modern energy services, and can use these on a sustainable basis, they are freed from some of the daily drudgery associated with being a woman and are able to improve their own lives. One of the questions is, if women's domestic burdens are to be relieved, will this be through access to modern energy services and appliances which reduce the physical labour involved in meeting women's practical needs, or will it be through sharing the tasks with men - that is through shifting and sharing the gendered division of housework? Further, would changing gendered roles, or even meeting women's productive needs, be accompanied by a shift in power relations, thereby addressing what have come to be known as women's strategic needs? This study suggests that a further category, that of emotional needs, has to be addressed in order to achieve gender equality.

The Study

Urban studies are gaining in importance as the rapid migration from rural to urban areas in developing countries continues to put pressure on the ability of cities to meet the needs of their new and expanding populations. Khayelitsha, where this study was conducted, has been labelled the most dangerous township in South Africa with high rates of violence including rape such that women are not safe on the streets or even in their homes. However, there have been changes in the attitudes and actions of some local police, and women have found that now being able to report domestic violence, and having the police take the issue seriously, has given them the support they need to refuse to be 'slaves'. This has had repercussions among the men who blame the new dispensation for the new breed of 'cheeky women' and for men losing the power and privileges that they had ten years ago. Men complain that, if they use the old ways of resolving differences (i.e. a beating), their wives 'run to the police' who 'are very unsympathetic to men' and lock them up 'for nothing'.

Woman and child at water point in Khayelitsha (Photo: Wendy Annecke)

Finding a methodology for integrating domestic violence into this energy study has been difficult, especially in the context of constitutional rights for women. The literature offers reasons for gendered violence such as hurt egos from job losses, the legacy of the brutality of apartheid and the confusion of identities in transition, but the everyday reality is that women are the ones with the bruises and broken bones. It was in response to the very apparent women's distress that an additional category, that of *emotional needs*, was identified and included in the study. It is argued that a degree of emotional security is necessary in order to achieve gender equality. Without this, women may remain in subordinate positions even if their other needs are met.

Other analytical frameworks used included gender analysis covering the gendered division of labour; access to and control over resources and benefits; and meeting practical, productive and strategic needs.

A survey of 250 electrified households in Khayelitsha provided data on household energy preferences, as well as trends in the gendered division of labour, decision-making, income generation, health and safety, and leisure for men and women. This information was supplemented by a short survey of gender relations in 60 high- and low- income households and qualitative information gleaned from five in-depth focus groups in Khayelitsha. The methodology adopted also involved increasing the capacity of young researchers.

Summary of Findings

The gender survey showed that the majority of the 60 men and women in both high and low income brackets thought that women now enjoyed more rights than they did ten years ago, and the majority of respondents in both groups knew that gender equality was enshrined in the Constitution. While those in the high-income group thought this was a positive step, many of the respondents in the low-income group did not agree with the principle and thought that women had gained rights at men's expense. In both groups, women

still perform the majority of domestic tasks, although since 1994 most men in both groups do help with domestic chores but noticeably not with child-care.

In the larger survey of 250 households, 72% of the respondents were women and 28% were men. Marginally more women than men in the sample reported working, but many of these women earned less than a living wage in the informal sector. Some of the men said they did not work because they could not afford the expensive machinery required to set up their own businesses. Overall, the respondents reflected the better-off section of the Khayelitsha population (as is often the case when looking at electrified households) but, even so, most people lived on less than US$1 a day.

Access to Energy and Gender Relationships

Electricity was the energy of choice by both men and women for all purposes except space heating, however only 14% of households used electricity for all applications; with kerosene, batteries and some wood use in evidence elsewhere. Liquid Petroleum Gas (LPG) is not widely used. An unexpectedly wide variety of appliances were owned, even by shack-dwellers. Women tend to buy small appliances, whereas men buy televisions and large appliances; and men admitted that they spend money on televisions and fridges rather on than tools for income-generating purposes. Decisions are usually made jointly, and while there were eight more televisions than electric stoves in the sample, television is seen as a way of keeping children safe inside the home.

Gendered Division of Labour

Women manage electricity much as they managed wood: they supply the money, they walk to buy credits (for the prepayment meters) and they are the heaviest users of the electricity – albeit mostly for family, rather than personal, activities such as cooking and ironing. In most households, men assist in some way or other and there was evidence that men recognised the difference between using the most electricity and benefiting the most. Having electricity meant better education, television, health and safety as well as more leisure time for both men and women.

Conclusions and Recommendations

Make Gender Equality a Priority, and Provide the Resources Necessary

The findings record the high propensity for violence among certain men, and men's resentment of their loss of power. The men had insisted on having one meeting where no women were present, and it was encouraging to see those with progressive perspectives trying to persuade the 'traditionalists' that times have changed and that the realities of urban working conditions, as well as democratic values such as gender equality, have to be respected. Such men could be trained so that they could facilitate further discussions. The men who were angry blamed the new dispensation and women for their loss of position and privileges - not electricity. Indeed many seemed relieved, almost proud, to be able to boil their own water to make a cup of tea and cook with the ease of electricity, but men continue to see 'helping' as a favour, which they can withdraw at will. Urban and media messages of masculinity need to present alternative models of 'the new man' that can appeal to poor men.

Keep Paying Attention to Women

Women still do most of the chores and they appreciate how much easier this is with electricity. A slight majority of the women said they enjoy doing the cooking, however they would like their efforts to be appreciated more, and some would like more help. The majority of women still lack confidence and competence when it comes to simple tasks such as changing plugs, and more effort should be made by utilities while carrying out electrification to address this.

Health, Safety and HIV/AIDS

There is significant anecdotal evidence of the benefits to health and safety of electricity. Quantification of these benefits should now be sought from those organisations which respond to shack fires, hospitals which deal with burns and poisoning, and school records of pass rates. People living with HIV/AIDS all agreed with the sentiments that "people who are HIV positive need a warm, dry place to live. They can easily get sick in conditions where there are no ceilings and gaps in the walls - draughts, particularly at night, can be fatal. Warm water is necessary but we don't have any. Refrigeration is necessary to keep food fresh and for medication. It would be advisable for someone with HIV not to be in a house where kerosene is used to cook – it amounts to suicide."

Achieving gender equality is a process, and in answer to the question *'how can energy interventions most effectively contribute to the process of empowering women?'* what this case study shows is that if there is substantial institutional support for gender equality, access to electricity can further facilitate shifts in gendered roles and responsibilities in the domestic sphere. The reasons for this are twofold: firstly, women know they have legal backing to assert their rights, and men are pushed by the legal system to accept this. Secondly, electricity makes it easier for men to perform domestic chores because they are not as burdensome or demeaning. However, it is clear that gender equality is not only a matter of meeting practical, strategic and productive needs, it is also necessary to meet women's and men's emotional needs in an accepting cultural environment. ■

This article is based on the full report of the research study titled, *"Whose Turn is it to Cook Tonight? Changing Gender Relationships in a South African Township"* by the author to be made available at: www.energia.org

References/ Recommended Reading

- Bennett, J. 2005. 'An Old Rag': South African research on GBV and debates on 'cultures' and 'rights', in *Agenda Special Focus: Gender, Culture and Rights* pp 24-35.
- Bentley, K. and H. Brookes. 2005. The great leap sideways: gender, culture and rights after 10 years of democracy in South Africa, in *Agenda Special Focus: Gender, Culture and Rights* pp 2-13.
- Morrell, R. 2000. Men, gender wounds and healing, in *Agenda* No 46 pp 100-104. Available on http://www.agenda.org.za

◆ Wendy Annecke is a South African who carries out independent research on gender and energy, and promotes the interests of the poor. Her PhD thesis was entitled 'One Man One Megawatt, One Woman One Candle. Women, Gender and Energy in South Africa with a focus on research'. She lives in Cape Town but works internationally.

◆ Wendy Annecke, Independent Researcher, Gender and Energy Research and Training, 270 Main Road, Muizenberg 7945, Cape Town, South Africa.
E-mail: glo-worm@iafrica.com

Gender Relations and the Energy Transition in Rural Asia

Govind Kelkar, Dev Nathan

In an earlier paper we put forward the proposition that the low opportunity cost of women's labour limits the adoption of improved stoves, and that women's entry into income earning activities would promote a fuel transition (Nathan and Kelkar, 1997).

In this paper the analysis is further developed with the following propositions:

- Women's excessive work in rural areas of developing countries derives from their gendered responsibility for providing cooked food as a household public good.
- If the opportunity cost of men's labour is much lower than that of women it will promote a substitution of men's for women's collection of non-purchased fuel. This suggests that gendered responsibilities, though generally rigid, are not completely fixed and can react to changes in the comparative economic positions of women and men. However, this does not promote a fuel transition.
- A fuel transition to less-unhealthy fossil fuels is more likely in a situation where the household purchases its fuel requirements since wood fuel then becomes seen as an inferior commodity.
- The severe negative health effects of wood fuel and related biomass fuels (dung, crop residues) make public subsidies for household adoption of cleaner, fossil fuels desirable. However, a policy of subsidising the equipment costs associated with fossil fuels is likely to result in ongoing use of fossil fuels only in those households that rely on purchased fuels. Its use is likely to be abandoned in households that rely on non-purchased fuels.
- The critical area for intervention is in providing commercial fuels for women's income-earning activities. The resultant increase in the opportunity costs of women's labour and the consequent need to reduce women's (and their family's) household labour will also promote the household adoption of improved biomass technologies, the commercialisation of fuel, and a switch to modern, commercial fuels – all with their attendant health benefits.

These propositions were arrived at through fieldwork in three Mosuo villages and three Naxi villages in Yunnan, China. This was supplemented by other fieldwork in Laos, Vietnam and India; along with some secondary material including the IDS (2003) study of six Chinese villages, and other case studies including one on Nepal by UNDP (2001).

Supporting Rural Fuel Transition

There are two ways of encouraging the adoption of improved stoves and related methods of achieving a fuel transition. One is to subsidise their use, and the other is to increase the opportunity cost of women's labour by increasing their productivity in income-earning activities. Whether a rural family does or does not pursue greater efficiency in fuel use, an improvement that will inevitably cost some money, depends on the opportunity cost of the labour used in fuelwood collection and in cooking. The lower the income or production foregone as a result of women spending long hours collecting and using fuelwood, the less the incentive to adopt improved stoves, or to switch to more efficient and healthier commercial fuels. The labour time taken into account should not only consider that spent collecting, but also that used in fuel preparation and cooking.
If employment were available, it would be preferable to earn cash as say a labourer and then buy wood, rather than spend many hours collecting it. An absence of such available employment, or other income-earning opportunities, will mean that such a substitution will not take place. Further, such a lack of an incentive to reduce domestic labour time will influence a farming family's decisions regarding possible investment in an improved stove. If the time that women could save by using improved stoves has no income-earning potential then, even if the women are the family decision-makers, they will not decide to spend cash to acquire improved stoves.
Only when available labour time becomes a constraint on expanding economic activities are labour-saving machines purchased. If available time is not a constraint on expanding economic activities then cash will not be spent on repairing, let alone buying, labour-saving devices. Note that we stress women's income. If men's incomes increase, but women's involvement in income-generating activities remains unchanged, there will be no change in the pattern of utilising women's "free" labour for fuelwood collection. There is no pressure to save low-valued or unpriced labour; it is only higher-priced labour that is saved. This applies to the individual worker, and not to the family as a whole.
An increased involvement by women in economic activities, besides leading to the adoption of improved stoves, can also lead to the complete abandonment of collecting fuelwood. Instead of collecting wood, families may choose to buy it. In a number of the case studies (Laos and Lugu Lake, China) it was seen that one of the ways adopted to reduce women's labour time in fuel-related activities (which includes collection and preparation and cooking) was to switch from collecting to purchasing wood.
When wood is purchased, rather than collected, it becomes a commodity. And as a commodity, it would be subject to the characteristics of commodity consumption – in particular, the substitution by superior fuels as income rises. If fuelwood becomes a commodity, it is an inferior good (effectively being more expensive per unit of cooking, besides the adverse health effects), but with low initial equipment costs. Even in rural areas there is likely to be a substitution of inferior by superior fuels as incomes rise. Thus, an energy transition is more likely where households rely on purchased fuels.

Mosuo women keep warm by the traditional fireplace in a village in Yunnan Province, China (Photo: Govind Kelkar)

Policy Considerations

In order to promote a rural fuel transition there should be greater stress on investing public money in providing energy based on fossil fuel or electricity to increase the productivity of women's labour through income-earning activities rather than in public subsidy of domestic fuel consumption. The rural household fuel transition also depends on an increase in the absorption of men's labour, so that we do not have a situation where lower-priced men's labour replaces higher-priced women's labour in collecting wood rather than purchasing it. Nevertheless, the key factor is to increase women's income-earning labour in order to bring about a tightness in the use of women's labour and thus induce a change in the household energy-use system.

The Mosuo case study of a tourism-intensive village has shown that the associated increase in productive women's income-earning labour led, after some time, to a complete rural fuel transition. When women's labour became a constraint there was a switch to LPG for cooking to reduce women's domestic labour time.
The sequence need not necessarily be first enterprise development, or income generation, and then household fuel use. However, in the absence of the former (women's enterprise development or income generation opportunities) households are unlikely to invest their own income in changing the fuel collection and use system and any externally-stimulated change in the latter is unlikely to be sustained. In Nepal, the rural micro-hydro development programme reduced the time needed to prepare and process food; and the time saved could be used in a poultry business (Rana-Deuba, 2001). It made sense to invest household income on buying a pressure cooker since the time saved in cooking could be used in the poultry business, which more than compensated for the cost of the pressure cooker.

A very similar point emerges from the small diesel engine system, known as the "Multifunctional Platform", used to generate electricity in Mali. It was necessary for it to be used to increase productivity in income-earning activities to pay for the cost of the energy service. As pointed out, "… for energy services to be affordable by poor women (and men), they have to be for end uses that are directly productive and income generating. Enterprise development is therefore of critical importance to successful implementation of the multifunctional platform concept, as shown in Mali, where a number of enterprises have emerged around the multifunctional platforms. Welding of metal chairs, donkey carts, farming implements, etc., is a new business in many places that have acquired multifunctional platforms" (Brew-Hammond and Crole-Rees, 2004, p.53). Besides its use in men's enterprises, women too were able to increase their production of shea butter, with the processing time reduced and final product recovery increased.

Women's control of their own income from shea butter sales not only paid for the energy used in its production, but was sufficient to pay for milling corn. Women could thus reduce their own burden and increase their free time as a result of greater productivity in income generating activities.
Fuel transition is not an automatic by-product of increasing women's productivity in income-earning activities. However, as women's economic roles change, there is also likely to be a greater assertion by women of their role in household decision-making, as seen in the studies on micro-credit in Bangladesh and East Africa (Kelkar, Nathan and Jahan, 2003), and in East Africa (Nathan, 2004). Thus, an increase in the income of women in the household is likely to be translated into an improvement in the conditions attached to acquiring fuel and cooking food in a manner that reduces women's workloads (such as purchased rather than collected fuels) and reduces the negative effects on women's health (fossil fuels rather than biomass fuels or, at least, improved stoves rather than traditional stoves).

What is important to note is that a similar increase in household income through an increase in men's income-earning potential alone is unlikely to bring about such a fuel transition. So long as women's participation in income-earning activities is low, there will continue to be a heavy reliance on collected rather than purchased fuel, and a rural fuel transition is unlikely to occur. ■

This article is based on the full report of the research study titled, *"Gender Relations and the Energy Transition in Rural Asia"* by the authors to be made available at: www.energia.org

References

- Brew-Hammond, Abeeku and Anna Crole-Rees, 2004. Reducing Rural Poverty through Increased Access to Energy Services, A Review of the Multifunctional Platform Project in Mali, UNDP, Mali
- Institute for Development Studies, 2003. Energy, Poverty and Gender: A Review of the Evidence and Case Studies in Rural China, World Bank, Washington, USA.
- Kelkar, Govind, Dev Nathan and Rownok Jahan, 2004. 'Redefining Women's 'Samman': Microcredit and Gender Relations in Rural Bangladesh," in *Economic and Political Weekly*, August 7.
- Nathan, Dev, 2004. Micro-credit in East Africa: Creation of Women's Space and the Transition from Subsistence to Accumulation, Working Paper No. 20, Institute for Human Development, New Delhi, India.
- Nathan, Dev and Govind Kelkar, 1997. Wood Energy: The Role of Women's Unvalued Labour," in *Gender, Technology and Development*, 1 (2), Sage Publications, New Delhi, India.
- Rana-Deuba, Arzu, 2001, Nepal: Rural Micro Hydro Development Programme, in *Generating Opportunities: Case Studies on Energy and Women*, UNDP, New York, USA.

◆ Govind Kelkar is Coordinator of the IFAD-UNIFEM Gender Mainstreaming Programme in Asia, and the founding editor of the journal Gender, Technology and Development. She has previously taught at Delhi University, the Indian Institute of Technology, Mumbai, and the Asian Institute of Technology (AIT) where she also founded the graduate programme in Gender Development Studies. Govind is a frequent consultant to IFAD - Rome, UNIFEM - New Delhi, and other UN organisations on mainstreaming gender in development.

◆ Dev Nathan, an economist by training, is a Senior Visiting Fellow at the Institute for Human Development in New Delhi. He is also a columnist and a regular contributor to the Economic and Political Weekly. He frequently serves as a consultant to IFAD - Rome, several UN organisations and ICIMOD - Kathmandu on issues of rural poverty and the development of indigenous peoples.

◆ IFAD-UNIFEM Gender Mainstreaming Programme in Asia, 223, Jorbagh , New Delhi-110003, India. Tel: +91.(0)11.24604351/ 2469829, Fax: +91.(0)11.24622136.
E-mail: govindkelkar@yahoo.com, nathandev@hotmail.com.

Women's Electrification

Michel Matly

Electrical engineers all over the world have high skills but short memories. Most consider that electrification is a process that goes from large to small cities, and from small cities to rural areas. Few know that in most developed countries, electrification resulted from the multiplication of small local initiatives, small isolated systems that progressively connected into larger grids.

Some may know that electrification in Western Europe was largely completed in the mid-1930s, when only 10% of US farmers had access to the grid, and that rural electrification in the USA was only completed in the 1960s. With this knowledge, an easy conclusion is that private dynamics alone fail to invest in rural areas and State support is necessary. This may be right, but it is a too simplistic conclusion.

Electrification in Europe and the USA

The rural electrification of France, a country paradoxically best known for its vast public utility EdF, was realised first through private investment, then through public investment and private management, and was in fact 95% complete by the time of nationalisation. Small enterprises, local governments and NGOs all played major roles in rural electrification in other European countries. In the USA, the cooperative movement filled a gap that neither private nor public utilities were much interested in plugging.

The major concern at the time was not at all between public or private property and management, but between centralised and local initiatives. European governments put the responsibility for electrification on local level authorities, bringing with it a growing support that made electrification possible in ever remoter areas. US electrification created its later successes on the same principle through cooperatives. Both European and American administrations trusted the people, and did not presume to act in their name. This worked for a simple reason: nobody has a greater interest in electrification that those without access to electricity.

American rural electrification delivers further lessons. Firstly, that monopolies lead to excessive costs. The US electricity cooperatives successfully showed that they could be more cost-effective than the existing large private and public utilities and were able to cut costs by 30 to 50%. Secondly, they showed that having low tariffs was not a key issue. The US administration set up rules imposing minimum rather than maximum tariffs, generally at least 20% above those in use by the regular utilities, in order to protect the new-born rural cooperatives from local and political demagogy. Reach the poor, but have them pay.

Another and crucial issue has now been widely forgotten by engineers worldwide. European electrification's history may well have been an early success, but it was a colourless and odourless one. It brought no more than a few bulbs, perhaps a radio and, very rarely, some productive equipment to farmers. Electricity itself raised little interest among farmers, unlike the arrival of piped water or the dissemination of domestic appliances for the farmhouse after World War II. American rural electrification, on the contrary, raised enthusiasm, because it came complete with many services that could and did change the farmers' way of life.

Rural Electrification in the US (Illustration: REA, US)

Following the example of the private sector, the US cooperative movement proposed a very different electrification model than the European one. Federal public funding not only came to develop grids but also to provide access to productive electrical equipment and domestic appliances, the latter by chance proving to be a far quicker and greater success. Rural electrification may have been nearly thirty years late compared with Europe, but farmers soon had equipment to match that in an urban household, and it took another thirty years for the European rural dweller to be in a similar position.

The reasons for these distinct approaches stem from the different economic and political visions. In Europe, most controversial issues in development were essentially related to colonisation. Right-wing and left-leaning political leaders, industrial managers and Marxist opponents all shared a distrust of domestic, household markets. In the USA, on the other hand, the household market's potential was quickly recognised by marketing specialists and industrial leaders. In the electricity sector it was seen as an important issue and its development would largely mitigate the effects of the 1930s' economic crisis on the electrical industry.

This is one of the major reasons why US private industry ignored the rural market: while European governments focussed on spatial extension of the grid, the highly-concentrated US electrical industry gave priority to upping its load factor. In order to improve their performance and benefits, the major players bought up promising appliance firms and concentrated utility development on sales to existing urban clients. Electricity cooperatives had the same concerns: they had to sell enough electricity to balance their accounts and repay federal loans. This had a considerable result: American rural electrification was far less costly to the public purse - relying mainly on soft loans while European electrification frequently involved 50% subsidies.

Gendered Aspects of Electrification

The European electricity business is definitely male-oriented. Its history is one of conflicts and compromises between public and

private, central and local level executives, and all of them men. Even an analysis of the publicity for electrical appliances in the interwar years in Europe shows a remarkable absence of women: the targeted clients seem to be department stores and their male retail sales staff. On the contrary, women played a crucial early role in the American power sector development, not only as market prescribers but also as decision-makers, executives and professionals, both in the private industry as well as in the cooperative movement.

Voices in the American electric private sector - as early as Thomas Edison's - considered that women had a crucial role to play. A gender-oriented approach, created back in the mid-19th century and peacefully coexisting with 'feminism', called home economics brought a ready-made ideology to the electricity industry. Women, now deprived of paid activities, must instead become efficient managers in the domestic sphere. They are the ones who will modernise the home, and this paved the way for the dissemination of electric services and equipment, and through this electrification could become cost-effective and profitable.

This had strong and concrete consequences in terms of gender. In contrast with the all-male European electrification, the American electricity sector developed itself successfully by strongly involving women, in large private utilities as well as in grassroots cooperatives, at central and regional levels in executive management, as well as in field extension. The National Electric Light Association, a private sector organisation, encouraged utilities to recruit women - especially women trained in home economics - in order to promote domestic uses of electricity. The Rural Electrification Agency, a public body set up to oversee rural electrification, built up a female home economics team, imposed joint husband and wife participation in cooperative meetings, a quota of one-third women on electrification boards, and the promotion of women to federal and local senior executive ranks. American electrification was engendered not as an expression of any feminist feeling but rather by basic financial realism, based on a simple argument that any electrical engineer could understand: women power is the load factor.

As a gender ideology, home economics has largely disappeared, partly due to its own success - it has become a way of life, and partly due to its narrow constraints - women being considered only in the family sphere. Mainstream women's concerns were displaced into other fields, taken over by feminists, as political rights, access to paid work or improved acknowledgement of sexuality. However, even caustic female analysts now recognise that home economist views are still acceptable. Appliances did give women better opportunities, once these became socially recognised, to enter paid work and take on community responsibilities, if only because appliances made it humanly possible to combine such activities with home management.
Housework should not be considered only as a set of chores, but rather as home management with responsibilities. Electrical appliances may not have changed the amount of housework – there seems little time gain with each appliance generating new needs – but they have relieved women from many heavy burdens, and allowed them to be more efficient for their home and family. Development certainly depends on family income, but only the modernisation of housework allows women to assume the operation costs of this development. A larger house, more clothes and better-educated children are forms of progress made possible only by more efficient and easier home management.

Even with no piped water, rural people in French Guyana invest in washing machines as soon as they have access to electricity (Photo: Michel Matly)

Women's Electrification

As we have seen, rural electrification had a very different meaning in America than in Europe. A meaning that seems to have been lost along the way since the general views on third world markets are very similar to the mistaken views that European politicians had of their own markets or indeed, as the cooperatives proved, that the private American electricity companies had of their own rural markets.

Let us take as a symbol the washing machine. The native rural populations in French Guyana use washing machines as soon as they have access to electricity. They do not have piped water, but they buy twin-tub washing machines and fill them using buckets from the river. Such machines are made by General Electric and Daewoo, and cost about US$100 from neighbouring Surinam. Since they formally belong to French society, the locals do have more money than other Latin American farmers, but in any case this does not represent such a major expense.

They use washing machines because everybody around uses them. They use washing machines probably because their nationality prevents them from the prejudices that make others, those responsible for electrification and even gender specialists, laugh when talking about the dissemination of washing machines in rural areas of developing countries. But do third world women really like washing clothes by hand, either by choice or by tradition? Is it not a burden for them as it is for women elsewhere in the world?

Third world women's access to washing machines may well be the true meaning of electrification – a process where electrical engineers and women have common interests, and should build innovative coalitions. This would be an alternative to the poor philosophy and trends behind today's mainstream electrification approaches, and one where gender specialists would have an important role to play: a women's electrification. ■

This article is based on the full paper, *"Women's Electrification"* by the author to be made available at: www.energia.org

◆ Michel Matly, from France, is an international consultant on energy and the environment. He has led and participated in numerous assignments in rural electrification and household energy in Asia, Latin America and Africa for major international cooperation agencies. He is also a specialist in the history of electrification in Europe and the USA.

◆ MARGE, Rue Fortunière, 46240 Labastide-Murat, France.
E-mail: mmatly@marge.fr

News from the Secretariat

Network Building

Asia Regional Network Meeting

The ENERGIA Asia Regional Network Meeting took place from 2-8 May 2005 in Chiang Mai, Thailand. The event was hosted by ARECOP (Asia Regional Cookstove Programme) and was facilitated by Christina Aristanti Manager of ARECOP. The meeting provided the national networks an opportunity to meet each other and share experiences on gender and energy activities. The meeting was also used to map-out an action plan for the Asian network. Rupeni Mario of Fiji represented the Pacific Energy and Gender (PEG) Network at the meeting, thus creating space for learning and sharing between regions.

Seed Funding for National Networks in Asia

ENERGIA has approved seed funding to its focal points in the Philippines, Pakistan and Lao PDR. Approtech Asia (Philippines) will undertake training on gender tools and methodologies for partner organisations, document best practices, develop resource material on gender and energy, and hold regular meetings of the network. GRID (Lao PDR) will adapt gender tools and methodologies to the national context, translate gender and energy material into Lao for use in training, convene a meeting with key government agencies on gender and energy issues. Among the activities envisaged by Aga Khan Rural Support Programme (Pakistan) are a membership drive and formalising of the network, preparation of a technical report on gender and energy in Pakistan and dissemination of the findings, and undertaking of a dialogue with policy makers and private-sector energy providers through information sharing and networking activities.

Capability Building

Gender and Energy Training in Asia

This 3-day training in Gender and Energy Concepts was conducted back-to-back with the Asia Regional Focal Point meeting in May this year. It is the first in a series of training workshops envisaged by ENERGIA to build the capacity of the national networks in Asia to incorporate gender into energy policy and programmes.

Workshop on Gender Mainstreaming in Water and Energy Initiatives

The Gender, Energy and Water Network (GEWNet) Nepal, supported by the Centre for Rural Technology Nepal (National Focal Point) and ENERGIA, organised this two-day workshop in September 2005. The workshop consisted of two components: sharing experiences of gender mainstreaming in water and energy projects and programmes on the first day and a training session on gender auditing on the second day. More than 40 participants from a variety of organisations including the government, non-government and private sectors attended the meeting. The workshop report will be posted shortly on the ENERGIA website.

Update on TIE ENERGIA

Several activities of the TIE ENERGIA project have been undertaken since the Inception Workshop in April 2005. Two of the five training packages on "Concepts of Gender in Energy" and "Gender Tools for Energy Projects" have been translated into French for use in francophone Africa. The first of three sub-regional "Training of Trainers" workshops was held in Nairobi, Kenya, in November 2005. The TIE ENERGIA web site - http://energia-africa.org - was launched and will carry regular updates on the progress of the project.

The two above-mentioned training packages are now accessible on ENERGIA's website at: http://www.energia.org/resources/training_packs.html both in English and French. The training packages are very extensive and can be used and adapted for training of practitioners, planners and policy makers involved in energy, poverty and development issues. If you happen to use this material in your work, please send your feedback and comments to energia@etcnl.nl so that ENERGIA can continue to improve the training packages to meet the needs of users.

Knowledge Resources

Pacific Gender and Energy Bibliography

ENERGIA supported the Pacific Energy and Gender Network (PEG) to compile a Pacific Energy and Gender Bibliography. This bibliography contains over one hundred annotations of books, papers, journal articles and other resources on gender and energy, specific to the Pacific Region. These annotations will be made accessible from ENERGIA's electronic database: http://www.energia.org/resources/bibliography.html in January 2006. The document can also be accessed at the PEG Secretariat:www.sopac.org/tiki/tiki-

indexindex.php?page=Pacifci+Energy+and+Gender+Annotated+Bibliography
Printed versions can be obtained from Yogita Bhikabhai at energysector@sopac.org or yogita@sopac.org

Regional and International Advocacy

ENERGIA has been actively engaged in advocacy activities during the last couple of months. In April 2005, Indira Shakya of GEWNet, Nepal, was at the World Renewable Energy Regional Congress in Indonesia and presented a paper on "Gender in energy policies and programmes: addressing the missing link". Also in April, Sadeka Halim made a presentation on gender and rural electrification at the Asian Regional Workshop on Electricity and Development in Thailand organised by UNDP, UNEP and IEA.

In May 2005, Soma Dutta, ENERGIA Regional Network Coordinator for Asia, presented a paper titled, "Women and productive uses of energy: some light on a shadowy area" at a meeting on the productive uses of renewable energy organised by the UNDP regional office in Bangkok. As an outcome to this meeting, UNDP invited ENERGIA to develop a project on women and productive uses of energy. The concept submitted has been well received by UNDP and hopefully will materialise as a project next year. UNDP also invited ENERGIA to submit proposals for gender-sensitive short-term pilot projects (to be completed within 2005). Of the seven proposals submitted from the Asian network, the pilot project from Approtech Asia has been short-listed for support.

Integrated Research and Action for Development (IRADe), an ENERGIA partner in India, organised a session on mainstreaming gender concerns in energy policy at the Expert Committee Meeting to Formulate Energy Policy convened by the Planning Commission (Power and Energy Division), Government of India. As a follow up to this meeting held in June 2005, IRADe prepared a policy paper, which will serve as an important input into gender and energy advocacy initiatives in the future.

Wendy Annecke, member of the South Africa Gender and Energy Network and technical advisor to ENERGIA, was in Brazil in September 2005 to participate in a workshop on the theme "Meeting the needs of the urban poor – the case of electrification". She presented a paper on gender issues in the session on socio-economic aspects of urban electrification. ESMAP, USAID, Cities Alliance, IDB, Electricite de France, and Coelba – a Brazilian utility sponsored the meeting.

Wendy Annecke was also at two meetings of the Monitoring and Evaluation for Energy and Development (M&EED) International Group, in Germany in June 2005, and in the UK in September 2005, on behalf of ENERGIA. The goal of this group is to develop a framework for monitoring and evaluation (M&E) in the energy sector and design relevant tools. Wendy Annecke leads the sub-group on gender methodology and has been emphasising the need for collection of M&E data disaggregated by gender. She has also been providing gender inputs into the draft M&E template. An improved version of the template will be discussed at the next meeting in January 2006.

ENERGIA in collaboration with the GVEP Technical Secretarait organised the "Gender, Energy and Microfinance" side event at the Global Village Energy Partnership (GVEP) in Brasilia, Brazil, in October 2005. The event showcased examples of how modern energy services made available through micro-financing directed at poor women creates employment and productive activities, provides lighting and power for rural and peri-urban communities, and improves the status of women. Experiences of SEWA/SELCO and GVEP in India, FINCA in Uganda, KITE in Ghana, NEAP in Cameroon were shared. ■

DONOR INFORMATION

GAPFund (GVEP Action Fund)

In order to aid the activities that serve to achieve GVEP goals and objectives, a GVEP Action Programs Fund (GAPFund) has been set up through a contract of the ESMAP of the World Bank. The initial phase of the GAPFund will be for 18 months with a funding of 1.35 million USD. Winrock International (WI), a US-based non-profit organisation, will manage the GAPFund. The fund is meant to assist projects that contribute to the country actions initiated by GVEP in several countries either through specific country actions including implementation of innovative pilot investment projects, policy development and institutional renewal, or in the four support service areas of Capacity Development, Finance Facilitation, Knowledge Management and Results Monitoring and Evaluation. Although the funding size will vary, the majority of projects considered will be in the US $10,000-50,000 budget range. Project duration should be 3 to 12 months, based on the nature of the activities proposed. The fund is now open and the full request for proposals can be downloaded together with the application form at:
http://www.gvep.org/content/general/detail/11409

Intelligent Energy Europe - COOPENER

Intelligent Energy Europe is a programme of the European Union for the promotion of energy efficiency and renewables. The call for proposals for 2005 under the COOPENER line of funding allows for energy projects in the developing countries. A total budget of 5 million euros is available on this call. Successful projects can expect to have 50% of the totals costs funded. Funding is available for activities in a) energy policies, legislation and market conditions for alleviating poverty in developing countries and b) strengthening local energy expertise in developing countries. This is the last call for COOPENER projects under this programme. The closing date for the receipt of proposals is 28 February 2006. Details on the call can be found at:
http://www.europa.eu.int/comm/energy/intelligent/call_for_proposals/doc/call_2005/call_2005_en.pdf

REEEP Fourth Programme Round

The Renewable Energy and Energy Efficiency Partnership (REEEP) is calling for proposals in its fourth round of funding. Proposals will be considered from organisations, including REEEP partners, active in policy and in the financing of renewable energy and energy efficiency. REEEP expects to deploy over 3 million euros to support projects identified under this round with funding from the UK government. REEEP will fund projects from around the world, however priority countries for this funding round include Angola, Brazil, China, India, Kazakhstan, Mexico, Nigeria, Russia and South Africa. Project application documents can be downloaded at:
http://www.reeep.org/trampoline/groups?groupType=node.funding

Next Issue

This issue of ENERGIA News is dedicated to the findings of the DFID KaR funded research project on "Gender as a key variable in energy interventions in developing countries: are we asking the right questions?" Most of the articles in this newsletter are based on the research studies undertaken in Asia and Africa for this project. The findings of these studies reflect the positive impacts that access to energy has in transforming the lives of the poor, especially women. They also emphasise the need for national energy policy and programmes to be engendered so that both men and women can reap the benefits of energy services, better their lives, and build more sustainable communities.

The next issue of the ENERGIA News to be published in early 2006 will be on the theme Gender and Urban Energy. It will carry several articles based on another DFID KaR supported research project on "Enabling urban poor livelihoods policymaking – the role of energy services" concluded in 2005.

ENERGIA also welcomes your contributions on gender and sustainable energy topics for future issues of ENERGIA News. The length of articles or case studies should be around 850 words for a one-page article or 1500 words for a two-page contribution that includes an illustration or two. Please remember to send photographs and/or other illustrations to accompany your feature together with captions and credits. Guidelines for writing articles can be obtained from the ENERGIA Secretariat or downloaded from ENERGIA's website.

ENERGIA reserves the right to select only those articles that are appropriate for publication in ENERGIA News. If an article is worthy of publication but not suitable for a particular themed issue it can be published on the ENERGIA website. ENERGIA also reserves the right to edit, shorten, and rewrite articles. In principle, providing the publishing deadline allows it, approval will be sought from the authors for any substantial revisions made to an original article prior to publication.

ENERGIA is an international network on Gender and Sustainable Energy, founded in 1995 by a group of women involved in gender and energy work in developing countries. ENERGIA's objective is to "engender" energy and "empower" rural and urban poor women, through information exchange, capacity building, research, advocacy, and action aimed at strengthening their sustainable energy development.

ENERGIA's approach is to seek to identify needed activities and actions through its membership, and then to encourage, and if possible assist, members and their institutions to undertake decentralised initiatives. ENERGIA News is the principle vehicle for this approach. The focus is on practice, with a conscious effort to interpret and learn from this practice.

Subscribing to ENERGIA News is free of charge but we do encourage our subscribers to contribute to the newsletter by sending in their own articles, letters, publications, reports, notes, resources, announcements, photographs, news and events. To become a subscriber to ENERGIA News, or if you have any queries, please contact:

ENERGIA Secretariat,
c/o ETC Energy
P.O. Box 64, 3830 AB Leusden
The Netherlands
Tel: +31.(0)33.432 6044;
Fax: +31.(0)33.494 0791
E-mail: energia@etcnl.nl
Website: www.energia.org

EDITORIAL TEAM FOR THIS ISSUE

Consulting Editor:
Elizabeth Cecelski
c/o ENERGIA Secretariat
P.O. Box 64,
3830 AB Leusden
The Netherlands
Tel : +1.(0) 919.408 0387
E-mail: ececelski@yahoo.com

Coordinating Editor:
Chesha Wettasinha
ENERGIA Secretariat
P.O. Box 64,
3830 AB Leusden
The Netherlands
Tel: +31.(0)33.432 6044 / 6000; Fax: +31.(0)33.494 0791
E-mail: c.wettasinha@etcnl.nl

English Language Editor:
Giles Stacey
ENGLISHWORKS
Wim Sonneveldstraat 50
7558 LW Hengelo
The Netherlands
Tel: +31.(0)74.278 3115; Fax: +31.(0)74.278 3149
E-mail: stacey@dds.nl

Design
Kon. BDU Grafisch Bedrijf bv

English Editing by
Englishworks, Hengelo

Printed on environmentally friendly paper by
Kon. BDU Grafisch Bedrijf bv

Sponsored
ENERGIA News is sponsored by the Directorate General of International Co-operation (DGIS) The Netherlands

ENERGIA News