GENDER AND SUSTAINABLE ENERGY

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NEWSLETTER OF THE NETWORK FOR GENDER AND SUSTAINABLE ENERGY

Contents

The findings of EnPoGen indicate that poverty remains a key barrier to the sustainable adoption of improved energy services, and that understanding gender differences is critical to being able to address energy needs fully. The photograph shows women in Sri Lanka using electric sewing machines to earn an extra income. (Photo: Courtesy of René Massé)

EnPoGen: Operationalising Gender and Poverty in Energy

There is increasing recognition of the importance of taking poverty and gender into account in the design, implementation, and assessment of energy projects. Practitioners around the world are attempting to institute poverty- and gender-aware projects, and document experiences in order to share lessons with others interested in similar initiatives. Recognising the value of such initiatives, donors have been supportive. To some extent, even the private sector is beginning to see the usefulness of poverty and gender foci: in order to better understand the market for energy products and services. However, there remains much uncertainty about how to "operationalise" poverty and gender in the energy sector: how to put poverty and gender concepts into practice within the context of actual projects on the ground, and the institutional and governmental policies that impact upon them.

This special edition of ENERGIA News is dedicated to a significant and pioneering initiative by the World Bank's Asia Alternative Energy Program (ASTAE). ASTAE's Energy, Poverty and Gender initiative (EnPoGen) has supported three country studies that examine the linkage between energy, poverty, and gender in China, Sri Lanka, and Indonesia. Simultaneously, EnPoGen has supported a complementary operational exercise to develop a Monitoring and Evaluation Framework and methodology for the design and assessment of poverty and gender impacts of rural electrification projects. These initiatives have helped demonstrate the value of incorporating gender and poverty approaches into rural energy initiatives, and provided valuable lessons for ASTAE -and to the World Bank and other rural energy programmes- in applying these approaches to improve the lives of project beneficiaries and increase project effectiveness.

ENERGIA would like to thank the World Bank for its support to the development of this issue of ENERGIA News.

Enno Heijndermans' article provides an overview of the EnPoGen initiative and how it fits within ASTAE's and the World Bank's broader energy strategy. The lessons coming out of EnPoGen will be disseminated among practitioners, researchers, donors, and policymakers with the ultimate goal of influencing ASTAE's, and others', energy projects so that they become more poverty sensitive and gender equitable.

This issue also features an interview with Dr Dorothy Lele, a consulting sociologist, on her experiences with efforts to focus on the social and gender dimensions of international energy and other development initiatives. The interview provides a peek into her background, interests, experiences; and insights into the primary barriers and opportunities facing the incorporation of gender in energy investments. From her perspective, as a member of the EnPoGen Peer Review Committee for the multicountry study, Dr Lele provides advice on what can be learnt from the EnPoGen process, and what steps should be taken to build on lessons learnt.

The article by Dr. Shijun Ding describes the China country study, which assessed the impacts of rural electrification on poverty and gender in the Hubei Province of Central China. The study found, not unexpectedly, that although electrification can greatly reduce the amount of time farming families spend on domestic tasks, electrification impacts on males' and females' use of time in very different ways. These findings suggest that efforts to address improved energy services should focus more on time-use issues and how men and women may be impacted upon differently.

In Gérard Madon and Mayling Oey-Gardiner's article, the authors describe the Indonesia country study which assessed the impacts of rural electrification on poverty and gender in West Java and South Sulawesi. One of the main findings of the study was that rural electrification efforts should place their main emphasis on access to energy services and removing barriers, such as access fees, for the poor. Other important findings include the need for energy efficiency measures, the need to provide low cost alternatives to electricity, the importance of end-user training programmes, and the need for simple impact assessment tools.

René Massé and Mallika Samaranayake describe the Sri Lanka experience, which complemented many of the findings of the Indonesia study. It was found that not only cost issues, but also project design issues hamper the ability of the poor to access electricity. Electrification projects usually use economic criteria to select the communities to be electrified, and thus neglect poor communities. Yet, as the authors point out, these villages could provide good business for microdistributors were policies in place to promote such distributed systems. The study did find, however, that those households that did gain access to electricity experienced significant benefits. Women greatly valued having more time to spend relaxing with their families. This study results in important recommendations for refocusing electrification projects to better serve rural markets.

The article by Rekha Dayal and Johanna Gregory describes a recently developed planning and management tool for assessing end-user needs and for monitoring and evaluating social development-related impacts of rural electrification initiatives. The methodology combines participatory and survey tools, and allows project managers, implementers, and other stakeholders -including community members themselves- to assess both qualitative data needed to understand the needs and priorities of the target communities, and quantitative data needed to systematically measure and analyse the benefits and costs of rural electricity interventions. Unlike conventional monitoring and evaluation methodologies, this one should be applied from the project preparation stage onwards so that the input of the potential beneficiaries can be taken into consideration during the conceptualisation and design of the project.

The article by Elizabeth Cecelski, entitled Enabling Equitable Access to Rural Electrification: Current Thinking on Energy, Poverty and Gender, reviews the current scenario and identifies key areas for further work to strengthen the understanding of the related issues. The article describing the process of establishing the National Network on Gender, Energy and Water in Nepal, provides the reader with examples of spin-off activities at the grassroots level to strengthen the efforts to establish and apply the linkages.

Two common themes running through all of the discussions are: 1) the high demand but low ability to pay for improved energy services; and 2) the existence of gender differences in energy use and preferences. These findings, though not surprising in their nature, are noteworthy in their similarity and universality. They indicate that poverty remains a key barrier to the sustainable adoption of improved energy services, and that understanding gender differences is critical to being able to address energy needs fully; themes that should be addressed in the design, implementation, and impact assessment of all energy initiatives, large or small.

It is our hope that the lessons learnt from the EnPoGen initiative will lead to a greater understanding of how to "operationalise" gender and poverty approaches in energy, both

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◆ Rekha Dayal is a social development specialist with a multidisciplinary background in economics, sociology, and community health and social medicine. Rekha has extensive project-related experience in agriculture, energy, health, education, and drinking water and sanitation areas, and has worked widely throughout Asia and parts of Africa. After working for almost a decade with many multilateral and bilateral agencies, she joined the World Bank in 1990. Since 2000, Rekha has been operating independently, and is the director of The Mallika Consultants based in Noida, India, and Bangkok.

◆ Johanna Gregory is a sustainable energy and gender specialist in Winrock International's Clean Energy Group. Johanna's background is in energy and environmental policy, gender, participatory approaches, and microfinance. She has worked in Latin America, Asia, and Africa. She holds a Masters degree in Energy and Environmental Policy, and a Bachelors degree in Anthropology and Environmental Studies.

◆ For the guest editors' contact details, please refer to page 24.

News from the Secretariat

National Stakeholder Consultations on Gender and Energy in Asia

ENERGIA has recently intensified its activities in Asia, by stimulating national gender and energy networks in Asia. As part of Phase 2, *ENERGIA* is assisting interested stakeholders in initiating such national networks, through national consultation workshops. A call for proposals was sent out in early September by email to all Asian subscribers to ENERGIA News and the subscribers to ENERGIANet (the electronic newsletter of *ENERGIA*). The closing date for submission of proposals was 18 September 2002, and it is planned to hold workshops before the end of the year. Twenty proposals were received by the *ENERGIA* Secretariat, out of which seven proposals have been selected for funding (see box below).

Participation in the ICIMOD-UNEP Regional Stakeholders' Consultation Meeting[1]

The ICIMOD (International Center for Integrated Mountain Development)-UNEP Regional Stakeholders' Consultation on "Incorporating Roles of Women in Energy and Water Management Practices" was held from 24-27 September 2002 in Nepal. Elizabeth Cecelski, representing *ENERGIA*, was invited as a resource person to bring a strong gender focus to the workshop.

Two participants from Africa were also supported by *ENERGIA* to attend the workshop:

- Khamarunga Grace Banda, a gender and energy expert at the Minerals and Energy Policy Center (MEPC) in South Africa, and the focal point for SAGEN, the Southern African Gender and Energy Network; and
- Beatrice Khamati Njenga of First Rank Consultants, Nairobi, Kenya, and a member of the *ENERGIA* Planning Group.

The presence of Khamarunga and Beatrice proved to be a good opportunity for South-South exchange, and synergy was found between experiences in Africa and Asia, notably:

- The culture of male dominance;
- The stratification of roles between men and women;
- The need for capacity building for gender and energy;
- The need to link gender and energy to other development needs;
- The need to explore new analysis tools for gender and energy; and
- The centrality of religion in a community.

Participation in the workshop has also increased the capacity of Khamarunga and Beatrice to advocate for gender and energy.

Update on *ENERGIA* Phase 3 Proposal

***ENERGIA* is pleased** to inform you that the proposal, which has been developed for Phase 3 of the *ENERGIA* programme, has been submitted to the Netherlands Directorate General of International Cooperation (DGIS) and the Swedish International Development Cooperation Agency (SIDA). Funds will further be actively sought from other donors and *ENERGIA* is preparing to hold a donors meeting later in 2002, where the proposal will be discussed with invited donor agencies.

Brief Report from WSSD[2]

A delegation representing *ENERGIA* successfully participated in the World Summit on Sustainable Development (WSSD), held from 26 August to 4 September 2002 in Johannesburg, South Africa. The core *ENERGIA* team members were:

- Sheila Oparaocha, *ENERGIA* Secretariat, The Netherlands
- Gail Karlsson, *ENERGIA* consultant, USA
- Adelia de Melo Branco, Joaquim Nabuco Foundation, Brazil
- Tieho Makhabane, Dikepolana Resources Ltd, South Africa
- Khamarunga Grace Banda, MEPC, South Africa
- Jyoti Parikh, Indira Gandhi Institute of Development Research, India
- Rachel V. Polestico, Xavier University, Philippines
- May Sengendo, Makerere University, Uganda

Activities at the WSSD were mainly centred on advocacy, networking, and engagement in plans for energy partnership initiatives:

- The *ENERGIA* team made strong gender and energy presentations at various venues, including the Implementation Conference, a UNDP-sponsored workshop on gender and energy, and the NGO Women's Caucus meetings.
- The *ENERGIA* team represented Women, as a major group, at the multistakeholder discussions on energy that took place between governments, multilateral organisations, non-governmental organisations, and other major groups acknowledged by the United Nations.
- A television show taped in Bali at PrepCom 4, including a presentation by Gail Karlsson on *ENERGIA*'s work, was shown at a side event sponsored by the International Sustainable Energy Organization.
- The special event on gender and sustainable energy at the Women's Tent, co-sponsored by *ENERGIA*, proved to be a major networking opportunity.
- Another useful networking opportunity arose at a side event sponsored by the African networks ENDA and KITE, where Fatma Denton presented a new ENDA publication "Gender: The Missing Link to Energy for Sustainable Development".
- The *ENERGIA* team participated in several working groups on potential energy partnerships. *ENERGIA* has also been included in the planning process for the Global Village Energy Partnership (GVEP), a formal Type II partnership initiative introduced by the UNDP Sustainable Energy Programme and ESMAP.

A full report of *ENERGIA*'s activities and the outcomes of the WSSD as they relate to gender and sustainable energy will be presented in the next issue of ENERGIA News (issue 5.4), to be published in December 2002. ■

[1] *Partly based on Khamarunga Banda's report on the meeting.*

[2] *Based on Gail Karlsson's draft report on ENERGIA's participation in the World Summit on Sustainable Development.*

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within World Bank/ASTAE and also in other energy programmes. The EnPoGen initiative can serve as an important catalyst in the process of furthering energy initiatives that are more responsive to the needs and priorities of all members of the communities they aim to serve. ■

ENERGIA is grateful to Rekha Dayal and Johanna Gregory, the Guest Editors for this issue, who worked jointly with Elizabeth Cecelski of the *ENERGIA* Editorial Board.

International Programmes: Focus on

Asia Alternative Energy Program of the World Bank: Energy, Poverty and Gender Work

Enno Heijndermans

In 2000, the Asia Alternative Energy Program (ASTAE) initiated the Energy, Poverty and Gender initiative (EnPoGen). The objective of this initiative is to improve the World Bank's rural and renewable energy projects, and project components, through gaining a better understanding of the impact of these projects on poverty alleviation and gender equity.

EnPoGen supported four initiatives: three country studies to analyse the linkages between energy, poverty, and gender, and the development of a methodology for monitoring and evaluating the impacts of rural and renewable energy projects on poverty alleviation and gender equity. Details of these initiatives are provided in the articles found in this edition of ENERGIA News. To understand how the EnPoGen initiative came about, it is necessary to know some of the background of ASTAE.

Asia Alternative Energy Program

ASTAE was established in 1992 by the World Bank in cooperation with UNDP and bilateral donors, notably the Netherlands and the USA. The mandate of ASTAE is to "mainstream" sustainable energy in Asia. To achieve this, ASTAE supports alternative energy (renewable energy and energy efficiency) projects in both the East Asia and the Pacific region and the South Asia region with the aims of protecting the environment and providing isolated rural households with access to modern energy. When ASTAE started, there were virtually no alternative energy projects by the World Bank in Asia. Today, the total alternative energy projects value in Asia is over US$ 2.8 billion, of which the World Bank/Global Environment Facility provides US$ 1.1 billion with the balance made up by contributions from recipient countries and private sector investment.

The ASTAE portfolio (i.e. projects supported by ASTAE) includes 36 projects, of which four are completed, 14 are currently being implemented, and 18 are under preparation. The portfolio includes projects on renewable energy, energy efficiency, and sometimes both. Environmental projects focus on the replacement of electricity from thermal plants, the avoidance of emissions of NOx, SOx, and particulates to protect the local environment, and of CO_2 and other greenhouse gases to protect the global environment. "Off-grid" renewable energy projects focus on providing rural people with access to modern energy. Although these projects usually have a positive impact on the local and global environments (and are therefore eligible for support from the Global Environment Facility); their main objective is to enhance the quality of life and provide opportunities for productive use and income generation from improved energy resources. A good example of such an "off-grid" rural energy project is described in the box below. The projects completed and underway in the ASTAE portfolio have helped to avoid 1.3 GW of electricity generating capacity and provided access to modern energy sources for 500,000 households.

The ASTAE strategy in the 1990s was straightforward. ASTAE had a clear objective (mainstreaming alternative energy in the World Bank's lending operations in Asia) and a clear target (10% of World Bank power sector lending in Asia). The challenge in the early years was to create a demand for ASTAE support in project preparation. This supply-driven approach was justified on the grounds of the benefits of alternative energy for client countries. Over the years, the interest in developing alternative energy projects, with support from ASTAE, has slowly increased. This is reflected by the steadily increasing number of alternative energy projects. As a result, ASTAE has met its objective and surpassed its target in 2000. Now that alternative energy has reached maturity in the Energy Sector of the World Bank, ASTAE faces new challenges and has to demonstrate that alternative energy options can make a significant and sustainable contribution towards the World Bank and Energy Sector strategies[1].

The EnPoGen Project

Based on the World Bank's and its Energy Sector's strategies, it is clear that all activities supported by the World Bank should contribute to poverty alleviation, viewed to encompass not only material deprivation, measured by income or consumption, but also low achievements in education and health, vulnerability, exposure to risk, and a lack of a voice and power. In response, ASTAE initiated the EnPoGen programme to identify and analyse the linkages among energy, poverty alleviation, and gender equity, in order to support the design of alternative energy projects that are better responses to the strategies.

Women in China soldering contacts to PV cells for assembly into PV modules.
(Photo: Courtesy of Enno Heijndermans)

Sri Lanka Energy Service Delivery Project

The Energy Service Delivery (ESD) Project in Sri Lanka, which received extensive ASTAE support during preparation and implementation, financed 56 off-grid community-owned village-hydro projects, serving 2000 households. Further, through the ESD Project, four private companies are marketing solar home systems that meet ESD standards in rural Sri Lanka, with 50 dedicated solar centres in the provinces for sales and service. The ESD project has supported the installation of 21,000 solar home systems. Due to the success of the ESD project, the Government of Sri Lanka requested a new project to follow. The Renewable Energy for Rural Development (RERED) Project was approved by the board of the World Bank in June 2002 and implementation will start shortly. The objectives of the RERED project are to expand commercial provision and utilisation of renewable energy, and to pursue economic development and improvements in quality of life through more productive and efficient use of rural energy resources. The RERED project aims to install 85,000 solar home systems, connect 15,000 households to mini-grids, and establish 85 MW of grid-connected renewable electricity production capacity.
It is interesting to note that the RERED project, which has a total value of US$ 133 million of which US$ 75 million is credit and US$ 9 million a GEF grant, is the largest World Bank project ever in Sri Lanka. This reflects how renewable energy has come a long way, from being a marginal component in a traditional project, to becoming the largest freestanding operation in a country.

At the start of the EnPoGen initiative, a background report was prepared followed by a participatory brainstorming workshop. The background report, "Enabling Equitable Access to Rural Electrification. Current Thinking on Energy, Poverty and Gender", prepared by *ENERGIA*'s Elizabeth Cecelski, summarised the current thinking on the impact of electricity on poverty alleviation and gender equity, and identified the major players and projects in this field. The participatory brainstorming workshop brought together experts working in the field of energy, poverty, and gender, to provide inputs to refine the EnPoGen project objective, approach, and outputs. Based on the background report, the results of the brainstorming workshop, and further internal discussions, the four initiatives described in this issue of ENERGIA News were selected for implementation.

The objectives of these initiatives were to: (a) identify the linkages among access to energy/electricity, poverty alleviation, and gender equity, (b) quantify the impact of access to modern energy on poverty alleviation, gender equity, and related development issues, (c) learn lessons from the country studies which can improve the impact of World Bank and ASTAE projects on poverty alleviation and gender equity, and (d) contribute to the development of a methodology for monitoring the impacts of energy/electricity projects on poverty alleviation and gender equity. China, Indonesia, and Sri Lanka were selected for the country studies because ASTAE had been very active in these countries and had the necessary background information and contacts. The monitoring and evaluation (M&E) methodology, supported in cooperation with the World Bank Energy Sector Management Assistance Program (ESMAP), although partially tested for use in a World Bank Rural Electrification and Transmission Project in Cambodia, can be applied to World Bank rural electrification projects in any country. Further details on the background report, country studies, and the M&E methodology, can be found in the other articles in this issue of ENERGIA News.

To ensure the quality of reports prepared under EnPoGen, ASTAE has institutionalised an extensive peer review process. A team of international experts was contracted to review all proposals and reports, and to provide extensive and detailed comments. A quality assurance group, consisting of Dominique Lallement of ESMAP, Joy Clancy of TDG, University of Twente, and Judy Siegel of Winrock International, have offered overall guidance on the projects. Peer report-reviewers have included Elizabeth Cecelski of *ENERGIA*; Rekha Dayal of The Mallika Consultants; Athar Hussain of the London School of Economics and Asia Centre; Govind Kelkar of the UN IFAD-WFP gender mainstreaming project in the Asia-Pacific region and the Asian Institute of Technology; Dorothy Lele, Consulting Sociologist to the World Bank; and Patti Petesch, International Development Consultant to the World Bank. As a contribution in-kind to EnPoGen, Rolf Posorski provided detailed comments on behalf of GTZ.

The four main activities of EnPoGen have resulted in a wealth of information. To make this available to all interested parties, a synthesis report is to be prepared, summarising the main findings and lessons learnt. This report will also contain clear recommendations on how to improve rural and renewable electrification projects in order to optimise their impacts on poverty alleviation and on gender equity. This report, and all other reports produced under the EnPoGen banner, will subsequently be professionally edited using a standard layout. All these edited reports will be made available to any interested party through the internet and on a CD-ROM which will be available upon request. All subscribers to ENERGIA News will automatically receive this CD-ROM as it will be included in a future issue of ENERGIA News.

The concluding activity of the EnPoGen initiative will be a workshop in Washington DC at the end of this year to present the results. This workshop is primarily aimed at World Bank staff, but will also be open to other interested parties. In this workshop, after the EnPoGen results have been presented, there will be a discussion on the relevance of the outcomes and possible follow-ups. ■

The findings, interpretations, and conclusions expressed in this article are entirely those of the author and should not be attributed in any manner to the World Bank, to its affiliated organisations, or to members of its Board or Executive Directors or the countries they represent.

[1] *See World Development Report 2000/2001, Attacking Poverty. World Bank, January 2001 and http://www.worldbank.org/energy/pffs/business_renewal.pdf*

◆ Enno Heijndermans is a consultant for the World Bank Asia Alternative Energy Program (ASTAE). From 1998 to mid-2000 he was based in the World Bank office in Washington, and he now works for ASTAE from the Netherlands. He has been involved in a number of projects supported by ASTAE, including renewable energy projects in China and Vietnam, and EnPoGen. He introduced within ASTAE the use of participatory project planning tools based on the Objective Oriented Project Planning methodology developed by UNIDO, and moderated a number of participatory project planning workshops for ASTAE using this tool. He previously worked for the Biomass Technology Group, based at the University of Twente in the Netherlands, UNIDO, and ETC Netherlands.

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Meeting *ENERGIA* Members

Dorothy Lele

Consultant

Interview by
Johanna Gregory and Rekha Dayal
(guest editors for this issue)

Tell us a bit about yourself, and how you came to be involved in gender and energy.

I had been interested for some time in the causes of deforestation in Maharashtra, India, where I regularly visited my husband's family. I conducted a study on community forestry there as part of my MA in Development Studies in the late 1980s, and found that a major cause of deforestation was the need for cooking fuel – which was seen as a women's energy need. When I finished my degree in Canada, I was hired by the Canadian International Development Agency (CIDA) as a development consultant to help implement their new Women in Development (WID) policy. I was hired to assist their Energy Sector in integrating women's energy needs into their programmes and projects. Ever since, I have been frustrated by the continuing fact that cooking needs, since they are still mainly met by biomass fuels, have not been considered or addressed by CIDA's Energy Sector, which only deals with commercial energy sources. They define it as an issue for the Forestry Sector.

Why do you consider it important to focus on the social and gender dimensions of international energy and other development initiatives?

Any plan or action that is not matched to its social context will not meet its objectives. If it does not consider gender differences and relationships, it may not have a positive effect and may inadvertently cause damage. One should not expect that techniques and processes that are successful in the West can be transferred to developing countries without major adjustments to the very different social and cultural contexts and processes. It is probably not necessary to focus on social and gender dimensions in energy initiatives, as long as they are understood and properly integrated as essential elements and factors in planning and implementation.

What do you see as the primary barriers and opportunities facing the incorporation of gender into large-scale energy projects and programmes today?

We should distinguish between incorporating gender a) into programme or project work, and b) within the workforce of a partner institution.

The major barriers to considering gender issues in large-scale energy programmes are the supply-side orientation of these energy projects coupled with their minimal consideration of end-use issues; the segmentation of the energy industry into specialised subsectors that are difficult to combine in any one project to meet users' various needs; and the costs of commercial energy, compared with collected sources, making it too expensive for most households to use for cooking. Opportunities include increased appreciation of the importance of gender issues, women's energy use, and their participation as users in project initiatives; increased understanding of energy issues in environmental degradation; and the development of new technologies.

The major factors that influence the treatment of gender issues in the workplace are: the attitudes of those in charge (usually men); prevailing policies, practices and outside pressures; and the strengths and interests of the gender-sensitive women and men (in numbers, talents, and commitment) working there. These factors constitute both barriers and opportunities. I see my role in this area as a catalyst providing support for women to develop and achieve their aspirations through their own initiatives.

As a member of the EnPoGen Peer Reviewer Group, in your opinion, what are some of the key findings or lessons that have come out of the EnPoGen initiative?

Major findings that I noted were:

- Most of the benefits of energy development projects go to the non-poor;
- Renewable energy services are generally too expensive for the poor to buy on their own;
- The importance of promoting community involvement in decision-making (through policies and regulations allowing decentralised energy initiatives), with additional efforts or regulations to include the poor who would otherwise be excluded;
- Advantages and disadvantages of grid power versus renewables from a user's viewpoint, and of alternative supply options;
- Documentation of the importance, in terms of impacts, of who chooses improved energy forms and technologies, and for what uses;
- Complementary infrastructure is needed to tap the poverty-reducing potential of improved energy services; and
- Methodologies are needed for measuring the social and gender effects of energy development activities.

What steps do you think should be taken by ASTAE/the World Bank in light of the EnPoGen findings?

- Publish and publicise the reports with a summary of the main findings and implications.
- Support initiatives that develop knowledge and experience in improving energy services for the poor.
- Take leadership in bringing people and organisations together to discuss successful approaches and to obtain financing.
- Fund community pilot projects to develop successful models that include the poor.

What can energy programmes outside the World Bank learn from the EnPoGen process?

- The importance of examining the linkages between: a) energy development, poverty reduction and gender differences; and b) various energy forms for different uses, and technologies and supply mechanisms for different user groups.
- The need for planners and policymakers to use an integrated analysis of energy needs that covers all uses and sources at the planning stage, rather than focussing on only one source or technology. This would help to bring biomass use by poor households into mainstream analysis and subsequent action. There is a need to support the development of low-cost energy forms and technologies for those with very limited ability to pay.
- The usefulness of disseminating research findings and involving several players in their analysis. ■

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Networking Around the World

Establishment of the National Network on Gender, Energy and Water in Nepal

Gyami Shrestha
Ganesh Ram Shrestha

With the support of *ENERGIA*, the National Consultative Meeting on Gender, Energy and Water in Nepal was organised. As a direct output of the workshop, the National Network on Gender, Energy and Water in Nepal was established. The whole process, starting from the proposal-writing phase to the actual workshop, was quite a thrilling one.

The Center for Rural Technology, Nepal (CRT/N) had been discussing the organisation of a consultative workshop about forming a national network in Nepal with *ENERGIA* and Dr. Kamal Rijal of ICIMOD -a member of the *ENERGIA* Planning Group- for some time. Based on their suggestions, and the guidelines provided by *ENERGIA*, CRT/N prepared a brief proposal for organising the workshop, which received seed funding from *ENERGIA*.

An initial informal meeting to discuss gender as it relates to energy and water was held in Nepal on 18 March 2002 (see ENERGIA News 5.2). The meeting agreed to organise a national consultation workshop, and a working group was formed to plan for this. Two days before the national consultation workshop, an informal session prepared general guidelines to steer the group discussions towards the formation of an action plan, as well as the functional modality of the network and its focal point.

The National Consultative Workshop

The 'National Consultative Workshop on Gender, Energy and Water in Nepal' was organised by CRT/N in Kathmandu on 13 and 14 August 2002. A total of 35 participants, 22 of whom were women, attended the workshop. The workshop had four sessions: the inaugural session, with a welcome address by Ganesh Ram Shrestha of CRT/N, and a keynote speech by Dr. Minendra Prasad Rijal[1]; a paper presentation and discussion session; followed by a group working and plenary session; and finally a concluding session.

The following papers were presented at the workshop:

- Dr. Chandra Bhadra - Tribhuvan University: *"Energy and Water: Institutional and Policy Aspects"*
- Dr. Indira Sakya - Royal Academy of Science and Technology (RONAST): *"Gender in Energy and Water: Capacity Building and its Implementation"*
- Dr. Kamal Rijal – International Center on Integrated Mountain Development (ICIMOD): *"Towards a Framework for Linking ENERGIA: The International Network on Gender and Sustainable Energy with the National Initiative on Gender, Energy and Water"*

These presentations were followed by other sessions that contained lively discussions and the sharing of issues and experiences on gender, energy, and water in Nepal. The participants realised the need for a national network to present and advocate for these issues more effectively at both the national and the international level. The national network was thus established. Recognising CRT/N's initiative in organising the network, and its work on gender, energy and water, the participants unanimously agreed that the organisation should become the National Focal Point (NFP).

A Network Steering Committee of five members and a five-member Resource Team were also established. The members were selected to give a balanced representation from government, NGO, and International NGO sectors. A preliminary action plan was prepared based on the discussions that included:

- The expansion of membership through information dissemination to all concerned organisations and individuals;
- Formation of sub-networks from the national level to the district and local levels;
- Publication of a newsletter and the formation of an e-group;
- Organisation of periodic meetings and workshops; and
- Influencing decision-making concerning energy policies and programmes within specific organisations and also at the governmental level.

The possible goals and objectives of the network were discussed and presented by the participants working in groups. However, it was agreed that these should be further discussed and established later by the Steering Committee. It was also argued that at least four or five Asian NFPs should be established and strengthened before a regional focal point was organised. Furthermore, it was agreed that a strong national network should be established and developed before advocacy for the establishment of a regional focal point was begun. The participants felt strongly that Nepal should be considered for this regional responsibility given its central geographical location and its cordial relations with all the countries in the South Asian region.

Post-Workshop Events

At the first meeting, held at CRT/N, of the Network Steering Committee and Resource Team on 11 September 2002 it was decided that concerned individuals and organisations could be granted membership and that a different fee structure would be established for each category. A directory of members and their activities, and a directory of experts, may also be created.

Group discussion at the National Consultative Workshop on Gender in Relationship to Energy and Water in Nepal. (Photo: Courtesy of CRT/N)

A dinner for the NFP, the Steering Committee, and the Resource Team, was hosted by ICIMOD on 26 September 2002 at the end of the UNEP-ICIMOD Regional Stakeholders' Meeting on Women in Energy and Water Management. The National Consultation Workshop Report was formally presented by the NFP to Elizabeth Cecelski, who had been attending the meeting. Beatrice Khamati-Njenga and Khamarunga Banda of the gender and energy network in Africa, and Elizabeth Migongo-Bake of UNEP, also attended this dinner. The Nepalese participants had a unique opportunity to hear about the activities of the African Network from the founders themselves and to express their own experiences with *ENERGIA*-Nepal.

The second meeting of the Steering Committee and the Resource Team was held on 4 October 2002 to discuss the vision, mission, and goals of the network. The output of this meeting has been circulated among the participants for further feedback and will soon be finalised.

Conclusion

The entire process of organising the national consultation and establishing the network has been a very valuable learning experience for all of us at the NFP, and hopefully for all our friends who helped and supported us throughout the process. Step-by-step, ideas were generated by many people and very openly discussed within the organising team and the working group. We believe that the on-going dialogue and cooperation among the policy, research, and implementation sectors from the very beginning, and the inclusion of their interests and views in moulding the workshop structure, is one of the reasons for its success and subsequent impact. ■

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Women's Energy Use: Evidence from Poverty Afflicted Areas of Rural China

Shijun Ding

Fuelwood is the major energy source for household energy consumption in poverty-afflicted mountain areas of China. Women disproportionately bear the negative impacts of inadequate energy services. The reduction of time spent on 'domestic' tasks following electrification does not have equal impacts on women and men, suggesting that interventions addressing energy use and poverty reduction need to be more focused on gender equity.

Women in the village enjoying the participatory exercise of examining how time allocation had been affected by the recent arrival of electricity.
(Photo: Courtesy of Shijun Ding)

The Asia Alternative Energy Program (ASTAE) of the World Bank commissioned an Energy, Poverty and Gender initiative (EnPoGen) in three Asian countries; China, Indonesia, and Sri Lanka. The project was managed by the Institute of Development Studies (IDS), at the University of Sussex, with Dr Henry Lucas as project manager. The global objective was to assess the impacts of rural electrification on poverty alleviation and gender equity, and to contribute to improving the design of future electrification projects and appraisal methodologies, especially regarding alternative energy options. This paper explores women's roles in energy use in rural China, using data from the above project.

Fieldwork for the project was undertaken in Hubei province of central China in October 2000. Three mountain villages, in three state-defined poverty-level counties, were selected carefully; one without electricity (Xiaozhu), one with microhydro electricity (Duiwotai), and one with grid connection (Housanxi). 36 households in each village were selected for the questionnaire survey. The fieldwork team members were from Huazhong Agricultural University (two males and one female), the Center for Renewable Energy Development, China (one female), and IDS (one female).

Methodologies used included document review, semi-structured questionnaires, quantitative methods, qualitative approaches such as focus group discussions, and participatory techniques such as key informant interview and village mapping. Gender-related methodological issues were highlighted. For example, a participatory exercise was undertaken in which two focus groups (one of women and one made up of men) were separately asked to list their daily activities and the average time allocated to each activity both before and following the arrival of electricity. In-depth interviews with women were also conducted. The findings of these exercises are discussed below.

Table 1. Energy Systems in the Three Villages

Villages	Activities	Primary energy	Perceived problems with energy services
Xiaozhu	Production	Human power Draught animal	*Stove*: time consuming; low efficiency. *Fuelwood*: time consuming; smoke and ash harmful; constant attention required; not warm enough; hard to collect. *Kerosene*: costly; weak light; smoke harmful; easily extinguished. *Coal*: costly; distance to carry.
	Cooking	Fuelwood	
	Lighting	Kerosene	
	Space heating	Fuelwood	
Duiwotai	Production	Human power Draught animal	*Stove*: time consuming; hard to light. *Fuelwood*: smoke; hard to gather; constant attention required. *Microhydro power*: not stable; very costly. *Coal*: costly; distance back to the village.
	Cooking	Fuelwood	
	Lighting	Electricity	
	Space heating	Fuelwood	
Housanxi	Production	Human power Draught animal	*Stove*: costly; smoke. *Fuelwood*: time consuming; deforestation; smoke harmful. *Electricity*: not stable; low voltage. *Charcoal*: ash harmful.
	Cooking	Fuelwood Charcoal	
	Lighting	Electricity	
	Space heating	Fuelwood	

Energy Use and Rural Poverty Linkages

People in poverty-afflicted rural areas frequently suffer from the so-called "vicious circle" of energy poverty (IDS, 2002). As they are energy poor, they have no energy to operate machines, and so they achieve low productivity. Low productivity results in small surpluses and little cash, and hence less money to buy improved energy services. Attempts need to be made to break the circle at some point.

One of the key issues when addressing women's energy needs is reducing time poverty, that is releasing women's labour time to enable economic activities, so that it will be possible for them to earn income, and hence increase their ability to pay for improved energy services.

Village Economy and Energy Systems

The three villages are experiencing tremendous social and economic changes. While agricultural production is still the main economic activity, non-farm activities are becoming increasingly important and their share of total household income is rising significantly, by 36-52%.

Typical end uses of energy are shown in Table 1. Energy for production purposes is mostly from human power and draught animals, supplemented by some coal and electricity. Energy for cooking and space heating comes predominantly from fuelwood and crop wastes, while lighting is by kerosene in the village without electricity, and electricity in the others, supplemented by kerosene and dry cell batteries.

Impacts of Improved Energy Services on Women

Poor farmers are not only resource poor but also time poor. Women in poor areas shoulder the burden of most 'domestic' activities (regarded as secondary to main 'productive' tasks such as working in the fields on crop production), such as cooking, preparing pig fodder, and collecting fuelwood. Such 'domestic' activities require substantial time inputs, and thus there is less time to spend on 'productive' activities. Table 2 shows the time allocated to various 'domestic' activities in the winter months.

Women spent an average of 44–50 hours per week on 'domestic' tasks and men between 15 and 31 hours. Women had the primary responsibility for cooking and washing. Further, women spent an average of 7-10 hours each week on pig feed preparation, while men only 1-3 hours.

Improved energy services could reduce the time involved in 'domestic' tasks considerably. With electrification, the major time savings occur in grinding and milling activities. In Housanxi, households without an electric mill have to turn their stone mill by human power to grind corn, which takes an average of 8.4 hours by men and 7 hours by women a week in winter. However, in households with an electric mill, the task is mainly undertaken by men, spending about one hour a week on it.

Women disproportionately bear the negative impacts of inadequate energy services. Cooking by fuelwood, illuminated by a kerosene lamp, with no ventilation leads to women suffering from

Table 2. Hours Spent on 'Domestic' Activities per Week in Winter

'Domestic' activities	Xiaozhu		Duiwotai		Housanxi	
	Women	Men	Women	Men	Women	Men
Cooking	18.6	2.7	20.2	1.1	23.9	0.6
Fuel gathering	5.6	8.0	9.2	5.4	5.2	6.4
Fetching water	2.0	5.7	2.4	3.7	1.6	4.8
Washing	3.9	1.1	2.2	0.4	3.5	0.4
Grinding/milling	3.7	4.9	1.6	0.7	0.3	1.2
Preparing pig food	8.6	2.3	7.3	0.6	9.7	2.5
Grazing cattle	0.5	5.0	4.8	1.9	0.4	6.8
Other	1.3	1.2	1.8	1.4	3.1	1.0
Total	44.2	30.9	49.5	15.2	47.7	23.7

Table 3. Time spent on tasks following electrification as a % of time spent before in Housanxi

Tasks	Women	Tasks	Men
Domestic: cooking, cleaning, child care	99	Domestic: cooking, cleaning, fetching water	81
Looking after pigs	45	Collecting fuelwood	94
Working in the fields	157	Working in the fields	91
Resting	132	Resting	144
Sleeping	101	Sleeping	110
Total	100	Total	100

eyes diseases, such as described in Case 1 below. Women often walk long distances to collect fuelwood, they suffer frequent falls, bone fractures, fatigue, and miscarriages, caused by carrying fuelwood often weighing 50-70 kg –almost equal to their own body weights.

Although the time spent on 'domestic' tasks by farming people can be reduced after electrification, this does not have an equal impact on women and men. As mentioned earlier, a participatory exercise in Housanxi examined how time allocation by women and men had been affected by the arrival of electricity. The results are shown in Table 3.

There are obviously gender differences. The biggest change for women following electrification was a reduction in the time spent looking after pigs, with the mechanisation of pig fodder preparation and corn grinding. The biggest change for men was a reduction in time spent on 'domestic' activities and a corresponding increase in resting time. Women's resting time also increased substantially, but this was partly offset by an increase in the time spent working in the fields. In some households, such as described in Case 2 below, women's working time even increased with the arrival of electricity, as electricity made it possible for women to move some of the 'domestic' activities into the evening period so that they could work longer in the fields during the day. The illustrative cases are taken from the fieldwork and explain how women can suffer from improved energy services, and may even work longer hours after the arrival of electricity.

Case 1. Women suffer eye disease while cooking

In Xiaozhu, Huang Shuangying complained that when cooking she sometimes could not distinguish the stove and the pan in the weak kerosene light, while at the same time she suffered badly from the fuelwood smoke. Her eyes frequently water, and she uses one bottle of eye drops each month as treatment. Her daughter does homework in the evening under a kerosene lamp, and her eyesight is also badly suffering.

Case 2. Women's working time extended following electrification

Li Zaimei lives in Duiwotai. Her husband is mainly responsible for the work in the fields and fetching water. She does most of the housework and works in the fields in the daytime. The time she allocates to various tasks is as follows: preparing three meals each day, about 3-4 hours; washing (once every 2-3 days), 1-2 hours; collecting pig feed outside (once every 2 days), 3-4 hours; preparing pig feed each day, 3 hours; collecting fuelwood, 2 hours a day. She said "The benefits of electricity are that my son and husband can watch television in the evening and I myself can do housework more easily and conveniently at that time."

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Concluding Remarks

Farmers in poor areas place a high value on improved energy services. From the survey it was seen that, as incomes increase, households increase their consumption of improved energy forms, their welfare is enhanced, and their income-earning potential expanded. From this perspective, introducing improved energy services can play an important role in breaking the 'vicious circle' of energy poverty.

Women's energy needs are likely to be different to those of men. While women spend an increasing proportion of their time working in the fields, they remain primarily responsible for 'domestic' activities, which require a range of energy inputs. The men, primarily working in the fields, mainly depend on human power and draught animals. As the main actors in the energy economies of rural areas, women, and their energy use, will have to be addressed specifically if energy and time poverty are to be reduced. Improved energy services need to be introduced to release women from their heavy burden of 'domestic' tasks. The increased time that women spend working in the fields following electrification implies a level of gender inequity, and suggests that interventions addressing energy use and poverty reduction need to be more focused on gender equity.

The impacts of rural energy development on poverty alleviation and gender equity have clearly been significant. The improved design of future rural electrification projects, taking poverty and gender issues into account (as in the World Bank/ASTAE project), will contribute to reducing poverty and increasing public awareness of gender equity. ■

◆ The author is grateful to Dr. Henry Lucas for allowing the project report to be used, and to the editorial team of ENERGIA News for their comments.

Reference

The Institute of Development Studies (IDS), 2002, "Energy, Poverty and Gender: a Review of the Evidence and Case Studies in Rural China, A Report for the World Bank", by the Institute of Development Studies, at the University of Sussex, UK. Draft Final Report, 31 March 2002.

POLICY PAPER

Gender: the Missing Link to Energy for Sustainable Development

Enda Tiers Monde – Energy Programme has recently published a policy paper: *Gender: the Missing Link to Energy for Sustainable Development*. Its main focus is "rethinking gender dynamics and strategies through sustainable energy services and integrated solutions". The paper was written by Fatma Denton, who presented it at the WSSD in Johannesburg, South Africa.

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EnPoGen Study in Indonesia

Gérard Madon
Mayling Oey-Gardiner

The Indonesia Energy, Poverty and Gender initiative (EnPoGen) commissioned by the Asia Alternative Energy Program (ASTAE) was conducted jointly by MARGE (France) and Insan Hitawasana Sejahtera (IHS, Indonesia). The overall objectives were to assess the impacts of rural electrification on poverty alleviation and gender equity, and to contribute to improving the design of future electrification projects and appraisal methodologies, especially regarding alternative energy options.

Assessing the value of electricity to a poor household in Tasikmalaya, West Java, Indonesia. (Photo: Courtesy of Insan Hitawasana Sejahtera)

The investigation used a "case study" approach to fully encompass the diversity regarding access to electricity, service levels, location, type of electricity supply, and time elapsed since electrification. Five case studies were selected in the provinces of Banten, West Java, and South Sulawesi, covering conventional grid extension, solar home systems (SHS), hybrid solar-diesel generator systems supplying a microgrid, microhydro systems, and rural business services -an activity aimed at raising productive energy use among small-scale rural businesses[1].

Fieldwork was carried out in two phases: a qualitative phase recording the "voices of the people", followed by a quantitative survey in the same locations to complement the initial findings. The qualitative phase was conducted by women researchers who carried out 110 in-depth individual interviews and six focus-group discussions, with separate groups for men and women (three male and three female groups), including people from both electrified and non-electrified households. The three male groups discussed grid, microhydro, and hybrid solar-diesel issues (one group per subject), while two female groups discussed the grid, and one discussed solar home systems.

The quantitative phase, which relied mostly on interviewers from the local statistical office, covered 1800 respondents in 19 villages, including electrified (1300) and non-electrified (400) households, and small business users (100). Regrettably, the sexes of the respondents were not recorded. While none of the selected areas could be classified as desperately poor, the survey samples contain a significant proportion of low-income households, predominantly dependent on agriculture. The results of the quantitative survey substantiate to a large extent the findings from the qualitative phase.

Findings

Electricity and Poverty

Both the qualitative and quantitative phases produced clear findings on the impacts of electrification on poverty alleviation. First of all, they highlighted the fact that non-electrified households are poorer than electrified ones in many ways: lower level of education, more self-employed, fewer small businesses at home, less access to loans from banks or cooperatives, living farther from the main road, in smaller houses more often made with traditional construction materials, more likely to get drinking water from unprotected wells or springs, and having significantly fewer durable goods, notably transport means.

Despite the high real demand for electricity, electrification only reaches the poor to a limited extent. People almost universally want electricity; many regard it as a basic need on a par, in terms of social priority, with other basic services such as education and health. People make substantial efforts to obtain electricity, even by illegal means: 35% of Perusahaan Listrik Negara (PLN)[2] grid-connected households have no meter and rely on informal hook-ups. People are also willing to pay significant amounts relative to their overall income

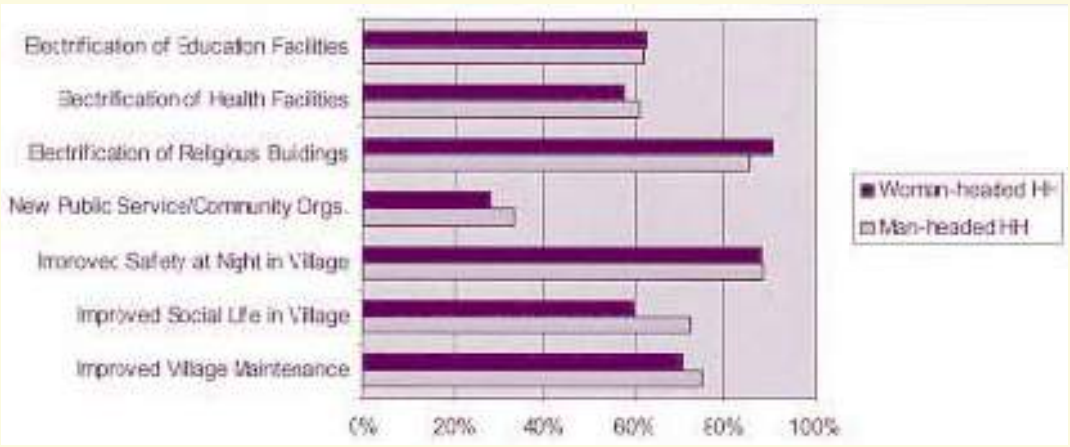

Figure 1: Percentage of households claiming social benefits from electrification (according to gender of household head)

and expenditure. Yet, access remains a problem, partly because of limitations in supply, but also due to the cost of access (up-front charges or connection fees are too high for many of the poor). With the PLN grid electrification, subsidies were provided, but directed towards supporting electricity consumption (subsidised tariffs) rather than improving access. This is why, in the qualitative study, some respondents claimed that the poor subsidise the electricity consumption of the rich.

Lighting is by far the main use of electricity, but the poorest tend to rely on low wattage incandescent bulbs that only slightly improve lighting conditions. However, even for the poorest, electricity use is not limited to lighting: it boosts the purchase of electrical appliances, reducing the gap between income groups in possession of domestic appliances, leading to slightly better living conditions for all.

Poverty causes many households to limit their electricity use. Electricity has little direct effect on improving the household welfare of the poorest since few of the poor can afford electricity for productive purposes and to create household economic activities. However, a large proportion of electrified households do claim that electricity has positive economic and social effects on the village. Electrification is highly valued for its contribution to the development of small shops and new businesses, and improving the village environment (village maintenance, quality of housing). Electrification of health and education facilities is widely seen as an advantage. Electrification is also highly valued for its contribution to improving social life and safety in the village at night; visiting neighbours and conducting meetings become more convenient.

Electricity and Gender

The findings on electrification and gender equity are also clear. First of all, there is little or no discrimination in access to electricity between male- and female-headed households. The proportions of woman-headed households among the sampled electrified and non-electrified groups are practically the same (≈11%), and consistent with the national average. The study also found no significant variations in the perceptions of the value and benefits of electricity according to the gender of the household head, as shown in Figure 1.

Nevertheless, gendered differences do exist: employees of electricity providers and hardware vendors are predominantly male, whereas household electricity use is mostly by women. Delivery of electricity services is defined as masculine. Women hardly contribute to staff numbers in local energy delivery offices. Even though women operate and manage home systems, male service providers tend to communicate with other men as the consumers of their services. Women are usually left out of the direct information chain, notably on use and maintenance. Who uses electricity for productive purposes depends on the scale of the activity, small-scale tends to equate with women's affairs, whereas large-scale tends to be male-oriented.

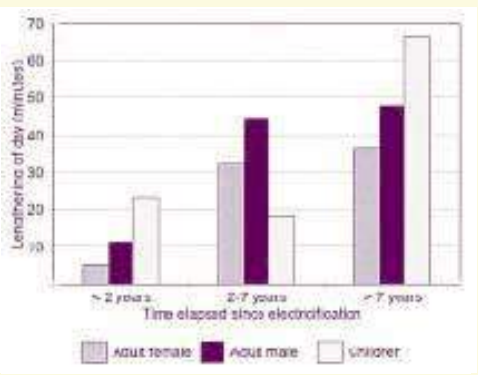

Figure 2: The extended day of electrified households compared with non-electrified ones

Women are the primary beneficiaries of electricity in the home, first because it makes home life more convenient, notably by easing chores and offering new possibilities and more time for entertainment (mainly watching television and spending time with relatives, friends or neighbours). By far -and this applies to both woman-headed and man-headed households- the most important impact was on the general convenience of life at home. Here, this refers largely to the ability to perform basic household duties and obligations, generally the province of women.

Table 1: Domestic appliances ownership (% of HH)

Appliance	Sex of Head of HH		
	Female	Male	Total
For housework			
Cooking stove	0.7	0.3	0.4
Iron	23.3	25.1	24.9
Sewing machine	2.1	1.0	1.1
Water pump	13.0	6.7	7.4
Blender, juicer, dispenser, etc.	4.8	2.9	3.2
Refrigerator	6.2	3.4	3.7
For entertainment, comfort			
TV	34.9	41.5	40.8
Radio or cassette player	35.6	41.5	40.8
Fan	4.1	5.0	4.9
Number of Households	146	1154	1300

Electric lighting is greatly appreciated for its convenience: flicking a switch instantly turns on the light. With pressurised lamps, on the other hand, the user must pump up the pressure about every half hour. The use of domestic appliances eases housework. Unsurprisingly, when women head a household, more importance is given to the purchase of domestic appliances such as water pumps, refrigerators, and small domestic appliances (blenders, juicers, dispensers, etc.) than in male-headed households (see Table 1). Women also benefit from not having to constantly accompany young children at night because, with lighting, they are able to get around in the house without bumping into stationary objects. The absence of fear of fires from kerosene lamps or candles, and the feeling of safety at night, are highly valued by both genders. Overall, however, the changes in socialisation are such that women are probably the greater beneficiaries, as they are responsible for the wellbeing of all household members.

However, while in some aspects electricity does help fulfil some of women's practical needs, such as water pumping, ironing, and other domestic chores, overall the impact has been limited. The useful length of the day increases over time with electrification (see Figure 2), and this extension is generally used to perform additional domestic tasks or to undertake income-generating activities. Especially in the morning, electricity gives women more time to prepare food and clean their houses. Overall, it is not clear if the workload of women has increased or reduced as the result of electrification.

Despite all the benefits for women of electricity, it has not resulted in a change in women's bargaining position within the household or the community.

Alternative Energy

Alternative (renewable) energy programmes generally do not improve the poor's access to electricity and gender equity. Renewables are regarded by both consumers and suppliers as a temporary solution that, when possible, will be replaced by grid electrification.

Table 2: Income group distribution by use of electrification systems

	Income class					Total	No. of HH
	Very Poor	Poor	Near-poor	Middle-income	Better-off		
PLN Grid	19%	26%	18%	20%	17%	100%	916
SHS	3%	18%	17%	13%	48%	100%	92
Hybrid S-D	2%	7%	5%	20%	66%	100%	92
Microhydro	30%	32%	9%	15%	15%	100%	200

SHS = Solar Home System; Hybrid S-D = hybrid solar-diesel generator

SHS are not "poor-friendly" due to their high initial costs. Most SHS users come within the higher expenditure categories, well above the poverty line (see Table 2). The same applies for hybrid system users, who in the area investigated are virtually all among the better off. Numerous SHS and hybrid system users complain about insufficient power from the systems. Microhydro, however, appears to be a feasible energy option for the poor. Surveyed microhydro users tended to be concentrated among those close to, or below, the poverty line.

In addition to their inherent limitations, alternative energy initiatives in this region are generally risky ventures and poorly designed, notably with respect to socialisation, involvement of local communities, and management.

A good illustration of project risks is the case of Mr. Pak Mamad, whom we met during the qualitative phase. Pak Mamad, head of a village cooperative in Cileles (West Java), wanted to use electricity to run a rice huller. At that time, there was no indication of PLN's plans, and he took the personal risk of installing a microhydro scheme for his own use and to provide electricity to nearby customers. Unfortunately, when PLN electricity arrived not long after, many of his customers deserted him, and he is now faced with problems repaying his personal loan. This is not an isolated case but a persistent problem with community-based power development. Given the uncertainties involved, the risks -particularly to commercial investors- can be very large.

Another example covered by the study, the E7[3] microhydro power project in Makale (South Sulawesi), did not train local technicians, and so customers are highly dependent on the contractor located in Java. The project also appears to be socially insensitive. Only male members of customer households were targeted for training on operation and system maintenance. Further, there is no transparency in the use of the money collected, notionally for maintenance, from the users.

Another project, the rural business services (RBS) programme in Tasikmalaya, failed partly on account of poor training. This is attributed to the poor performance of the partner NGO selected. A number of RBS customers interviewed during the qualitative phase were not even aware of the RBS programme. Overall, the RBS programme resulted in only a limited increase in electricity use.

Recommendations

The above findings led the authors of the study to make the following recommendations for improvements in future project design and implementation:

- Rural electrification efforts should place an emphasis on access as opposed to use, through the removal of access fee barriers. The goal should be to get as many people as possible into the system, and then to let it take its own course. One option would be to spread the access costs through the use of a higher kWh price for a limited time.
- There is an urgent need for demand-side management, or energy efficiency actions, especially in the area of lighting. The promotion of fluorescent or compact-fluorescent lamps to replace incandescent bulbs should be included in any rural electrification programme.
- Realistic alternatives should be developed. For example, future renewable energy projects should support the commercial development of SHS components and very small systems (5-10 peak-Watt), providing households with a transitory low-cost solution that could be used for several years.
- Future rural electrification efforts should strongly emphasise empowerment and better training, especially of women. Rural electrification should be treated as part of local development efforts, ensuring that local communities have a say in electrification decisions. Electrification projects should be initiated and selected locally, in competition with other development and infrastructure projects. They should come with social and gender measures to ensure that newly connected consumers are able to fully profit from the use of electricity.
- There is a need for simple impact assessment tools to guide public financing for rural electrification (criteria such as eligibility, and type and level of financial support). Future investigations should concentrate on the following socioeconomic impacts: reduction of traditional energy consumption and expenditures; changes in time-usage patterns; change in income from productive activities at home; and market development of electrical appliances. ■

◆ Gérard Madon, an engineer with a PhD in renewable energy, has twenty-seven years of experience in more than forty developing countries in Africa, Asia, and Latin America, and in Europe. A consultant for about twenty years, he has led several high-level interdisciplinary teams, numerous studies, and technical assistance assignments, in the fields of household energy, rural electrification, and sustainable management of natural resources. He has received assignments from numerous international aid agencies, notably the World Bank, the European Economic Commission, and the French Agency for Development. He has contributed significantly to the development of new approaches in these topics, which have since demonstrated their relevance and replicability, such as supporting joint local communities / private sector initiatives for decentralised rural electrification, and devolving forest management responsibility to local communities by the creation of rural woodfuel markets.

◆ Mayling Oey-Gardiner founded IHS in 1991, and remains Executive Director. In addition to management responsibilities, Dr. Oey-Gardiner has been engaged over the past 20 years at a senior leadership level in a variety of major research projects covering a wide range of social, economic, and demographic issues. In recent years, her research interests have focused increasingly on policy aspects of equity, with a focus on poverty and gender issues, on issues related to general access to social services, and on the delivery of social services through participatory approaches in the context of building environments of greater governance. Her interests include issues concerned with informal sector employment and education, small-scale industry, home-based work, poverty and alternative energy, and more general social impact analysis. Even though most of her work has focused on Indonesia, Dr. Oey-Gardiner has also undertaken overseas assignments including in Cambodia, Malaysia, the Philippines, Thailand, Vanuatu, and recently Mongolia.

see next page ›

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◆ A presentation of the general findings of the Indonesia Energy, Poverty and Gender study, prepared by MARGE for the World Bank, can be seen at: http://www.quercy.fr/enpogen

[1] *RBS is a component of the Second Rural Electrification Project funded by a World Bank loan.*
[2] *State Electricity Corporation*
[3] *E7 is a group of nine world-leading electric utilities from G7 countries, and was formed in 1992.*

EnPoGen Study in Sri Lanka

René Massé
Mallika Rukminie Samaranayake

The Asia Alternative Energy Program (ASTAE) commissioned an Energy, Poverty and Gender initiative (EnPoGen) in several Asian countries. MARGE (France) had the overall responsibility for the Indonesian and Sri Lankan components, and in the latter, described in this article, MARGE joined forces with the Institute for Participatory Interaction in Development (IPID). The overall objectives were to assess the impact of rural electrification on poverty alleviation and gender equity, and to contribute to improving the design of future electrification projects and appraisal methodologies, especially regarding alternative energy options.

The fieldwork was carried out in two phases: a qualitative study followed by a quantitative survey. The qualitative study was conducted in four sample areas. Tools adapted from Participatory Rural Appraisal methodology (*wealth ranking, impact diagramming, pair-wise ranking, structured formats, semi-structured interviews, and observations*) were used to generate information for the study. Information on different types of electrification programmes in Sri Lanka -grid electricity connection, village microhydro schemes, solar home systems (SHS), and demand-side management programmes- was obtained from the Ceylon Electricity Board (CEB), Sarvodaya Economic Enterprise Development Services {Guarantee} Limited (SEEDS), and the Intermediate Technology Development Group (ITDG). The qualitative study was intended to generate insights into the types of rural electrification schemes, and their relationships to people's livelihoods in general and to poverty alleviation and gender in particular, so that the comprehensive household survey could then validate these insights and their applicability. The quantitative surveys were conducted in six Provinces (10 Districts, 35 villages). Of the 1,820 questionnaires completed, 1,573 covered private households - 1,177 of which were electrified and 396 non-electrified- and the remaining 247 questionnaires covered commercial and public service establishments using electricity services.

Electricity Access and Poverty

It is still very difficult for the poor to access electricity and the reasons are primarily economic. While virtually everyone could pay the monthly electricity bills at grid rates, most poor households were unable to finance the one-off payment for connection costs and indoor wiring, regardless of the type of electrification programme. The minimum cost for national grid service connection and internal wiring is Rs.10,000, or four to five years of a poor family's household budget for traditional lighting.

A number of design issues also hamper poor households' access to electricity. The predominantly financial and economic criteria used to select villages are discriminatory in that the poorest villages are naturally the least attractive for electrification despite the fact that electrification schemes for such villages could be good business for public or private providers if the law authorised micro-distributors. Housing types and living standards are also sources of discrimination because national and local grids are designed around existing road schemes and what is seen as the potential market. Thus, most electric lines are located far from poor households who must therefore pay higher connection fees. Families living in temporary housing are not even allowed to be grid connected for security reasons. Only poor families live in such houses. Village hydro schemes also discriminate against the poor. Households not initially connected cannot be connected later because all the available energy has been distributed. Finally, the CEB compact fluorescent lamp (CFL) loan programme is also discriminatory. Electricity consumption in poor households is very low, making CFLs not very attractive for either the poor (return on investment is much longer than the one-year guarantee) or the utility (imperceptible reduction in overall electricity consumption).

Where abundant electricity is available, poor households do eventually get connected. The wealthier a household, the quicker its connection to the grid or village hydro scheme: almost three-quarters of households with above average wealth had electricity five years ago whereas only one-third of the very poor households were connected. This reinforces the view that when a grid develops, the richest households benefit first, followed progressively by medium and poor households provided electricity is available in sufficient quantity.

Due to the selection procedure, the publicly-financed infrastructure benefits the rich much more than the poor. Why not use subsidies to cover service connection fees for poor families given that poor people pay higher fees than rich people living near the grid in urban and rural areas? It would seem reasonable to consider service

connection subsidies for poor people as a fair way of increasing access to electric services in rural areas. If the service connection subsidies were included in the investment plan then the utility would not have to bear the financial weight of this subsidisation, either in the investment phase or through the tariff structure. The utility would then be much more interested in connecting all possible rural households instead of only those nearest the grid.

Impacts of Electricity on Poverty

In-home electricity brings about changes in home life for all rural households: both rich and poor no longer have to live in the dark. Electrical lighting is unquestionably the first direct advantage of household electrification, leading to increased safety in the house and the ability to work longer hours, or spend time relaxing. It was found that the immediate effects of electrification on the poor, although great, are limited by their restricted purchasing power. Most poor families have only the basic equipment such as indoor lighting (100%), radios (90%), TVs (63%), and electric irons (44%); and cheap equipment such as convenient water heaters (36%).

It was also seen that, especially for the poor, electrification has led to financial savings on regular expenses, such as kerosene oil for lighting and car batteries to run television sets. The savings amount to Rs.150 to 350 per household per month, equivalent to one to three days salary. Compared to their pre-electrified status, poor families now spend significantly less meeting their monthly household energy expenses (around Rs.126 per month), whereas average households pay approximately the same, and above average households pay more (on average by Rs.348 per month). The richer the household, the more that electricity consumption has increased over the past five years.

Having electricity at home also results in having more time. The active length of day is slightly longer -especially for men- when electricity is available at home. Women gain by saving time on now unnecessary travel and through tasks being made easier with electric appliances, providing them with an extra hour and a half each day. It was anticipated that women would use this opportunity to launch productive activities at home. In absolute terms, the development of productive activities remains low, although the figure is quite high compared to non-electrified areas: around 7% of rural electrified households have a workshop or shop at home (three times more than with non-connected households), nearly half of which are in female-headed households. Rather than pursuing income-generating activities, women tend to devote their extra free time to relaxing with their families in front of the TV or with friends. Watching TV is the largest change in the daily routines of households that did not own battery-powered TVs before electrification.

Village electrification also changes the day-to-day life of the poorest households who remain unconnected to the grid. Safety is enhanced; people are now able to move around the village in the evenings, go to the temple, visit friends, participate in social interest meetings in lighted buildings (the school or temple), and visit local shops. Such households also greatly appreciate the extension of local health services: they no longer have to travel to the nearest city to buy vaccinations and medication; and they now have access to village health services that are able to intervene efficiently in emergencies. All school children, even the poorest, benefit from improved school services. Lighting in religious buildings is of great importance to Sri Lankans.

Half of the electrified villages now have a battery-charging centre that services non-connected households who therefore save the time and money they would have spent travelling to the nearest city to charge their batteries. Further, the poorest households also gain indirect benefits: from the creation of new shops and workshops, the development of buildings and new public services, and increased value of land and housing in the electrified zone.

The empowerment of electrified poor households remains very limited. It is clear that very poor families are not interested in increased involvement in village-level social organisations because, even with electricity, they have more pressing day-to-day priorities. However, village electricity does lead to profound changes in how the future is seen, especially by the poorest. The arrival of village electricity sparks a sort of renaissance for the population. Rural households feel that they have finally joined the national -or even international- community and have left behind an outdated, archaic, era. Their confidence in the future is reinvigorated. The poorest, those that cannot afford to send their children to the city, begin to believe in the virtue of schooling as a means of social betterment once again. Electricity means access to broadcast information for all, including women; it means the possibility of obtaining electric household appliances and living in a domestic environment similar to that in the cities. These changes help to break cultural isolation. The new feeling of confidence in the future also brings about increased confidence in public institutions, schools, and health centres.

This woman in Ekiriyagala Village, Sri Lanka, is using an electric buttoning machine to earn an extra income. With the introduction of electricity, women were expected to launch productive activities at home.
(Photo: Courtesy of René Massé)

Electricity and Gender

Women, because they are more responsible for housework than men, can reap many of the benefits from home electrification:

- The major benefit is the time that women save. Eighty per cent of the interviewees reported saving between one and two hours through avoided journeys (taking batteries to be recharged, and going to the city to buy kerosene, medication, and vaccinations) and on household activities (such as firewood collection, cooking, ironing, boiling water, house cleaning, and chimney cleaning). Twenty-nine per cent of the female household members said that the time they saved was spent on extra housework, while less than 5% reported using it for productive activities.
- Electrification also results in more free time and new entertainment opportunities within the house. Women in electrified households watch up to two hours of TV per day. For 83% of them, this is their first opportunity for all the family to share leisure time.
- Women, more than men, appreciate the increased security and health benefits that come with village electrification.
- Though it was expected that electrification would allow women to undertake income-generating activities at home, the initial results show a different picture: 94% of remunerated in-home activities involve men. Of those women with in-home activities, only 15% use electrical equipment for the activity, compared to 32% of men; and mostly it is men who have high in-home activity incomes.
- Increased sharing of household chores has become acceptable: "*I am now prepared to do ironing and assist my wife in her work: ironing, boiling of water, cooking*" said a man in Asmadala, a grid-connected village. This may lead to more equity between men and women.

• In Sri Lanka, domestic violence is one of the main issues that rural women, especially in poor households, face daily. Up to 40% of adult males commit domestic violence, and this is often linked to alcoholism. Household electrification may reduce domestic violence since men may spend more time at home when there is a TV.

These benefits represent social progress for rural women in electrified villages. This has not yet resulted in greater empowerment or heightened participation in local societies, since these are more a matter of cultural resistance. Such changes will take time -more time than the seven-year period studied.

Alternative Energy

Not all forms of electrification provide the same expectations and potential for economic and social development. Findings show that SHS do not reduce poverty or gender inequity as efficiently as grid electricity. SHS do not provide households with the same quality or the same quantity of energy. They are seen as costly and temporary solutions. There is always the hope of access to the grid in the future, and the hope among the poor that they will be able to find the financial resources needed to access it.

The development of new services and retail shops is strongly linked with the type of electrification and the time elapsed since electrification. Grid extension schemes have a very high capacity to multiply the number of commercial[1] and administrative[2] building connections over time. At the beginning of a grid extension scheme, there were on average 2.75 connected administrative buildings per village, which figure rose to 5 on average in less than 7 years. This amounts to an increase of 82% over 7 years. For retail shops the increase was 136% (from 5.5 to 13 per village in less than 7 years). Compared with grid extension, village microhydro grids yield more modest results since all the available capacity is allocated during the two first years of activity. Generally there is no increase in the number of administrative buildings (3.0 per village at the beginning, this number remaining stable for 2 to 7 years) and an average 27% increase in the number of retail shops (from 4.4 connected retail shops per village to 5.6).

The investment costs for SHS are proportional to the number of beneficiaries; there are no economies of scale related to the density of connections. Our calculations show that the share of public funding (subsidies and tax rebates) per rural household in commercial SHS distribution schemes is no lower than the average cost of connecting a rural client to the CEB grid.

The report on the project formulates numerous recommendations to improve the institutional and technical organisation of the 102 existing village microhydro grids, and to facilitate the design of future rural electrification programmes through replacing the centralised single operator approach, that progressively builds an interconnected grid by extending the existing grid, with a local operator approach based on decentralised management and the simultaneous building of multiple local grids that can be interconnected as and when appropriate.

Conclusions

As with everything else, when it comes to electricity the poor are not the first to be served. However, when a sufficient quantity of electricity is available in a village, even the poorest households benefit considerably. Village electricity means greater safety, considerable savings on travel and fuel costs, and better health and schooling. Over time, even the poorest households manage to get connected to the electricity supply, thus lowing their lighting costs considerably and improving the quality of life at home. Women are the most appreciative of the benefits of village electricity. While grid electricity is vital for local economic development, it will not automatically launch this process. ■

[1] *Commercial buildings include wholesalers and retail shops, hotels, restaurants, and bakeries.*

[2] *Administrative buildings include government offices, health centres, religious buildings, schools, and community-based organisation buildings.*

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◆ A presentation of the general findings of the Indonesia Energy, Poverty and Gender study, prepared by MARGE for the World Bank, can be seen at: http://www.quercy.fr/enpogen

Demand-focused Framework for Designing, Monitoring and Evaluating Rural Electrification Projects

Rekha Dayal
Johanna Gregory

There is a growing emphasis on demand-based, rather than supply-driven, infrastructure services for less-developed countries. Simultaneously, there is increasing evidence that end-user needs and impacts, and associated poverty and gender implications, should be analysed and addressed when designing, implementing, monitoring, and evaluating investment projects. Further, it is increasingly recognised that greater programme responsiveness to the specific needs of all customers (men, women, rich, poor, etc.) is good business; the more the services respond to specific needs, the more successful the projects are likely to be.

The needs and interests of the rural poor, and of women in particular, vary according to their differing roles, customs, and lifestyles. However, these are often underrepresented in the context of conventional rural energy projects. While there is increasing understanding that these issues are important, there remains much uncertainty about how to apply poverty- and gender-sensitive approaches at the operational level in the energy sector.

This transition in strategies and operational practices towards greater poverty- and gender-awareness in energy projects has created a need to develop planning and management tools that assess end-user *needs* and monitor and evaluate social development-related *impacts* of investments in the energy sector. A recent initiative, sponsored by the World Bank ASTAE/EnPoGen and ESMAP[1]; to develop a "Demand-focused Framework for Designing, Monitoring and Evaluating Rural Electrification Projects", with a specific focus on poverty and gender, is an attempt to respond to this challenge.

The Design Team and Approach

The Demand-focused Framework for Designing, Monitoring and Evaluating Rural Electrification Projects is an outcome of collaboration between Winrock International, The Mallika Consultants, and the World Bank; with valuable inputs and comments from the *ENERGIA* Secretariat. The approach builds on two different techniques - Participatory Assessments (PAs) at the community, institutional, and policy, levels, and a Socioeconomic Impact Survey (SIS) at the household level. The resulting Framework provides a tool for project managers, implementers, and other stakeholders, to access both the "softer" qualitative data they need to understand the needs and priorities of the target communities, and the quantitative data necessary to systematically measure and analyse the benefits and costs of rural electricity interventions.

The Framework

The Framework is based on the assumption that the sustainability of improved rural energy systems is positively associated with the extent to which all segments of the target population have access to, and use, the service. The approach implies that for a project to be successful it must meet the needs of all population groups and share the costs and benefits equitably among them. The approach assumes that success and sustainability are also positively influenced by institutional and policy environments in which gender and poverty issues have been taken into consideration. These principles are reflected in the variables listed in Box below.

Key Variables

- Effectively sustained
- Equitable access and use
- Degree of change in cross-sectoral social development indicators
- Division of burdens and benefits
- Participation in service establishment and operation
- Institutional support for gender and poverty sensitive demand-responsive participation
- Policy support for gender and poverty sensitive demand-responsive participation

Indicators have been developed to assess each of these variables. The final choice of indicators will largely depend on the local context, and the objectives and priorities of the project. The data from the majority of these indicators are disaggregated for the different socioeconomic groups identified; the categories being determined by the community members as part of the participatory exercises.

The typical rural electrification project cycle has four stages: preparation, design, implementation, and post-project impact assessment.[2] With a conventional monitoring and evaluation (M&E) approach, there is no activity until the project is implemented; then important changes that impact upon the goals of the project are monitored and, at the end of the project, the evaluation is based on whether it has achieved its targets. In the approach advocated by the Framework, however, the M&E process begins in the preparation stage of the project, so that inputs by the potential beneficiaries are considered in the initial phases of the project cycle. Beneficiaries' inputs are further addressed during project implementation (Figure 1).

The Two Pillars of the Framework

Participatory Assessments

Participatory Assessments (PAs) are carried out at three levels -in the selected community, and at the institutional and policy levels- in order to understand priority needs and key constraints to, and opportunities for, equitable and sustainable rural electricity delivery. The community level assessments provide both the poor and the better off with opportunities to influence the process of service establishment and participate in its management. The approach builds capacity through joint investigation and analysis, and community participation in planning and managing the project. When participatory approaches are used to identify issues and ways to address them, communities are more likely to own the outcomes. The assessments use tested Participatory Rural Appraisal (PRA) tools -including wealth classification, community mapping, focus group discussions, transect walks, pocket voting, and the "ladders" exercise- that allow villagers to assess and plan equitable access to electricity services.

In order to examine the linkages between sector policies, and the operational practices and procedures of service providers in relation to community demands and social environment, PAs are carried out at institutional and policy levels, termed the "Stakeholder Meet" and the "Policy-level Dialogue," respectively. These exercises bring the perceptions of poor and rich women and men into the institutional and policy levels. The objective is to see how user-choice can guide key investment decisions, thereby encouraging services that are what people need, want, can afford, and are willing to pay for.

The PAs use self-scoring methods, allowing instant feedback of results, and encouraging transparency and joint action by communities, project managers, service providers, and policy makers.

The Socioeconomic Impact Survey

Quantitative surveys are used widely in rural electrification projects to assess changing patterns of energy demand, identify possibilities for fuel substitution, and understand the impact of energy policies on the poor. The Socioeconomic Impact Survey (SIS) provides valid information on markets for energy services, the rate of adoption of electricity, the impressions and attitudes of people towards electricity, and the benefits of electricity compared with other types of energy.

Based on the results of the PAs, a survey plan is developed. The SIS gathers baseline energy consumption data and general information on the level and patterns of national or regional energy demand (see Box below). The survey also assesses the impact of a policy or technical intervention on energy issues and a local population's willingness to pay for any new energy services contemplated under a project.

Possible Research Topics for Questionnaire

- Socioeconomic profile of actual and potential beneficiaries/customers.
- Fuel and energy use prior to improved electricity services, including all sources of energy.
- Monthly expenditures on fuels and energy by source.
- Potential willingness to pay for energy services by application.
- Energy use as it relates to alternatives to improved electricity services (kerosene, candles, etc.).
- Reasons for not connecting to the grid or purchasing improved energy devices.
- Barriers to the adoption of improved electricity technologies/services.
- Incentives to overcome barriers to the adoption of improved electricity technologies/services.
- Appliances in rural households.
- Time use (by men and women) as it relates to existing energy use or appliances.

In-depth interviews are conducted at the household level with both the male and female heads of households.[3] There are several important reasons for gathering gender-disaggregated data:

- Empirical evidence shows that interviewing only men may not accurately reflect all members of the household.
- Men and women have different roles in society and the household, and so have different needs and priorities.
- Women and men may or may not benefit from rural development and infrastructure projects/programmes, and to different extents.
- One cannot understand the entire picture from only half the population.[4]

In some cases, males and females will have similar responses, and in others not. It is impossible to know in advance the responses from men and women to various topics and questions. Constructing a research design with preconceived ideas about which topics are relevant to men and which are relevant to women -and similarly for rich and poor- will risk generating biased results. Thus, the same set of questions should be asked independently to both the man and the woman in a dual-headed household. The responses can then be disaggregated to determine gendered differences.

How the Two Components Fit Together

A rural electricity project cycle has several stages, and the assessment and evaluation techniques applicable to each stage are usually different. For instance, in the earliest stages of a project, it is likely that somewhat informal input is necessary from the potential participants. This is because understanding the needs of those who will potentially be affected is very important, and the methods of project implementation have yet to be fully defined. In the early stages of a project, it is difficult to specify exactly what types of information

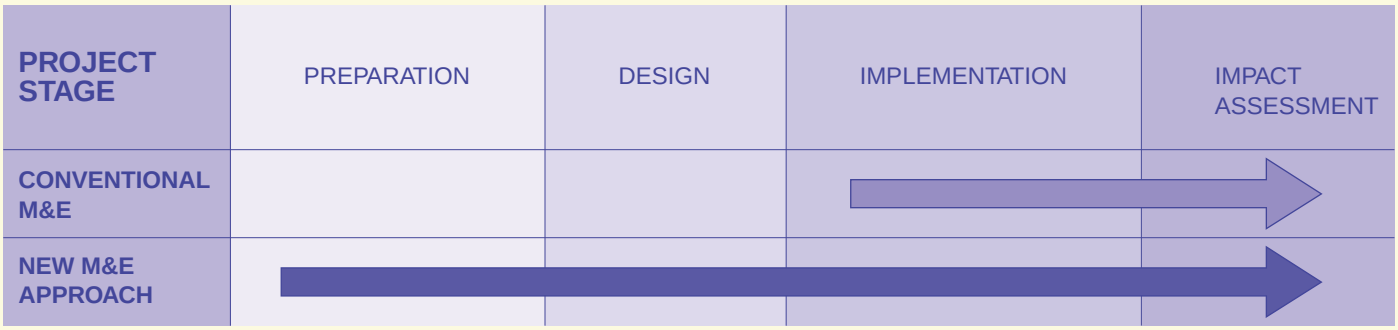

Figure 1. Conventional and Proposed Approaches to M&E

Community members participating in community mapping exercise in Treng Trayoenung, Cambodia. (Photo: Courtesy of Rekha Dayal)

are necessary to evaluate its success or failure. At this stage, the energy problems and needs of the various potential beneficiaries are not well known, and so a market assessment of service needs is essential for project preparation. The PAs, which allow selected households -and different members within households- to identify and discuss relevant issues with the researchers, can reveal priority needs and the underlying reasons for consumption behaviour.

In subsequent stages, quantitative information is generally necessary to allow for more standardised analysis and comparison, and this can be obtained through a SIS. The specific topics to be addressed in the survey should be influenced by the earlier PAs.

Both the participatory and survey approaches are useful in different stages of a project cycle, but require different evaluation techniques in order to provide useful data. The particular needs and objectives of a project will determine how each methodology is applied during the various stages of the project cycle.

Preliminary Field Test of the Framework

A preliminary field test of several of the PA tools was conducted in Cambodia during October 2001 as part of the preparation for the renewable energy component of a World Bank-supported rural electrification project. Key findings included:

- Rural energy needs are manifold. Villagers engage in a wide range of income-generating activities, including: rice, watermelon and peanut farming; fishing; frog hunting; market selling; and the operation of cafés and karaoke clubs.
- Many poorer families use batteries and kerosene lamps for everyday lighting, and firewood for cooking. Some use batteries for frog hunting.
- There is a large demand for electricity among café and karaoke shop owners; however, among poor villagers, it is generally not a priority. This suggests that rural energy projects will better benefit rural communities by addressing rural energy in general rather than focusing solely on electricity and/or lighting applications.
- Ability to pay for improved energy services did not match demand and willingness to pay. In the three participating villages, although there was strong demand for electricity, most household expenditure went on food and healthcare, thus making affordability a critical issue.
- Many villages have a very high number of female-headed households, and a large proportion of poorer households fall within this category. This suggests that it is important to conduct some assessments exclusively with female heads-of-household.
- Households would be better categorised using indicators other than income, e.g. household consumption of energy, or housing materials.
- There were contradictory responses from generator operators and their customers about fees and quality of service. Much of the electric service currently provided is irregular, and it can take a week to repair generators as spare parts and tools are not readily available.

Conclusions

Understanding the implications of energy initiatives for social development, especially in terms of poverty and gender, is critical to the success of rural electrification projects. The use of both qualitative and quantitative tools can help provide a fuller picture of the needs and priorities of different groups, and how they are affected by the project. Monitoring and evaluation should not be used only as a post-project data collection exercise, but rather as a means for generating the information necessary to make project improvements throughout its life.

The Demand-focused Framework for Designing, Monitoring and Evaluating Rural Electrification Projects is limited to the evaluation of rural electricity technologies and services; it does not attempt to cover other forms of energy services that could respond to the energy needs of rural populations. Rather, it is an initial step towards incorporating the socioeconomic development impacts of rural energy services, as an important component, in the project development process. ■

◆ For the profile and contact details of the authors, please refer to page 2 of this issue.

[1] *The World Bank Asia Alternative Energy Program (ASTAE) / Energy, Poverty and Gender initiative (EnPoGen) and Energy Sector Management Assistance Program (ESMAP).*
[2] *While terminology varies, most rural electrification projects follow a similar cycle. The main difference between our terminology and others concerns "preparation" and "design." In this Framework, "preparation" refers to project identification or conceptualisation, while "design" refers to project planning.*
[3] *The Framework assumes that each household has one male (the husband or male partner) and one female (the wife or female partner) "head of household", unless the household is "headed" by only one adult due to death of a spouse, divorce, etc.*
[4] *Range and Omondi (2000).*

Internet Resources

WWW

EnergyAfrika is the electronic newsletter of Knowledge Networks for Energy in Africa (KNSEA). The newsletter features an editorial, articles, energy events, a profile of an African energy society, and of an African energy expert. The editorial of Volume 2, issue 9, is entitled "*Gender and Energy Integration – who are the key players who can make a difference*?" The newsletter can be accessed through: http://www.worldbank.org/afr/knsea/newsletter/index.htm

The UK Department for International Development (DFID) has produced a document "*Energy for the Poor: Underpinning the millennium development goals*". This document highlights some of the ways in which access to clean, efficient, energy services can tackle poverty. The document is available online at: http://www.dfid.gov.uk/Pubs/files/energy_for_the_poor.pdf

Enabling Equitable Access to Rural Electrification: Current Thinking on Energy, Poverty, and Gender

Elizabeth Cecelski

Poverty reduction and gender equality are now integral goals for all major development institutions. Energy assistance programmes are seeking models and approaches to respond to these mandates. Gender and poverty challenges, in widening access to electricity in rural areas, are arising in the context of renewed interest in rural electrification, especially from renewable sources, both as a tool both for sustainable energy development and to achieve greater equity in rural areas.

This article, based on a briefing paper for EnPoGen[1], reviews current thinking on energy, poverty, and gender - with a focus on rural electrification and renewable energy - andas an initial attempts to conceptualise linkages and needs in this area. A companion report[2] inventories major organisations and activities in this field, and is reviewed on page 22 of this issue of ENERGIA News.

Energy, Poverty, and Gender

Sustainable Energy Development (SED) has been defined as sustainability in financial, social, and environmental terms. Energy has been pushed higher up the sustainable development agenda by recent UN meetings, and is being linked to the Millennium Development Goals adopted by the UN General Assembly. Renewable energy and energy efficiency are usually characterised as "win-win" options in SED, meeting the objectives of both environmental improvement and poverty alleviation, (with affordability being the principal challenge). However, despite many efforts, rural energy poverty is still widespread. Consequently, current approaches emphasise an explicit poverty focus, decentralisation and participation, and the integration of energy efforts with other development sectors. Gender issues, however, are still not prominent. Further, recent thinking emphasises that *choice* in energy options is still critical to meeting the needs of poor people, and that a variety of strategies and trade-offs, including efficiency and fossil fuels, will be necessary.

Recent thinking emphasises that *choice* in energy options is critical to meeting the needs of poor people, and that a variety of strategies and trade-offs, including efficiency and fossil fuels, will be necessary. Despite many efforts, rural energy poverty is still widespread. New approaches emphasise an explicit poverty focus, decentralisation and participation, and the integration of energy efforts with other development sectors. Energy has been pushed higher up the sustainable development agenda by recent UN meetings, and is being linked to the Millennium Development Goals adopted by the UN General Assembly.

Over the last two decades, gender issues have attained increasing prominence in the debate on sustainable energy development. International organisations, such as *ENERGIA*, the United Nations Development Program (UNDP)/Energy and Atmosphere Program (EAP), the joint UNDP/World Bank Energy Sector Management Program (ESMAP), the US National Renewable Energy Laboratory (NREL), and Winrock International, have helped to bring the critical issues of gender equality and efficiency to the table (see companion report). Policy researchers and development practitioners have begun building a body of evidence and experiences that links attention to gender in energy policy and projects to equitable, efficient, and sustainable outcomes in development. A number of energy programmes are starting to pay closer attention to gender and are launching important initiatives.

Despite these developments, the importance of bringing a gender perspective to energy policy analysis and design is still not widely understood, nor have the lessons for development been fully integrated by donors or national policymakers. While many are sympathetic, gender is still commonly viewed predominantly as a political agenda and, given this, is not seen as central to questions of energy efficiency or project effectiveness. There is, however, a growing amount of literature on energy and gender concerns, and this is appearing increasingly in mainstream energy publications, though often as a separate topic not integrated with strategies and solutions. The focus in the literature is mainly on poor rural women, on wood energy, and on micro household and project level analysis. Project experience is also becoming available, though much is not yet documented.

This lack of acceptance exists despite the growing literature on energy and gender. Gender is also appearing increasingly in mainstream energy publications, though often as a separate topic rather than integrated with strategies and solutions[3]. The focus in the literature is mainly on poor rural women, on wood energy, and on micro household and project level analysis. Project experience is also becoming available, though much is yet to be documented. Some especially relevant initiatives and reports are described in the companion report to this paper (see footnote 2).

Current efforts on gender and energy focus on:

- building up a body of evidence and experience (conceptual, methodological, and case studies) linking attention to gender in energy policy and projects to equitable, efficient, and sustainable outcomes in energy and development;
- advocacy in national and international arenas on the importance of bringing a gender perspective to policy analysis and design;
- capacity building, advice, and assistance to energy programmes, policy, and projects in integrating a gender perspective; and
- creating networks and institutions at the national, regional, and international levels to support these efforts both practically and politically.

Current Thinking on Poverty: Some Energy Implications

Current New thinking on poverty broadens the definition of poverty to include empowerment, security, and opportunity[4]. Important aspects include (a) learning from the poor, in order to shape understanding and strategies; and (b) recognising the importance of inter-sectoral policy instrument interactions. However, little or no mention is made of rural energy poverty in current thinking on poverty -with the exception of occasional references to the strengthening of infrastructure and public services to the poor. In the energy sector, inter-sectoral linkages are well-recognised as critical in ensuring the expected impacts of, for example, rural electrification interventions.

Unfortunately, the perspectives of empowerment, security, and opportunity have not been part of the normal professional and bureaucratic concerns of many of those involved in energy policy and practice. Linkages of energy strategies with this framework have been little explored. Energy is not widely recognised as a "basic need" in development circles; working relationships between macroeconomists and engineers, and other social scientists, have been slow to develop in the energy sector (in contrast to other sectors such as health and agriculture).

Different "ways of thinking" are partly responsible for this lack of communication: poverty and gender thinking prioritises people, while energy thinking often prioritises other objectives such as efficiency and the environment. The few attempts to view energy primarily through a poverty optic are quite startling in their challenge to us to alter our perspective.

Rural Electrification, Rural Development, and Poverty

There is no doubt that rural electrification usually benefits the non-poor more than the poor. In fact, like many new technologies, it can increase inequities in rural areas. Nonetheless, there are clearly approaches through which access can be widened and the poor more likely benefit. Two important issues for future research that emerge from current thinking on rural electrification (and indeed energy generally) and the poor are:

- What is the relationship between specific energy strategies and *poverty reduction* (as opposed to merely *widening access*)? Although anecdotal evidence is available, there are very few empirical studies that convincingly demonstrate such a linkage, whereas there are in other sectors (such as health, water, and education).[5]
- What is the effect on the poor of privatisation and market reform in the power sector? Experience in this area is relatively new but it has received some attention recently.[6]

◆ Elizabeth Cecelski is a founding member of *ENERGIA* and presently its Director for Advocacy and Research, 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. Her particular interests are household and rural energy, and rural electrification and rural development. Elizabeth now works as a consultant, advising a number of international and regional organisations on gender and energy programmes. She has served as a member of a number of expert groups, at present including expert groups for EnPoGen/World Bank, for the ENDA Africa gender and energy book, and for AFREPREN.

◆ For further information, please contact: Elizabeth Cecelski. For address details, please refer to page 24 of this issue.

Some promising directions for analysis and application are:

- appropriate tariff and connection policies, including credit and leasing for decentralised systems;
- the role of subsidies, and the impacts of restructuring the power sector on subsidies and access;
- demand analysis including the use of gender-disaggregated data;
- financial/institutional mechanisms including microcredit, Rural Energy Supply Companies (RESCOs), community/NGO-based approaches, and private participation in small-scale infrastructure provision;
- productive uses of electricity -especially uses that may only be possible with decentralised systems; and
- institutional coordination of complementary infrastructure.

Some Key Gender Issues in Rural Electrification Programmes

Unfortunately, many past studies of the social impacts of energy interventions have failed to address gender issues, or have addressed them only superficially. It is probable that gender will not be included as a variable for analysis without a specific mandate.

Four key energy issues for poor rural women that require the attention of rural electrification programmes are:

- *data needs and analysis* -disaggregation of energy use, supply, and impacts by gender, in order to provide a better basis for applying established field methods, and analytic tools for incorporating gender in project design and implementation, as well as at the micro- and macro-policy levels;
- *wood energy, cooking, and health* -seeking integrated approaches and a range of solutions (including fossil fuels and perhaps electric cooking) that recognise the central importance of wood energy and cooking for poor women, and their health implications;
- *women's specific electricity needs* in terms of water pumping, agricultural processing, security, work productivity, and health - addressing these in the framework of sectoral development initiatives; and
- *equal access to credit, extension, and training* to assure energy and electricity supplies for women's domestic tasks as well as their microenterprise activities.

Needs

The findings above indicate the following needs:

- to routinely disaggregate energy use, supply, and impacts by gender -at all stages of the rural electrification project cycle;
- to document existing experiences in order to provide (a) empirical evidence of strong linkages between energy, poverty reduction, and gender; and (b) examples of "best practices", models, and approaches;
- to encourage a dialogue and interaction between "ways of thinking" in energy, poverty, and gender, as well as to create capacity to work in this interdisciplinary area;
- to develop new approaches to integrating energy (including decentralised supply options) with other development sectors.

Given the recent burst of interest and activities in this area, and the limited existing capacities available (experts and organisations, especially in the South), any initiatives would be well-advised to focus on capacity-building, to interact closely with other programmes, and to establish partnerships with the various organisations now working on or interested in energy, poverty reduction, and gender equality. ■

[1] The Energy, Poverty and Gender initiative (EnPoGen) of the World Bank Asia Alternative Energy Program (ASTAE), a Dutch-financed project.

[2] *Major Activities and Actors in Energy, Poverty and Gender* by Anja Panjwani and Elizabeth Cecelski, Report to ASTAE EnPoGen project, July 2000.

[3] See, for example, World Energy Council/Food and Agriculture Organization of the United Nations, *The*

see next page ›

Challenge of Rural Energy Poverty in Developing Countries (WEC, London, October 1999); and UNDP/UNDESA/World Energy Council, *World Energy Assessment*, 2000.

[4] For a detailed discussion of these concepts, see World Bank, *World Development Report 2000/1*. Briefly, *empowerment* addresses inequalities which prevent the poor from influencing policies and interventions that affect both their own lives and overall growth and development; *security* concerns risks and vulnerability which characterise the realities of the lives of poor people and of poor nations; and *opportunity* means sustained economic expansion and human development in which the poor participate.

[5] One exception is a quantitative study on microhydro and poverty, sponsored by DFID, which encouragingly concludes that microhydro "is a relatively efficient method of poverty reduction, in terms of costs per person moved across the poverty line. [And]..micro-hydro is also able to reach a number of the extremely poor…through the channel of wage employment…and linkage activities." Unfortunately this microhydro study, like most other social impact studies in the energy sector, fails to include gender in its scope. See Moseley, Paul, and David J. Fulford, "Community Micro-Hydro in LDCs: Adoption, Management and Poverty Impact, Project 7110, Socio-economic Effects of Micro-Hydro in Nepal, Sri Lanka, Ethiopia and Uganda, " Draft Report to DFID, The University of Reading, July 1999.

[6] See for example, *ESMAP Energy and Development Report 2000: Energy Services for the World's Poor*, World Bank/ESMAP, 2000.

Resources:

Major Activities and Actors in Energy, Poverty and Gender

Authors: Anja Panjwani and Elizabeth Cecelski
Published by: The World Bank/ASTAE

An overview of the major institutional actors and their activities in energy, poverty and gender is given in the recently published report *"Major Activities and Actors in Energy, Poverty and Gender"* by Anja Panjwani and Elizabeth Cecelski.

The report was prepared for the Energy, Poverty and Gender initiative (EnPoGen), under the auspices of the World Bank/Asia Alternative Energy Program (ASTAE), to which this issue of ENERGIA News is dedicated. Although not encompassing all the initiatives in this field, the report sets out to include all the major ones and is the only overview of its kind. It could be used as an important resource document in the energy, poverty, and gender field, not only for further study in this area, but also for the various stakeholders involved at the decision-making, policy-making, or implementation levels. The report contains contact details and weblinks to facilitate direct communication with initiatives of interest to a reader.

The report was first published in January 2000 as an Annex to Elizabeth Cecelski's briefing paper *"Enabling Equitable Access to Rural Electrification: Current thinking on energy, poverty and gender"*[1], which was prepared for ASTAE (see also her article in this issue of ENERGIA News). However, given the recent burst of activities in the field of energy, poverty, and gender, and given the fact that the EnPoGen project is to end in December 2002, it was deemed prudent to revise and update the information in the Annex. Given the amount of material this update generated, the Annex has been upgraded to a fully-fledged companion report to the paper.

The updating and revising was a joint collaboration between EnPoGen and *ENERGIA*. Some of the information on the activities and actors described in the report was extracted from relevant websites and from documents and newsletters. If such sources of information were not available, contributions to the report were requested from the actors directly. All the entries in the report have been reviewed by appropriate people within the projects or organisations under consideration.

The report describes initiatives undertaken at a number of levels, including:

- United Nations initiatives, such as a number of United Nations Development Programme (UNDP) programmes, the United Nations Environment Programme (UNEP), and the women's fund of the United Nations (UNIFEM);
- gender and energy networks, including *ENERGIA*, the Mesoamerican Network on Gender in Sustainable Energy (GENES), and several African regional and national initiatives;
- regional and national NGO initiatives in Africa and Asia;
- international initiatives undertaken by NGOs, including those of Winrock International, Intermediate Technology Development Group (ITDG), and the National Renewable Energy Laboratory (NREL); and
- bilateral and other donor programmes, and a number of World Bank programmes that focus on energy, poverty and gender, such as the Energy Sector Management Assistance Programme (ESMAP) and ASTAE.

As noted earlier, the report is not all-encompassing. Especially in Africa, there are a number of gender and energy networks that were not included because their activities have not been well documented. In addition, inevitably, some national, regional, and international NGO initiatives on energy, poverty, and gender were left out. Some of these have already featured in ENERGIA News under *"International Programmes"* or in articles. It is hoped that these initiatives can be added to the report in the future.

The report will appear, along with other EnPoGen papers, on a CD-Rom that will be disseminated at the end of 2002. The report is also posted on the *ENERGIA* website (http://www.energia.org/resources/papers/major_actors-activities.html). It will be maintained and updated on a regular basis, provided resources permit. *ENERGIA* would therefore welcome revisions and new additions to the report to help in keeping the document up-to-date (contributions to be sent to a.koerhuis@etcnl.nl). ■

◆ For more information, please contact the authors at the *ENERGIA* Secretariat.

[1] E. Cecelski, *Enabling Equitable Access to Rural Electrification: Current Thinking and Major Activities in Energy, Poverty and Gender.* Briefing paper prepared for a brainstorming meeting on "Asia Alternative Energy Policy and Project Development Support: Emphasis on Poverty Alleviation and Women", organised by ASTAE, Washington DC, 26-27 January 2000.

The Bulletin Board

CONFERENCE INFORMATION

National Stakeholder Consultations on Gender and Energy in Asia

ENERGIA is assisting interested stakeholders in initiating national gender and energy networks in Asia, through national consultation workshops. Proposals for national workshops in the following Asian countries were selected by the *ENERGIA* Secretariat:

- Nepal, where a workshop has already been organised by the Center for Rural Technology Nepal, and a national network established (see page 7 of this issue);
- Philippines (APPROTECH Asia);
- Sri Lanka (Department of Geography, University of Peradeniya);
- Thailand (Regional Information Service for Southeast Asia for Appropriate Technology, and Thailand Research Fund);
- Vietnam (Vietnam Women's Union); and
- India. Due to the size of the country, two consultations will be supported initially in India. Northern India (All India Women's Conference), and Southern India (Environment Protection Training and Research Institute).

◆ For more information about the national stakeholder consultations, and for contact details of the workshop organisers, please contact: the *ENERGIA* Secretariat.

TRAINING

Sustainable Energy Engineering

International Master of Science Degree Programme

The Department of Energy Technology at the Royal Institute of Technology in Sweden offers an International Master of Science Degree Programme "Sustainable Energy Engineering" with two alternative study majors that both have a strong environmental focus:

- Sustainable Power Generation; and
- Sustainable Utilisation in the Built Environment.

The programme starts in September each year (Fall Term) and runs through to the end of the following May. Applications for entry in 2003 need to be submitted to the address below not later than March 15.

◆ Application forms can be downloaded from the Internet at:
http://www.egi.kth.se/msc

◆ For more information about the content, scope and structure of the programme, or eligibility, please contact: Andrew Martin, Programme Director, Department of Energy Technology, Royal Institute of Technology, S-100 44 Stockholm, Sweden;
Tel: +46.(0)8.790 7473,
Email: andrew@egi.kth.se

PUBLICATIONS

A. Harruna Attah

Generating Opportunities for Women in Ghana In: CHOICES, June 2002 Issue.

The article argues that the lack of reliable and readily available energy services impacts harshly on rural women's lives. A case study in a Ghanaian village showed that the introduction of non-traditional energy services, alternative energy systems, and labour-saving technologies, managed by and benefiting women, can realise major improvements.

◆ For more information about this project, please contact: Sabina Anokye Mensah, P.O. Box 11024, Tema, Ghana;
Tel: +233. (0)22.202 693,
Fax: +233.(0)22.306 023,
Email: sabinamensah@hotmail.com

DFID

The Gender, Energy and Poverty Nexus

A DFID-funded desk study has investigated the relationship between gender, energy, and poverty. The study was carried out by Gamos Ltd, in partnership with the TDG, University of Twente. An analysis of the work done to date was made, and knowledge gaps identified, in consultation with development actors. It was found that:

- Development actors who have energy in their programmes tend to be gender-aware.
- Actors who promote gender tend not to mention energy.
- Energy should be related to gender strategic interests.
- Programmes need to consider energy provision as a factor for reducing poverty and as an enabling factor for changing strategic gender interests.

◆ For more information, please contact: Simon Batchelor, Gamos Ltd, 231 Kings Road, Reading, RG1 4LS, UK;
Email: simon@gamos.org,
URL: http://www.gamos.org

OXFAM

Gender and Development Journal, Volume 10 (2)

This issue focuses on the theme of climate change, and was prepared as source material for lobbying at the World Summit on Sustainable Development in Johannesburg. The issue contains a number of articles from ENERGIA members, including:

- Fatma Denton, "Climate Change Vulnerability, Impacts, and Adaptation: Why does gender matter?"
- Margaret Skutsch, "Protocols, Treaties, and Action: The 'climate change process' viewed through gender spectacles"
- Tieho Makhabane, "Promoting the Role of Women in Sustainable Energy Development in Africa: Networking and capacity-building"

◆ For more information on this issue of the journal, please contact: Ruth Evans, Oxfam Publishing, 274 Banbury Road, Oxford, OX2 7DZ, UK; Tel: +44.(0)1865.312 610,
Email: revans@oxfam.org.uk

DONOR UPDATE

U.S. Department of Energy (DOE) expands energy-efficient and renewable energy technologies

The United States presented their "Clean Energy Initiative: Powering Sustainable Development from Village to Metropolis" on 31 August 2002, at the WSSD in Johannesburg. A major feature of this initiative is the DOE efficiency and renewable energy programmes. The initiative has three goals:

- "Energy Efficiency for Sustainable Development" to reduce waste, save money, improve reliability, and optimise investments in new generating capacity;
- "The Global Village Energy Partnership" to bring electricity to the two billion who presently do not have access to it, and to another two billion who experience frequent supply disruptions; and
- "Health, Homes and Communities" to promote cleaner transportation fuels and healthier indoor cooking and heating equipment.

Additionally, the DOE has issued a compendium of sustainable energy and water success stories for the delegates and attendees of the WSSD.

◆ The report "Energy and Water for Sustainable Living: A compendium of energy and water success stories" can be accessed electronically at:
http://www.pi.energy.gov/library/ewsl.html

The International Finance Corporation (IFC) has recently launched an English version of the SME (small and medium enterprises) Toolkit. This toolkit is funded by the government of Japan and IFC's SME Department, and will provide small businesses in targeted countries in the South with access to web- and CD-Rom-based interactive tools, training, how-to articles, downloadable forms, and software. The SME Toolkit can be accessed through:
http://www.smetoolkit.org

Next Issue

ENERGIA News 5.4, due out in December 2002, will be a special issue focusing on the outcomes concerning gender and energy of the World Summit on Sustainable Development (WSSD). *ENERGIA*, together with a number of *ENERGIA* members, actively participated in the WSSD and this special issue will give a full report of these activities.

ENERGIA would very much welcome your contributions on gender and sustainable energy -articles and/or case studies (1500-2000 words) - for future issues of ENERGIA News. Please remember to send photos and/or other illustrations to accompany your features.

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" women, through the promotion of information exchange, training, research, advocacy, and action, aimed at strengthening the role of women in 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.

ENERGIA News is produced jointly by Energy, Environment and Development (EED, Kuerten, Germany), the Technology and Development Group (TDG, University of Twente, Enschede, the Netherlands), and ETC Energy (Leusden, the Netherlands) which houses the secretariat. 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 details of events. To become a subscriber to ENERGIA News, or with any query please contact:

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