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Many women use considerable amounts of their own energy in activities such as food processing. Such processes could often be electrified, reducing the women's physical load and further enabling them to become entrepreneurs by using machinery on a commercial basis. The photograph shows women in Ghana using an electric grinder to prepare grain for sale. (Photo: Courtesy of Saskia Everts)

News from the Editors

Generating Opportunities: Case Studies on Energy and Women

This issue of *ENERGIA News* focuses on a recent publication by the Sustainable Energy Programme of the United Nations Development Programme (UNDP) entitled *Generating Opportunities: Case Studies on Energy and Women*. The book of case studies was put together as part of a UNDP project on Energy and Women supported by the Swedish

International Development Cooperation Agency.

Summaries of five of the case studies are included in this issue. In addition, a review of UNDP training materials on gender and energy is provided by Makareta Sauturaga from Fiji (page 11). The training materials were prepared as a further output of the Energy and Women project and have been published as a chapter of the manual entitled *Sustainable Energy Strategies: Materials for Decision-Makers*. This was distributed to interested governments and organisations as part of UNDP's Initiative for Sustainable Energy. In a related article, Susan McDade and Astra Bonini from UNDP's Sustainable Energy Group present a discussion of UNDP's work on gender and energy and how it fits into sustainable



CASE STUDIES ON ENERGY AND WOMEN

development and poverty reduction policies, and ongoing UNDP activities (page 8).

Before beginning work on the case studies, UNDP gathered information on links between energy policies and women's development needs. The Energy and Women Project sponsored national consultations and a subsequent regional workshop for southern Africa in June 1999. The project also drew on the expertise of participants at a March 2000 regional workshop in Nairobi, Kenya, organised by *ENERGIA* in collaboration with the Environmental Liaison Centre International, UNIFEM and Winrock International. A number of *ENERGIA* members contributed to the preparation of the book, as authors, as members of the advisory group, and as important sources of information.

One common theme that emerged was the need to share information and document lessons from past projects in order to avoid repeating mistakes and to build on promising approaches for meeting women's energy needs. The UNDP case study book provides a start by analysing a variety of energy projects in terms of women's participation and the projects' impacts on women. Most are from Africa, where lack of access to modern forms of energy is a widespread problem, but there are also examples from other areas requiring decentralised energy services in remote locations.

Although there is not enough space to include summaries of all the case studies in this newsletter, we have attempted to include examples covering a variety of locations and technologies. The case studies summarised discuss community microhydro systems in Nepal, the production of battery-operated lamps by women in Bangladesh, the marketing of solar electric systems in Uganda, production and distribution of improved stoves in Kenya, and efforts by a women's group to introduce gender equity into national energy policies in South Africa. Other case studies included in the book, but not summarised here, concern UNIFEM-sponsored activities in Ghana involving fish smoking and shea butter processing, biomass briquette production in Malawi, and the use of diesel engines mounted on platforms in Mali for grinding, charging batteries, welding, pumping, and providing power for lighting. More

information on these projects can be found at the UNDP website at the end of the article.

The case studies are not intended to demonstrate best practices, but rather to look at selected projects that address women and energy with a view towards extracting lessons about criteria for good project design and successful implementation that can be used to inform energy policies around the world. The underlying assumption is that reduced drudgery for women and girls through increased access to energy, and to better sources of energy for lighting, cooking and productive activities, can have dramatic effects on women's education, literacy, nutrition, health, economic opportunities, and involvement in community affairs, with significant benefits for their families and communities as well.

By tradition, women in many developing countries are responsible for cooking and food processing, activities which require considerable amounts of fuel, usually wood, charcoal or dung. Lacking access to electricity and modern fuel sources, many women must expend their own physical energy in performing household tasks and collecting traditional fuels, which in some areas are becoming increasingly scarce due to environmental pressures.

The case studies demonstrate that providing energy in useful, convenient and affordable forms is not a simple matter, especially in rural areas where extension of the electricity grid is uneconomic. It is also important to consider other forms of energy than electricity since many of the activities performed by women require process heat for which electricity is neither the most appropriate nor the cheapest option. Meeting the energy needs of women generally calls for a shift in focus to the demand side of the energy sector – to the end users. Most of the projects discussed represent promising decentralised, small-scale, off-grid solutions, yet they nevertheless have encountered serious social, political, economic and technical challenges. The Uganda project, for example, made special efforts to encourage women entrepreneurs to purchase solar systems by offering credit through a women's bank, but high interest rates, short repayment schedules, and collateral requirements meant that few women were able to take advantage of the programme.

By presenting examples of approaches that address multiple development obstacles, including energy scarcity, gender inequity, income-earning limitations, and environmental degradation, the case studies provide useful lessons for those involved in energy planning and decision-making. The projects that were selected have achieved varying levels of success, and some are still in the early stages of implementation, but they all contain valuable ideas about how to strengthen linkages between energy activities and improvements to the lives of women.

Primary Lessons Drawn from the Case Studies can be Summarised as Follows:

1. The successful introduction of new and gender-sensitive approaches requires the support and coordination of local and national government institutions. In Nepal, different levels of the government have been engaged in the microhydro programme, with the national government providing subsidies for the systems, and village and district level development committees also required to commit their own financial and human resources.
2. Since the needs of different communities vary widely, the formulation of energy policies and programmes should begin with an assessment of people's actual needs, not a plan to promote a particular technology. The Mali multifunctional platform project has developed detailed village-specific feasibility studies to assess demand for electrical power, and, in so doing, found that local customs and practices affect the timing and amount of post-harvest grinding and milling.

3. While environmental issues may be priorities both nationally and internationally, they must be addressed in the context of overcoming poverty and helping people meet their basic needs.
4. It is easier to mobilise support for energy projects that target women if they provide new opportunities for income generation and economic benefits.
5. Effective marketing strategies are crucial in realising commercial opportunities and establishing the long-term viability of energy-related programmes. In Bangladesh, for example, the women involved in the microenterprise project prepared a detailed marketing plan that analysed target locations and customers, and projected demand for their battery-operated lamps.
6. Innovative financing and credit arrangements are needed that make energy equipment more affordable for women, and targeted short-term subsidies may be required to underwrite the high initial costs of new energy systems.
7. Capacity building is needed to promote the involvement of women, and the giving of attention to women's concerns, throughout all levels of energy policy-making, planning and project implementation. This was clearly demonstrated in South Africa, where a women's energy network which strove to increase the participation of women in decision-making processes in the energy sector, and where the members helped each other work towards higher levels of professional competency and recognition, still experienced frustration with the lack of available time and resources.
8. The fully-fledged participation in energy programmes of the intended beneficiaries, including women, is crucial to successful design, implementation and evaluation processes. The Upesi stove project in Kenya was able to take advantage of women's knowledge and experience by involving interested women's groups in the design and field testing of the stoves, as well as stove production, distribution and installation.
9. Introducing energy policies that take into account women's concerns is a complicated process. In order to promote gender-sensitive national energy policies, mechanisms are needed to capture lessons learnt from local experiences, especially regarding women's energy needs.

Although the analysis provided in the case studies is primarily at the project or programme level, these experiences can provide useful guidance for developing sustainable energy policies that address the needs of women and rural communities. If women's participation in the formulation of national and local government policies and plans is properly addressed, perhaps using some of the approaches suggested in the case studies, overall poverty reduction and empowerment goals are much more likely to be met. ■

Acknowledgements

ENERGIA is grateful to Professor Salome Misana and Gail V. Karlsson, the Guest Editors for this issue, who worked jointly with Joy Clancy of the ENERGIJA Editorial Board.



◆ Salome Misana is an Associate Professor of Geography at the University of Dar es Salaam, Tanzania and one of the editors of the UNDP book on *Generating Opportunities: Case Studies on Energy and Women*. She is also the National Coordinator of the Leadership for Environment and Development in Southern Africa (LEAD-SA) training programme. Professor Misana has researched extensively and written on various issues relating to human-environment relationships and dynamics, including problems of deforestation caused by production and use of biomass energy such as charcoal. Professor Misana can be contacted at: **University of Dar es Salaam, Department of Geography, P.O. Box 35049, Dar es Salaam, Tanzania;** Tel: +255.(0).22.2410500-8, Ext: 2337/2335, Fax: +255.(0).22.2410393, Email: smisana@ud.co.tz



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◆ The entire *Generating Opportunities: Case Studies on Energy and Women* publication - and the separate chapters - can be downloaded from the UNDP web site at: www.undp.org/seed/eap. For more information on the publication, please contact: **Energy and Atmosphere Programme, Bureau for Development Policy, UNDP, 304 East, 45th Street, 9th floor (Room 9100), New York, NY 10017, USA;** Fax: +1.(0).212.9065148, Email: eap.guest4@undp.org

Internet Resources



Searchable photo library on NREL website. The photographs in the PIX library can be used without charge provided that the source is credited. NREL would welcome the submission of additional photos. Visit the photo library at: <http://www.nrel.gov/data/pix/pix.html>

The Global Development Network (GDN) website offers a lot of information on its initiatives to support the generation and sharing of knowledge for development, and to help bridge the gap between the development of ideas and their practical implementation. On this site you will find information about: research grant competition; global research projects; development awards; scholarship opportunities; and much more. Visit the site at: <http://www.gdnet.org>

Visit the site of the recently founded OWWEGA (Organisation of Women in Water, Electricity and Gas in Africa) and learn more about the background and mandate of OWWEGA and view its e-newsletter. Visit the site at: <http://www.owwega.org>

The Climate Network Europe website has a searchable database, which is regularly updated, of over 3000 documents on climate change. The site also provides links to other related online libraries. Visit the site at: <http://www.climnet.org/library/library.htm>



News from the Secretariat



Anja
Panjwani-Koerhuis

Revised *ENERGIA* Website Launched!!

ENERGIA is happy to announce that its new and expanded website was launched on 1 October 2001.

A very exciting moment and an important step forward for *ENERGIA*. The "new look" reflects the progress of *ENERGIA*, and the latest developments in the field of gender and sustainable energy. The website uses *ENERGIA*'s own house style, which makes it more recognisable to its members and the wider audience in general, and brings us up-to-date with the latest changes in the ICT (information and communication technology) sector.

To develop the new website, Anja Koerhuis, *ENERGIA*'s Information Officer, received on-the-job training from Harry Oosterveen, an electronic information specialist from IRC, the International Water and Sanitation Centre, following which the site's new structure and layout were designed. The site was then tested internally, after which technical problems were ironed out and a lot of work was done on the content of the pages. Again the site was tested, minor changes were made, and the site was then ready to be launched.

The objectives of the new site are:

- to facilitate and enhance *ENERGIA*'s services to the Network;
- to promote the *ENERGIA* Network; and
- to advocate *ENERGIA*'s aim of strengthening the roles of women in sustainable energy development.

Join *ENERGIA*'s member database - expected online soon!

Publishing its member's database on the Internet is one of *ENERGIA*'s goals. Having such a database would facilitate networking between members, and at the same time could serve as a resource base for donor agencies, ministries, international organisations, etc. looking for experts on gender and sustainable energy.

ENERGIA expects to launch this online, and searchable, database before the end of this year. We are taking this opportunity to ask you to send us your updated contact and professional data. This can be done by

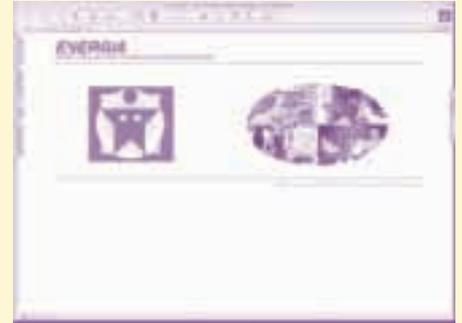
The website can be accessed through the unchanged URL www.energia.org, where you will find a lot more information about *ENERGIA* and its activities, including:

- *ENERGIA*'s mission statement and principles;
- The organisation's structure;
- An introduction to who's who within *ENERGIA*;
- Detailed contact information; and
- Detailed and up-to-date information on each of *ENERGIA*'s programme activities, including links to reports and partnering organisations.

The website also provides many more resources on gender and sustainable energy in general:

- Downloadable pdf files of *ENERGIA News* 3.1 to date;
- *ENERGIA*'s electronic newsletter, *ENERGIANet*;
- A link to *ENERGIA*'s photo gallery, which is hosted by *Photoshare*, a free service to NGOs managed by the Media/Materials Clearinghouse of John Hopkins University;
- Eleven working papers on gender and sustainable energy; and
- The latest news and events in the gender and energy field.

Soon we will be adding links to a number of interesting websites, an annotated bibliography on gender and energy, html files of all back issues of *ENERGIA News*, and an online database of the members of *ENERGIA* (see box below). *ENERGIA*'s website already links to several regional gender and energy network sites (such as



GENES and OLADE) and programmes of partner organisations (Winrock International, UNDP) and we are looking forward to making other links in your area.

The *ENERGIA* site is "the" place to start looking for information on gender and energy on the web, and to find out more about *ENERGIA*. Although the website is considered an important vehicle in making information on gender and sustainable energy available to a wide audience, *ENERGIA* realises that not everyone has Internet access. *ENERGIA* will therefore continue to make information available in hard copy as well.

We hope all of you with an Internet connection will have a look at the site and we are looking forward to receiving your feedback! ■

◆ Anja Panjwani-Koerhuis has an MA in Development Studies, for which she specialised in gender issues and household energy. She has worked for a number of years in Tanzania on household energy, with a focus on charcoal and woodstoves. In September 2000, Anja joined the *ENERGIA* Secretariat as Information Officer. She is responsible for managing *ENERGIA*'s Resource Centre, including maintaining the *ENERGIA* website, publishing the electronic newsletter *ENERGIANet*, and coordinating the preparation of *ENERGIA News*.

◆ For more information on *ENERGIA*'s website or Resource Centre, please contact: **Anja Panjwani-Koerhuis at the *ENERGIA* Secretariat in Leusden, The Netherlands: a.koerhuis@etcnl.nl**

completing the registration form on the *ENERGIA* website, or by asking the *ENERGIA* Secretariat to send you a datasheet that can be returned by email, fax, or regular mail.

Even if you do not want your contact details published on the Internet, please still fill in a datasheet so that we can contact you, but indicate that you do not want to be included on the internet data base.

Looking forward to hearing from you soon!

Networking Around the World

Genderising the Energy Debate at CSD9

The Ninth Session of the Commission on Sustainable Development (CSD9), held in April 2001 in New York focused on energy and transport.

"Genderising" CSD9 was the goal of a cooperative advocacy effort at the session and expert group meeting, by:

- *ENERGIA*,
- the CSD NGO Women's Caucus,
- ENDA Tiers Monde – Senegal,
- Minerals and Energy Policy Centre (MEPC),
- the Environmental Liaison Centre International (ELCI), and
- the Energy and Climate Change Caucus.

The 1992 Earth Summit/UN Conference on Environment and Development (UNCED) in Rio de Janeiro clearly acknowledged the important role which women need to play in sustainable development. A sustainable energy policy should mean sustainable access to sustainable energy but access to sustainable options by different population groups is sometimes overlooked. In reviewing the draft document for CSD9, significant gaps were identified in the structural relationships between energy policy goals and gender issues. With the approach of the World Summit for Sustainable Development/Earth Summit 2002 in South Africa, and the recognition of the significant role that the outputs of CSD9 will play in setting the energy agenda for this event, the integration of gender issues into the energy dialogues and output documents at CSD9 was a priority goal.

The various activities that were undertaken in this respect were as follows:

1. Special Issue of *ENERGIA* News on CSD9

ENERGIA News' twelfth issue (no. 4.1 released in March 2001) was specifically developed as an advocacy tool in the run up to CSD9. The issue was prepared with the premise that although many of the participants at CSD9 would be, in general terms, well informed about gender in development, the question of how to integrate it, in concrete ways, into energy policy and planning might be one that government officials, and also NGOs, still needed to consider. The content of the newsletter thus focused mainly on consultations related to the CSD9 process, such as the Women in Energy Ministers' conference (December 14 - 15, 2000) where recommendations and commitments to the integration of gender into energy policy were developed. The issue also provided a new dimension to the debate on gender and sustainable energy by covering issues relating to climate change. The newsletter was disseminated at CSD9.

2. The Integration of Gender in the Outcome Document from the Intergovernmental Negotiation on Energy and Sustainable Development

Through the active lobbying of *ENERGIA*, in collaboration with Fatma Denton of ENDA Senegal and Gail Karlsson, an *ENERGIA*

Consultative Group Member, at the ad hoc open-ended meeting of the Intergovernmental Group of Experts on Energy and Sustainable Development (IGEESD) (February 26 - March 2, 2001) and at CSD9, specific references to women were added to the final outcome documents of the Intergovernmental Negotiations on Energy and Sustainable Development (INESD) (available at: <http://www.un.org/esa/sustdev/csd9/ecn172001-15.pdf>). These included additions to the following sections of the INESD document:

- **Issues and Options:** Strengthening the role of major groups, including women, inter alia, through participation in decision-making, as appropriate.
- **Accessibility of Energy:** Support equal access by women to sustainable and affordable energy technologies through needs assessments, energy planning and policy formulation at the local and national levels.
- **Rural Energy:** Considering the health and safety concerns of women and children in rural energy programmes. Promoting efforts to address the disproportionate burdens experienced by women in rural areas including the carrying of fuel wood over long distances and the adverse health effects of prolonged exposure to open fires.
- **Multistakeholder Approach and Public Participation:** Energy solutions that are compatible with sustainable development require the participation of all stakeholders and the involvement of the public at large. The capacity to facilitate participatory approaches to energy for sustainable development of community-based organisations and institutions including women's groups should be strengthened, taking into account principle 10 of the Rio Declaration, with full recognition of principles 5, 7, and 11.
- **International Cooperation:** Supporting international endeavours to promote equal access and opportunities for women in relation to energy, including credit facilities and involvement in energy policy decision-making processes.

3. Multistakeholder Dialogue on Energy and Transport

At CSD9, the multistakeholder dialogue continued with a focus on Energy and Transport for Sustainable Development. The purpose of the multistakeholder dialogue is to generate action-oriented dialogue between governments and major groups, and to identify future policies and actions that increase the positive impact of sustainable development objectives in specific economic sectors.

Representing a major group, the Energy and Climate Change Caucus NGO, Annabell Waititu of ELCI presented a dialogue paper calling for the active participation of women to be encouraged in all sectors producing and using energy, in order to bring about a gender perspective and gender equity in energy policies and programme planning and implementation. Because cooking represents the main energy use of poor women, the paper also called for programmes that would improve energy access by women and children in developing countries by giving priority to more sustainable cooking fuels and methods, including improved biomass stoves. This could lead to improved family health, both by reducing smoke and other indoor air pollution, and by decreasing women and children's workload in fuelwood collection and in cleaning.

4. Background Papers Prepared for CSD9

• Gender Perspectives on Energy for CSD9

On behalf of the *ENERGIA* Consultative Group and the CSD NGO Women's Caucus, a background paper was prepared by *ENERGIA* as input to the Secretary-General's report, the EU position paper, NGO Dialogue Sessions, etc. The paper set out the reasons, from both Southern and Northern perspectives, why gender issues need to be more strongly integrated into energy policies, planning and projects, in order to increase sustainable energy access for women. It refers to relevant recommendations made at UN meetings and other expert gatherings, and lists a number of major achievements in both the North and the South. Ten general recommendations for engendering energy and empowering women are made, as well as specific recommendations for the CSD, international agencies, donor agencies, governments, business and industry, workers and trades unions, NGOs and other groups in civil society. The most important contents of this background paper were summarised in the February issue of "Sustainable Energy News", the newsletter of INFORSE, the International Network for Sustainable Energy. This newsletter was disseminated at CSD9.

• Gender and Energy in the South: A Perspective from Southern Africa

This was prepared and presented by Hespina Rukato of MEPC (the focal point for the Southern African Gender and Energy Network), as a background paper for the Expert Workshop "Gender Perspectives for Earth Summit 2002: Energy, Transport, Information for Decision-Making" held in Berlin, Germany (January 10 – 12, 2001). One of the aims of the paper was to provide, from a developing countries perspective, an overview of existing research studies and their approaches concerning the linkages between gender, energy and sustainable development issues which were to be discussed at CSD9, including, where possible, practical experience with energy projects and their monitoring.

• Is there a Gender Angle to the Climate Change Negotiations?

This paper was jointly produced by Njeri Wamukonya and Margaret Skutsch as an attempt to readdress the lack of information on the gender consequences of the climate change process. A number of different issues within the climate change debate, in particular the instruments proposed, were analysed. Included were the responsibility for the emission of greenhouse gases (GHGs), studies on vulnerability to the effects of climate change, emission mitigation, capacity building for participation in flexible mechanisms, and adaptation to climate change. The paper concludes that while there are many gender angles related to the climate change convention and its instruments, some are more strategic than others. Strategic issues include: mitigation activities, the Clean Development Mechanism, capacity building, technology transfer, vulnerability studies, and projects for adaptation. The poor, the majority of who are women, should be targeted and active participants in decision-making.

5. Side Events

Side events are an increasingly important part of the CSD, allowing NGOs, governments, international agencies and others to showcase their projects, hold discussion panels, and hear what others have to say. Four gender and energy related side events were hosted at CSD9. These were:

- A one-day side event at CSD9 on the 24 April 2001, jointly prepared by *ENERGIA* and ENDA-Senegal. Participants were invited to partake in a round-table discussion on the theme: "Does Sustainable Energy have a Woman's Face? Advocating for a Gender and Energy Inclusion in CSD9 and Beyond." Presentations from Lisa

Büttner of Winrock International, Annabell Waititu of ELCI, Gail Karlsson, and Ms P. Butelezi of the South Africa Department of Minerals and Energy, provided inputs for discussion.

- A UNDP side event to launch the book produced from the UNDP Energy and Women Project, "Generating Opportunities: Case Studies on Energy and Women". The publication critically looks at policy and programme design options to improve women's access to modern energy services, based on the lessons learnt from the eight case studies presented. As the international community prepares for the Earth Summit 2002, *ENERGIA* considers this current issue of **ENERGIA News**, based on the aforementioned UNDP publication, to be a timely contribution that will serve to highlight actual activities that have attempted to link gender, energy, and sustainable human development objectives at the policy and project level.
- A WHO Expert Panel discussion "Household Energy, Health and Development: Key Issues and Policy Implications for Sustainable Energy", 26 April 2001. The aims of this expert panel were to examine the impacts of household energy on health and development, highlight efforts at global and national/local levels to address the problem, and discuss technical and policy interventions needed for effective and sustainable solutions. Presentation were made by Professor Kirk Smith of the University of California, Berkeley; Professor Jyoti Parikh of the Indira Gandhi Institute of Development Research; Professor Thomas Johansson of UNDP; Dr Nigel Bruce of Liverpool University; Sheila Oparaocha of *ENERGIA*; and Dr Rogerio de Miranda of PROLENA, Nicaragua.
- A display of a multifunctional energy platform, that is a small engine to which a variety of end-use equipment can be attached (mills, alternators, oil presses, etc), from a UNDP-supported project in Mali. The basic aims of the project are to reduce the time and energy poverty of women, and to enhance the opportunities created for reducing income poverty and for achieving desirable outcomes in terms of other indicators of well-being and empowerment. The project, through its partners, can achieve these outcomes by enhancing the benefits of water pumping and water point provision, electric lighting and education.

6. The Caucus Statement to the High-Level Segment Session

As a representative of a major group, the NGO Energy and Climate Change Caucus presented a statement to the High-level Segment Session at CSD9. In its statement, the NGO Caucus recommended: "Women's overall developmental needs must be integrated into programs that address poverty and income-generating activities, including energy production, supply, and consumption, particularly in rural areas. Efforts should be geared towards fostering greater cooperation between men and women in development projects with regard to gender-specific needs."

Follow up activities

Building on the successes at CSD9, and the probability that energy will be a key issue at the Earth Summit 2002, *ENERGIA* and others in the gender and energy sectors are in the process of planning activities to influence future international energy policy through advocacy to mainstream gender into the outcomes of the energy discussions and documents of the Earth Summit 2002. More details of these activities will become available early next year. ■



◆ For more information on this article, please contact:
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Coordinator; Email: Energia@etcnl.nl**

I was wondering if you could first tell us about growing up in Bangladesh. Did your family encourage you to pursue a career in engineering?

I grew up in a relatively large city, Dhaka, where there were many educational opportunities available to me, and my family placed the utmost importance on education and building a career.

My father was a professor of engineering at the university, so I was exposed to this subject from a very early age, and my interest grew further when I saw my elder sister joining the same university. My family was liberal and encouraged us to choose any field we were interested in.

Women often complain about feeling isolated and marginalised in male-dominated professions such as you find in the energy sector. Did you experience anything like that and, if so, did it affect your career path? Do you have any suggestions for young women on how to deal with these types of experiences?

Engineering has always been, and still remains, a male-dominated profession. During my undergraduate years in Bangladesh I was the only female student among the seventy students in my department, and when I went to the United States for graduate studies I was the only woman in a class of twenty. In my teaching career in the US, I was the only female faculty member out of forty-five, and I am still the only woman at most of the professional meetings I attend. In the process I have learnt to stand up for myself, so this situation has not adversely affected me, or my career. Motivation and performance are the key factors.

There is always some feeling of loneliness among minority group members in any situation. In my teaching, I noticed that female graduate students often came to me for discussions and advice on research, and some eventually became friends. Female engineers engaged in different organisations in Bangladesh also seek out opportunities to discuss their situations with other female colleagues who could share their views. But the idea of professional success should not be limited to the challenges imposed by others. Women in such professions should feel confident in setting their own standards, which should preferably exceed general expectations. So it may be a difficult struggle, but you become stronger by taking on such challenges.

I remember that our office in Dhaka once submitted a project bid in which the four senior team members were all women and we took pride in this coincidence. However, after we submitted it to the contractor, the task manager of this highly rated international organisation said, 'everything

Meeting **ENERGIA** Members



Hasna J. Khan

Director Prokaushali Sangsad Ltd

Interview by Gail Karlsson

looks fine, but you have four out of five women professionals in this engineering project'. I was truly surprised, because nobody had ever tried to discriminate against us in this manner before, so my response was 'well you should feel proud that a consulting firm in Bangladesh is able to produce such a team'. Of course there was no immediate reply, but our bid won anyway.

What are you currently working on?

I am part of a technical team of an engineering firm, Prokaushali Sangsad Limited, in Bangladesh. We are currently working on two energy-related topics. We are designing a national solar electrification programme to provide electricity to 58,000 households in the next five years. In addition, with support from ESMAP, we are providing technical assistance to rural women in Bangladesh so that they can enter mainstream energy-related activities and become off-grid energy service providers.

Your work on development projects in Bangladesh seems to have emphasised solar systems for rural electrification. How did you become interested in solar power?

My interest in solar electrification comes from my exposure to solar car projects undertaken by senior students at the University of Maryland while I was teaching there as an assistant professor in 1990. It was fascinating to evaluate the potential of solar energy and I began to imagine its potential in developing countries, where millions of households remained un-electrified, while we built solar racing cars.

The case study you contributed to the UNDP book described a project through which rural women learned to produce and market battery-operated lamps. Was that the first time you focused on women's energy needs in particular?

My colleagues and I in Bangladesh have focused on women's energy needs for several years, but most of our early involvement was in terms of evaluating energy consumption patterns and identifying barriers that were specific to women. The project described in the UNDP book, and summarised in this newsletter, promotes a very special role for women as energy service providers. This is a non-traditional activity for rural women, and considers their capabilities as well as their needs.

Why did you consider it important to focus on women, both as the target group and as the disseminators of the technology?

I think this is one of the most effective ways to mitigate the prevailing poverty experienced by rural women in developing countries. If we recognise women's potential, and transfer the knowledge necessary to improve their skills, women can not only benefit from technological intervention, they can also effectively contribute to the economy and to society. It is important that we do not isolate rural women, since they can immensely improve their own livelihoods if we engage them productively in mainstream energy-related activities.

What has been the response to your approach?

The response has generally been very positive. Public officials in Bangladesh have recognised this activity as a breakthrough in the mobilisation of rural women, while private individuals and organisations are equally impressed by the women's enthusiasm. Because the work is non-traditional by nature, it is subjected to close scrutiny by other organisations that are interested in the potential for future replication.

What do you see as the most promising ways of increasing women's access to the energy they need to improve their living conditions and future prospects?

I think that rural women's access to energy is one of the key factors in improving their individual prospects. The impacts of public policies related to the availability of energy for cooking and lighting are far reaching and go beyond the issues of immediate needs for energy on a daily basis, since they are related to the overall sustainability of an integrated energy plan. Another important factor is

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International Programmes: Focus on

Engendering UNDP Energy Policy

Susan McDade
Astra Bonini

UNDP and Sustainable Energy Policy

UNDP works around the world on capacity building to support sustainable development and poverty reduction. One of the key capacity building areas for this organisation is in support of national policy frameworks, including models of alternative policy approaches, as a means to reach concrete development objectives. Focusing on specific national and local development policy entry points can be an important way of catalysing changes in the living conditions of women and men in developing countries. One of the six thematic priority areas for UNDP worldwide is energy and environment. Within this thematic focus area, the challenge of how to promote sustainable energy policies that address the needs of all people, women and men, rural and urban, is one of our key institutional challenges. Energy policies that address poverty and equity concerns, and specifically those policy approaches that address the unique energy needs and constraints faced by women, have been identified as an important entry point for the development of UNDP's sustainable energy programme. The ways in which policies are reviewed, defined, implemented, and monitored provide multiple entry points in development policy dialogue for including women, their concerns and a gender perspective on desired development outcomes. When development agencies emphasise the importance of focusing on poor people, the majority of these poor people are women and the majority of poor households are headed by women. In this sense it is not possible to promote truly pro-poor policy dialogue without considering the particular situation of women, including the voices of women and their representatives in policy dialogue.

Sustainable energy approaches that have "win-win" economic and environmental benefits include: (1) the promotion of end-use energy efficiency to increase the benefits from existing resources and fuels; (2) the promotion of renewable energy systems, especially in decentralised systems, to provide services in rural areas where grid extension would be uneconomic; and (3) the introduction of cleaner, modern technologies and energy carriers where energy services are scarce or absent. None of these approaches are gender neutral, either by definition or design, and specific efforts are needed in the design of policies and programmes to accurately identify the impacts and opportunities they present to women and their communities.

Energy and Women: Background

Today, two billion people rely on traditional fuels such as wood, dung and agricultural residues to meet their heating and cooking needs; and two billion people, mostly in rural areas, still do not have access to electricity and the services that electricity provides. Due to gender-specific roles in the use of natural resources, scarcity of energy services impacts on men and women differently, as will solutions that reduce this scarcity.

The burden of fuel collection to meet household energy needs falls mainly on women and girls, reducing their educational opportunities, the time available for domestic and income earning activities, and their quality of life. Lack of energy options for water pumping, grinding, food processing, and other activities largely undertaken by women in developing countries, entrenches gender disparities and conditions of poverty. Worldwide over two million premature deaths annually are attributable to the health impacts of indoor pollution from heating and cooking with traditional fuels, and these health impacts are borne most directly by women and young children.

The poorest people spend a higher proportion of their family income on energy services than other groups. Dry cell batteries, kerosene and candles amount to low quality and expensive energy services for poor people. In many countries, energy sector reforms, utility deregulation, and electricity distribution privatisation, contribute to increased inequities in energy service provision. Since much of the contribution by women and girls to the production, distribution and use of energy goes unmeasured in economic terms, market signals alone are unlikely to have direct economic benefits in the short term on women's lives.

The special energy needs of women have in general not been addressed in energy planning processes. Although the unsustainable environmental impacts caused by existing energy systems have resulted in the international recognition of the need for fundamental changes in energy pathways; price distortions, due to subsidies for conventional energy, and weak support for energy alternatives have hampered systemic change. Energy professionals, both women and men, also frequently assume that energy policies are gender neutral.

Implementing new approaches, however, is complex and requires more integrated and participatory approaches. With new and innovative regulatory, technological and financing measures, energy can become a powerful instrument that supports sustainable human development. Ensuring adequate attention is paid to the three dimensions of sustainable development - economic, social and environmental - and to the gender differentiated needs of poor people for energy services that support sustainable development, is the goal of UNDP in this area.

What to Do:

It is essential to include sustainable energy considerations in three types of policy dialogue: macroeconomic reform, energy sector reform, and sustainable development planning. All three must address energy in ways that support growth and equity if the Millennium Summit goal of halving the number of poor people by 2015 is to be achieved. All three provide opportunities to address the unique energy needs of women, and to consider how the availability of energy services differentially impacts on groups and sexes. Within processes for setting and regulating national economic, environmental and energy policies, UNDP's energy activities advance the interests of poor and marginalised groups with the object of increasing their access to energy services. Generally, getting sustainable energy policies right requires addressing a two issues axis,

equity and sustainability, within the following three policy arenas:

1. Energy linkages in macroeconomic policy reform

Within macroeconomic reform processes it is essential to evaluate and review the effect of energy subsidies and subsidy reduction on poor groups, and within these groups, poor women. Support for national efforts to restructure subsidy programmes, including targeted energy pricing, is essential to support equitable growth. Adequate policy debate on the role of pricing cooking fuels, and LPG in particular, is an essential element of this debate if household energy needs, and the role of women in meeting these needs, is to be adequately addressed. Similarly, the inclusion of energy links and household energy concerns in poverty reduction strategies and the non-energy sector policies of developing countries is essential in order to reach social, economic and environmental goals. Policy considerations in a variety of economic sectors impact on energy and poverty outcomes. For these policy discussions to be undertaken in an informed way, the distinct energy-use patterns and economic conditions of women and men, and female-headed poor households in particular, must be adequately understood by policy makers. In many instances this requires the collection of baseline consumer information from poor groups. Often, it is the women within these groups who are the hardest to reach in terms of information collection and statistical sampling due to gender blind methods of data collection, and differences in literacy or social norms impacting on communication outside the family or community. Special efforts to address these complex gender-based differences are required in order to gather useful consumer data that can inform macroeconomic policy making processes.

2. Energy sector policy and development

Capacity building, for energy planners, utility regulators and energy companies, in terms of assessing and meeting the energy needs of poor people, poor women, and rural populations, is also a major challenge for energy sector reform around the world. An understanding of the energy consumption and production profiles of men, women, families and communities is essential in this dialogue. Increasing the capacity of public officials, including women officials, to understand gender differentiated energy considerations is important in this regard. Around the world, the process of energy sector restructuring, separating energy generation, distribution, and sales into distinct economic units, both publicly and privately owned, is a significant feature of energy sector regulation. This process creates opportunities for innovation in the use of

cleaner decentralised energy systems and also potentially impacts on the employment of energy sector workers. Opportunities to expand the use of rural energy cooperatives, private sector small-scale producers, and credit systems to support the purchase of energy services, can all be expected as part of this process. In all these regards, there are significant opportunities for women, and women's groups, to expand their participation in energy sector solutions, but these will not be taken unless government officials and representatives of the energy industry are sensitised to the potential beneficial development outcomes. As the publication featured in this issue shows, there are a number of countries in which the active inclusion of women's groups, and gender considerations in planning energy services delivery, has resulted in better outcomes in terms of the quality of energy services delivered.

3. Energy within sustainable development policy dialogues

National and local sustainable development planning is another important entry point for including energy issues since they impact on the local environment and human well-being. One of the features of sustainable development planning that crosses sectors and development issues in the economic, social and environmental realms, is the use of participatory methods in problem definition and solution identification. Support for multistakeholder dialogue processes in energy for sustainable development is essential in identifying barriers and determining common objectives and priorities in new energy developments and investments linked to economic growth, equity and sustainability. Critical stakeholders include women and their representatives. Energy issues linked to land use, fuel harvesting, and the role of women in managing natural resources, are fundamental in this regard. Similarly, the role of modern energy carriers and reliable energy services for supporting economic activities and social services for women, their families and communities, are key aspects of sustainable development planning. These stakeholder groups can provide important insights into the specific causes of unsustainable practices based on the daily conditions of women and especially poor women, and may also provide insights into innovative solutions that would not otherwise emerge. As is the case with macroeconomic and energy sector planning, the sensitisation of planners and policy makers to the fact that gender-informed policy options lead to better development outcomes, is an important element in improving the policy dialogue process itself.

In addition to supporting the inclusion of sustainable energy

considerations within the three realms of policy dialogue described above, UNDP places emphasis in programmes on a few key topics. Again the purpose is to support equity and sustainability in development outcomes. In relation to two programme areas, there are specific issues directly linked to the role of women in development.

Rural Energy Services (Heating, Cooking, Electricity)

Development activities and programme support focusing on the heating, cooking and electricity needs to support household and productive activities in rural areas is essential if the goal of poverty reduction is to be achieved, especially since the majority of people with the worst energy services live in rural areas. Women in rural areas face many of the greatest challenges in relation to access to basic health and education services, economic opportunities and food security for themselves and their families. UNDP assistance focuses on energy efficient options through both conventional and renewable energy. In this focus area, special attention needs to be given to the distinct energy needs of women in terms of household and economic activities, and the essential role of energy services in supporting value-added activities in rural areas. Priority policy issues include topics such as resource use and ownership, pricing, credit, taxation, and public information to support rural energy objectives concerning electricity, cooking, and the other energy needs of poor communities.

In rural areas much greater support is needed in relation to analysis, capacity building and programme development focusing on the distinct energy use patterns and needs of women for both household and productive activities. Support for the marketing and availability of cleaner burning fuels such as LPG, and the adoption of more energy efficient equipment (stoves, kilns, etc) is critical to address the cooking and thermal energy needs in rural areas. In many cases, this will require adaptation of technology, fuel options and energy service payment systems to reflect the conditions of poor households, and women in particular. Promotion of decentralised energy service delivery options to meet electricity needs in rural areas (to support illumination, mechanised power, water pumping etc) using the fee-for-service approach can expand the access of poor women to these services. The decentralised approaches supported to date include a multi-functional platform using diesel engines, solar photovoltaic home and community based systems, hybrid electricity generating systems, and biomass equipment to produce clean cooking gas, heat and electricity.

As mentioned earlier, the analysis of the ability and willingness to pay for energy by poor households has proven to be essential in these approaches. This is also an important basis for enhancing access to, promoting, and developing credit systems that can finance investments in energy generating systems and energy using equipment, and so expand economic activities in rural areas. In assessing the ability of households to pay for energy services, it is essential to determine the extent to which women participate in the decision-making process or management of family incomes and savings. Where women are not decision makers over the use of scarce cash resources, it will be difficult for them to participate in fee-for-service approaches for meeting their energy needs. This suggests that an important part of the planning and implementation of such systems should be an adequate understanding of the relationship of women to cash resources in the communities or regions that are targeted by such programmes. The assumption that men and women within poor households have equal access to money, or would make the same decisions concerning the use of such resources, is not supported by field-level evidence from around the world.

Low-Emissions Technology

The energy needs and unique characteristics of developing countries will impact on the direction of technology development, as the majority of new investments in energy will take place in these markets in the future. In the long term, low carbon energy pathways are the only truly sustainable development option. UNDP efforts in this area support the introduction and adaptation of low emission technologies that can support economic growth, social development and environmental

sustainability. Changing technology pathways can have both positive and negative impacts on women and the inclusion of gender impact considerations in assessing the effectiveness of energy technology options is necessary but often ignored. The tools and methodologies needed for such assessments are not always readily available and more work is needed in this respect. Cleaner, lower emission, technology can certainly bring about positive global and local environmental impacts. The impacts on local employment and gender issues cannot be assumed to be positive unless consideration of these aspects is explicitly incorporated in effective programme design.

Priority activities in changing energy technology pathways include capacity building and creating networks to provide information on clean energy technology options, developing country experiences with different technology options, and assessing emerging trends regarding the introduction of technologies and their viability in developing country markets. In all these regards there are again important opportunities for including women, their representatives, and a gender perspective in such assessments. Evaluating the impact of low-emission energy technology changes on the gendered division of labour, formal/informal sector employment opportunities, and rural/urban opportunities, must be balanced by a consideration of both equity and sustainability factors. Where cleaner technologies also bring about improved employment, income earning, or time saving opportunities, for women there can be win-win outcomes. Often, the introduction of modern energy technologies has led to the displacement of women from traditional energy-using economic activities, or has created new employment opportunities that are accessed mostly by men. If the methods used to introduce these

technologies result in improved environmental outcomes, yet worsen the living conditions of one sex, or specific income groups, the approach cannot be said to be truly sustainable.

Conclusion

As this discussion has shown, there are multiple opportunities for including a gender perspective in energy dialogue and public policy setting. Policies cannot be assumed to be gender neutral, and many policies designed to bring about positive development or environmental outcomes can have unintended negative effects on women and their opportunities to overcome poverty if explicit attention is not given to gender relationships in policy and programme design. This leads to the concept of gender mainstreaming in policy dialogue. Unfortunately gender mainstreaming in some cases had led planners to conclude that if gender is "mainstreamed" then a special focus on women and their unique economic and social conditions is not called for. As the experience of UNDP has shown in development efforts around the world, and as these case studies underline, those policies and programmes that do pay special attention to the energy roles, needs and options of women tend to bring about better overall development outcomes. This testifies to the importance of using special tools, improved analysis, better baseline data collection, and seeking out the opinions and participation of women and their representatives within policy analysis, dialogue and definition, in order to bring about more sustainable energy outcomes. UNDP has recently launched a new Thematic Trust Fund on Sustainable Energy as a means of raising additional development assistance to support country-level operations,

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through the provision of technical assistance and programme support for topics such as the environment, job creation, the role of women, and poverty alleviation, as they relate to energy issues. Ms. McDade is also one of the contributors to the UNDP publication *Energy after Rio: Prospects and Challenges* released in 1997 in preparation for the UN General Assembly special session that reviewed progress since UNCED, as well as *Generating Opportunities: Case Studies on Women and Energy* published in April 2001 as input to the ninth meeting of the Commission for Sustainable Development. Susan McDade holds a Masters degree in Development Studies, having specialised in economic policy and planning, from the Institute of Social Studies in the Hague, the Netherlands where she studied and subsequently taught from 1987-1990.



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Resources: Focus on Training

Gender and Energy: How is Gender Relevant to Sustainable Energy Policies?

Makereta Sauturaga

The importance of gender in energy sustainability cannot be over emphasised. This is the message that comes out clearly in the chapter entitled “*Gender and Energy: How is gender relevant to sustainable energy policies?*” included in the publication *Sustainable Energy Strategies: Materials for Decision Makers* prepared by the UNDP Energy and Atmosphere programme in 2000 as part of the UNDP Initiative on Sustainable Energy (UNISE). The publication was primarily intended as a resource for use by UNDP country offices when working with governments to incorporate sustainable energy activities into country-level development projects, build national capacity on cross-sectoral approaches to energy issues and the design of sustainable energy policies and programmes. The inclusion of a chapter on gender and energy will help in mainstreaming the issue in policy and project discussions. The publication is also intended to serve as the basis for in-country training activities. UNDP have made the material available to a wider audience and here we are considering the chapter on Gender and Energy as potential training resource material.

Increasing global interest in sustainable development has led to the development of new perspectives on energy policies that promote greater attention to the social dimensions of energy decision-making, including the disparate gender impacts of national energy priorities. The publication argues that this increased interest in the gender dimensions of energy related issues is strongly motivated by the following factors:

- Rural women are the primary collectors of fuel wood to meet household energy needs. Meeting this basic energy need involves large amounts of time and physical efforts, and poses great risks to women’s health and safety.
- Women throughout the world continue to have fewer options and opportunities than men.
- Women’s work in sustaining their households, families and communities has generally been ignored in calculations related to economic policy because it does not fall within formal, monetarised, market activities.

- Lack of energy services limits women’s productive and community development activities.
- There is very limited or no involvement of women in policy formulation and energy decision-making processes.
- National energy priorities affect gender issues.
- Global concerns about sustainable development and environmental degradation.

The Gender and Energy chapter further provides key points that can be included and/or improved upon when considering gender issues in the energy planning and policy formulation process. These include the need for:

- Stakeholder participation and consultation in energy planning and energy decision making,
- Public awareness of energy policy issues,
- Skills training to boost women’s ability to engage in productive, income-generating activities, and
- Addressing priority issues of concern to women in energy projects.

The authors of the Gender and Energy chapter have developed their argument by analysing factors that demand that greater attention be given to gender and energy. This was achieved by looking at the problems experienced by women, in particular rural women, in developing countries in their struggle for daily energy survival; and what actions have been taken at the international level that relate to gender, energy, the environment, and sustainable development. They then considered some of the practical suggestions on how to incorporate gender issues into the energy planning and policy formulation processes.

It would be helpful, however, if there was a clearer statement of purpose, or a summary of findings, at the outset to inform the reader about what exactly the materials are intended to cover. Also, additional examples or illustrations to support the document’s conclusions, particularly in section 2.1, would make it more focused. References to “women throughout the world”, “in many countries”, and “in many cases” make the document seem rather generalised.

One good aspect of this chapter is that it raises an important issue - gender and sustainable energy are topics being discussed globally. Since the document is intended for use as training material for decision makers, it would be helpful to define the category of decision makers that are being targeted, and whether it is for industrialised or developing countries. Since the focus tends to be on developing countries, the materials would seem best suited for use in such countries. However, the topic is a more general one and gender issues need to be also addressed in the energy policies of industrialised countries (see for example, the article in *ENERGIA News* 4.1 p.12-13: *Gender and Energy: A Northern Perspective*).

An appropriate target audience for the training materials are those decision makers in government and non-government organisations, interest groups, the private sector and government departments, whose activities have an impact on energy, environment and sustainable development. Decision makers in relevant energy ministries and departments need to be targeted because many of them fail to take into account the particular needs of women with regard to energy planning and projects. Targeting decision makers in other related departments would also be useful because energy provides many different services and it interacts with economic, housing, transport, welfare and environment policies.

The material is easy to understand and with some modifications in its presentation, as discussed above, would provide excellent resource material. One suggestion in terms of presentation is to include a background section including general information on gender and energy. A section could follow this on past and current problems with sustainable energy development (problems that could be categorised as *accessibility of energy, women and energy use*, etc). Next could be a section on key considerations (such as *public awareness and training, stakeholder participation in energy planning and energy decision making, rural electrification*) that might assist in genderising energy planning, and finally conclusions with suggestions for follow-up. ■

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Battery-Operated Lamps Produced by Rural Women – Bangladesh

Hasna J. Khan

problems, air pollution and climate change. The lamps use small batteries that are familiar to rural households, and are portable so that they can be charged from diesel generators at a battery charging station, or from solar modules when they become available.

Implementation of the “Opportunity for Women in Renewable Energy Technology Utilisation in Bangladesh” project began in 1999 with funding from the Energy Sector Management Assistance Programme (ESMAP), a joint programme of the World Bank and UNDP. Surveys and consultations about energy needs, with community members in an area made up of remote islands, identified electric lighting as a high priority for the rural households.

Stakeholder Participation

The primary bases for the development of this project were the previous studies done by the designers of solar electrification projects, including a market assessment survey of solar PV applications for rural electrification conducted by PSL and funded by the World Bank. These surveys focused on the energy utilisation patterns of rural households. In response to remarks made by rural women, the project designers felt the need to utilise the potential of rural women, in terms of skills and ideas, in designing energy service delivery mechanisms.

Local NGOs were consulted in the early stages of project implementation. Since rural energy was not their mainstream activity, they were hesitant about offering microcredit for energy equipment. The impact of improved lighting on poverty alleviation and the health of rural people, as well as potential income generation opportunities, had to be explained to them.

Recruitment of participants for the microenterprise project was undertaken through announcements and the distribution of handbills in local villages. Local NGOs also discussed the opportunity with their contacts. In total, 35 women were seen as appropriate participants based on their interest in the potential activities, their education levels, their present occupations and their aptitude for business. None of the women had been previously employed, although many were experienced in handling microcredits through local NGO programmes.

After training in the use of the tools, and gaining experience with the electronic components, the women were examined to ensure that their technical skills were adequate to ensure reliable lamp construction. The group leaders who were to manage the manufacturing plant received extensive training in accounting and bookkeeping so they could keep accounts relating to daily production, sales revenues, and costs of the factory operations.

Market Development

The project advertised the lamps by organising public meetings, distributing handbills, and setting up billboards and posters. In addition, the lamps were demonstrated at several locations, including shops and residences. A detailed marketing plan was developed by the women covering factors such as business location, customer characteristics, target markets, competition, electricity demand, marketing goals and strategies, and budget considerations. The long-term target area of this project covers nearly 20,000 households within 300 square km beyond the reach of grid electrification.

Lamp sales are closely tied to the availability of batteries and reliable battery-charging facilities. Recharging batteries is difficult when battery-charging stations are more than two kilometres away. The project set up the first diesel battery-charging station in Char Montaz so that local battery users do not have to carry batteries to

Of the more than 120 million people in Bangladesh, 80% live in rural areas and most use traditional forms of biomass energy. For lighting, people in rural areas frequently use kerosene. Typically, poorer households use *kupis*, which are small inexpensive cans of kerosene with wicks. Households with greater resources purchase hurricane lanterns in which the flames are surrounded by glass enclosures. Both of these lighting devices produce poor quality light and release smoke and fumes. A project was developed by Prokaushali Sangsad Limited (PSL) to improve the lighting and indoor air quality of rural households by replacing the traditional kerosene lamps with modern battery-operated lamps. Through a microenterprise, rural women are now engaged in the construction and sale of fluorescent lamps that use direct current (DC) and rechargeable batteries. About one thousand rural households are using these lamps today in the remote islands of Bangladesh.

Women’s Lamp-making Microenterprise Project

The project is located at Char Montaz, an island in the south of Bangladesh, a five-hour motorboat journey from the nearest commercial centre. Electric grid extension to this area will not be economically viable within at least the next 20 years, and therefore there is a high demand for alternative modern lighting.

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

The DC lamps are popular because they have a number of advantages. They are designed to operate with high efficiency and low energy consumption, and are seen as good value in terms of the benefits achieved. The lamps reduce the risks of fires from kerosene lamps, as well as smoke and other emissions that cause health



By helping women move from traditional farm labour into skilled labour and gainful employment in the energy sector, this lamp-making project in Bangladesh has elevated the knowledge base of rural women and exposed them to mainstream commercial activities. (Photo: Courtesy of Haska J. Khan)

Golachipa, five hours away by motorboat. In addition to charging batteries, this station is the major sales centre for the lamps manufactured by the cooperative, as well as for reliable batteries sold at affordable rates. To facilitate service, battery-charging stations in two other locations are now owned and operated by the microenterprise.

Financing and Access to Credit

Despite the popularity of the lamps, sales are hindered by the lack of consumer credit for purchasing the batteries. In order to make the batteries affordable to rural households, the enterprise offers microcredits, and has sold about 300 batteries on this basis. With a suitable financing plan, service providers could also offer solar panels for household battery charging. There is a plan to enable rural households to purchase solar panels using microcredit from the women's cooperative. This type of arrangement will spread out payments on a monthly basis, thereby eliminating the high initial costs that prevent many people from purchasing solar systems. However, even with such an arrangement, using private commercial funds to finance solar lighting projects would generally result in monthly fees beyond the means of many rural end users. Hence, it is

expected that some financial subsidies will be needed in order to reach a broader group, at least in the short-term.

Benefits to Women

Lamp production provides a new opportunity for women to earn a living, one in which their labour is highly valued. Besides increasing the non-agricultural skills of rural women, the project has also allowed them to generate income, play a role in decentralised energy service delivery, improve their quality of life through better lighting, and raise their status in the household and in the community.

Income generation has been a key motivation for the people buying the lamps. Household income was found to rise with the availability of electric lighting in the workplace. Families with school age children have also shown significant interest in purchasing battery lamps so that their children have better light for studying.

Project participants and their associates now run meetings to discuss prospects and problems in microenterprise operations, regional sales and electrification issues. The women are encouraged to bring their husbands to the monthly meetings with the marketing manager in order to discuss business prospects. The husbands of the project members offer assistance to the working team of women, especially in marketing, sales, and the operation of battery-charging stations. Such interactions have been found to build women's confidence, and the interest of the men in the project. Women who are involved in lamp construction are also being heard more by their community. As a result, the project has been successful in removing some of the social and cultural discrimination experienced by rural women.

Participation in project activities requires women to regularly spend time outside their homes, helping to overcome a traditional social barrier. Other family members are found to support the women by taking on household responsibilities. The electric lamps enable housework to be done at night, and women can restructure the time they spend on household activities. The women involved in project activities have also shown an interest in more energy efficient cooking equipment that would save cooking time and allow more time for income generation. Such shifts in priority-setting by households in remote rural areas are a sign of the social changes achieved by the project. ■

◆ For Hasna J. Khan's biodata, please refer to the interview on page 7.

◆ For more information on this article, please contact the author at the address given below.

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creating new avenues for income generation by women through energy service opportunities. This can provide them with greater access to alternative energy solutions that have higher efficiencies and more diverse applications.

Do you have any advice for young women who want to work in the energy sector?

I strongly encourage younger women to

join technical professions if they have the opportunity. We need to change the traditional mind-set in the energy sector and work to allow the benefits of energy to reach the less fortunate people, as much as we aspire to the high-tech innovations available in more advanced countries. Young women should feel comfortable with their own fields of activities and also share the vision of those who are engaged in bringing such social changes. ■

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Photovoltaic Project for Rural Electrification - Uganda

May Christine Sengendo

The Uganda Photovoltaic Pilot Project for Rural Electrification (UPPPRE) was designed as a three-year pilot project, funded by UNDP-GEF, with a goal of promoting the use of solar photovoltaic technology in Uganda.

The project aimed at overcoming the financial, social, and institutional barriers that hinder the widespread dissemination of this technology. The strategy was to establish viable financial and institutional mechanisms for offering solar photovoltaic systems on a commercial basis to households, businesses, and communities. In the first two years of implementation, the project has led to the installation, by solar companies, of 576 solar home systems and 42 institutional systems. Some of the institutional systems have been installed in collaboration with the Ministry of Health and local government agencies to provide lighting for clinics and vaccine refrigeration facilities.

The Rural Energy Situation in Uganda

Close to 90% of Uganda's population of approximately 19 million people live in rural areas. Biomass, in the form of wood, charcoal, agricultural residues and animal dung, provides 96.5% of the total energy consumed in the country. Significant quantities of fuel wood are consumed for household uses, as well as for tobacco curing, tea drying, fish smoking, brick making, commercial baking, and cooking in hotels. Men tend to harvest commercial fuel wood, while women and children collect wood for domestic use. Petroleum-based products provide only about 1.5% of Uganda's energy needs. Petroleum is imported, and availability is affected by foreign currency constraints. High prices have caused many industries to switch from petroleum to other products (particularly fuel wood and electricity). Less than 5% of Uganda's population has access to grid-based electricity. Power generation, which provides 2% of total energy, is mostly from hydroelectric stations, and although there are possibilities for extending the grid, the high cost of establishing electricity connections is a major constraint in a country with a widely dispersed population.

Uganda's rural electrification strategy aims at reducing the inequalities in access to electricity and the associated opportunities for increased social wellbeing, education, health, and income generation. This objective suggests the need for policies to support decentralised electricity development, and for accessible financing mechanisms. Possible renewable technologies (other than hydro) utilise biogas, solar, wind and geothermal resources, as well as crop wastes and industrial biomass residues.

Focus on Women in Project Implementation

The UPPPRE project was generally targeted towards individuals, communities, and government institutions with the ability and willingness to pay market prices for solar photovoltaic (PV) services. The majority of the participants in the design phase of the

project were men since they headed most of the solar companies in Uganda. Project staff nevertheless made an effort to involve the few female stakeholders, who were working as electricians, installers, or researchers, in the design process, and to encourage the training of women entrepreneurs and technicians. The emphasis placed on women addressed their roles, needs, rights, and responsibilities; and further addressed discrimination against them as project actors and beneficiaries.

In order to make the project's activities more gender sensitive, UNDP-GEF also encouraged project staff to seek guidance from institutions working on the integration of gender into project design, and to make use of the existing National Gender Policy formulated through the Ministry of Gender, Labour and Social Development. Following project implementation, the project staff and solar companies came to realise that women had particular needs related to the use of solar equipment for lighting, domestic activities and income generation, due to the differences in household activities undertaken by women and men. Due to their large numbers as users, but their low involvement in technical fields, women were viewed primarily as users rather than as manufacturers or distributors of solar equipment. Moreover, despite project efforts to actively involve women as users at the village level, whenever consultations and public awareness seminars were conducted, men were in the majority. Men were involved in the project not only as users but, more significantly, as manufacturers and agents of solar companies. There are 32 registered members of the manufacturing and assembling group for solar photovoltaic systems, only one of whom is a woman.

During the first two years of the implementation stage, the project particularly targeted women by:

- Designing a credit strategy, and involving the Uganda Women Finance Trust (UWFT), as part of a special lending programme for the purchase of solar PV systems. However, many challenges were still faced: it was difficult for women to borrow for a consumable commodity without a sustainable and regular income; private sector solar companies were unable to offer subsidised rates for solar systems because they were using market rates when costing systems; and the UWFT charged market interest rates.
- Involving the Centenary Rural Development Bank (CERUDEB) in the provision of vendor credit so that the few women who owned solar companies could seek such credit.



Decentralised energy sources to rural health facilities have helped to improve living conditions by providing benefits that enhance the quality and effectiveness of health care. (Photo: Courtesy of ETC Energy)

- Having a woman as the Assistant Project Manager. Although having women in such decision-making positions does not necessarily ensure the inclusion of women's needs and priorities in the design and implementation of a project, the use of female personnel is an initial strategy that can be used for integrating women's concerns into project activities.

The third implementation year has involved monitoring the implementation of the credit mechanism through the UWFT and the CERUDEB, revising the credit delivery strategy, and establishing other collaborative credit-related activities with intermediary entities such as village banks for the administration of loans for solar PV systems. The project has transformed the former credit guarantee fund into a revolving credit fund that can be directly accessed by village banks, charging subsidised interest rates with an extended loan period of two years.

Stakeholder Participation

The design and implementation of the project was undertaken within the framework of the Ugandan Ministry of Energy and Mineral Development. The project is administered through the Directorate of Minerals and Energy, headed by the Commissioner for Energy, which is responsible for activities related to new and renewable sources of energy. The project has worked closely with members of the Uganda Renewable Energy Association, a group of 25 private Ugandan companies, training institutions, and consultants. In addition, UNDP/Kampala provided a grant of US\$1 million to the government of Uganda to facilitate the development of credit mechanisms for the purchase of solar PV systems in collaboration with local financial institutions

One of the first activities of UPPPRE was to increase the awareness in rural areas of environmental issues in general, and in particular about the availability, advantages, and costs of household and community-based PV systems. The strategy of first targeting local leaders in the pilot districts enabled the project to obtain institutional support. Public awareness seminars were held for leaders in Mbale, Tororo, Pallisa, Mbarara, Bushenyi and other surrounding districts. Special exhibitions and seminars were organised for clients of the Uganda Women Finance Trust to enable them to make informed decisions on purchasing solar PV systems through the credit scheme. Both men and women from the Uganda Renewable Energy Association have participated in awareness-raising activities, including advertising through trade fairs and exhibitions, and seminars at the district and sub-county levels. The project has also advertised in newspapers and on radio and television to inform people about the benefits of solar power. The result of the project's information campaign was numerous inquiries at the project offices, and at the offices of the banks involved with the project.

Access to Credit

Credit institutions in Uganda were consulted in order to identify the most suitable way of providing access to solar PV for those who could not afford to directly purchase a system. The project established collaborative credit agreements with the Uganda Women Finance Trust, selected because of its focus on women clients, and the Centenary Rural Development Bank, selected for its achievements in lending to low-income wage earners in various districts. In the first nine months of the credit system, the Uganda Women Finance Trust provided credit to only one female client, and only two solar companies had obtained credit from the Centenary Rural Development Bank. The banks consider solar PV systems to be consumable goods and thus require the client to have a regular source of income to cover the repayment of the loan. The interest rates charged by the banks for solar system purchasers were, at 28% to 30%, too high for most customers.

In addition, loans for solar PV systems under the UPPPRE project were subject to the banks' collateral requirements, even though under the collaborative agreement these loans were guaranteed by UNDP. The banks did not view the solar system equipment as appropriate collateral due to its limited resale potential. Banks were also concerned about the high operational costs of such loans. Although the financial institutions have internal information systems to compute such costs, credit for solar requires a long repayment period leading to the requirement for a special credit scheme.

Potential solar purchasers generally had a seasonal income based on agriculture-related economic activities and had difficulty in borrowing from microfinance institutions due to the short repayment periods allowed (usually only nine months) and the requirement to make regular repayments. Solar companies that offer credit to cover equipment purchase have designed "hire purchase" mechanisms that allow clients to repay somewhat more flexibly.

Benefits to Women

Women and men who have bought solar PV systems have reported improved living conditions. Other benefits include the provision of energy for equipment that can improve the quality and effectiveness of income-generation work (e.g. refrigeration and battery charging); reduced drudgery while performing daily tasks; improved health conditions; greater opportunities for income generation; and greater conservation of natural resources. In addition to improving living conditions, the solar PV project has enabled people to acquire new skills. Women technicians have had the opportunity to participate in private sector delivery of PV electrification. Under the project, three female and thirty male technicians have been trained in design improvement, and four women and twenty men participated in management and company improvement training at the Uganda Management Institute in Nakawa. ■



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Impact of the Women's Energy Group on South African National Policy

Wendy Annecke

In 1993 a small group of women activists in South Africa attended a National Energy Forum and were struck by the lack of women at the meeting and in its task groups. They requested that more women be able to attend the Forum and initiated a support group for women participants.

By the end of the year, having learned some important lessons, the group decided to consolidate their experiences and form a network, the Women's Energy Group (WEG). Starting in 1994, this group contributed to a draft discussion document – the Green Paper – that set out to establish energy priorities for the new South African government, and argued determinedly for national policies targeted at women's energy interests. In the end, most of their suggestions were diluted or omitted from the final energy policy adopted in 1998 – the Energy White Paper – but their efforts had helped put the issue of women, as users and participants in the energy sector, on the national policy agenda.

Greater attention is now paid to women's needs, and to addressing gender imbalances in the energy sector. In 1994, a female Deputy-Minister of Minerals and Energy was appointed and, in 1999, following the second democratic elections, a woman, who had long been a champion of gender issues, was appointed as Minister of

Minerals and Energy. The growing awareness of women's issues was a result of a number of initiatives and lobbying efforts, including actions by the Women's National Coalition and the Commission for Gender Equality, as well as the Women's Energy Group.

New Directions in South Africa's Energy Policies

South Africa has large energy reserves. However, during the apartheid years, energy policies were driven more by a desire for security and self-sufficiency than by concerns about meeting the energy

needs of the majority of the population. By 1994, only 44% of households were electrified, most of these in urban areas; and only 12% of rural households had access to electricity. The electrification drive of the 1990s resulted in 68% of urban households and 48% of rural households having access to electricity.

Following a call in 1994 by the new Democratic Government of National Unity to all sectors to put appropriate policies in place, the energy sector first produced its Green Paper, a discussion document, and later the final energy policy document, the White Paper, which was published in 1998. The Energy White Paper marked a paradigm shift from the previous emphasis on energy security and self-sufficiency towards a focus on equity, efficiency and environmental sustainability in energy service provision.

The policy priorities stated in the Energy White Paper were: increasing access to affordable energy services; improving energy governance; stimulating economic development; managing energy-related environmental impacts; and securing supply through diversity. This was the first time that energy services for low-income households had been addressed in a South African policy document (White Paper, 1998: 38).

Identifying Women's Needs and Challenges

Over 50% of the South African population are poor and struggle to pay for energy. Thus, there is a need for sustainable income generation, as well as safe, affordable, accessible and secure energy sources. These needs were highlighted by women at a national energy workshop held in Johannesburg in 1999.

At present the majority of women use fuel wood, coal or kerosene for cooking, none of which can be considered as safe fuels. The women at the national energy workshop emphasised the need of a secure supply of the fuel of their choice so that, if they invested in appliances and connections, the energy service required – whether electricity, biogas, kerosene, or low-smoke fuel – would be reliably available.

Formulating Gender Sensitive Energy Policies

The challenge for the government and energy suppliers lies in delivering appropriate energy services to all areas, and to give men and women equitable access to energy. The challenge for the WEG is to ensure that women are represented in all decision-making bodies and educated to a level where they can take their rightful places in the energy sector.

Activities of the Women's Energy Group

The initial priorities of the members of the Women's Energy Group were to develop their own and other women's technical expertise, to develop alliances in order to be heard, and to learn to lobby successfully. The group was inclusive, acting as a link between energy professionals and broad political organisations. Women in the energy sector were under considerable pressure, from the multitude of issues that the WEG was supposed to address, to act on a number of fronts, including analysing the gender-blind research agendas and the methodologies used in policy development, and addressing issues of affirmative action in organisations. At the same time, the political events taking place in the country encouraged WEG members to



Gender mainstreaming in the South African Department of Minerals and Energy is supported by a pledge that male colleagues are asked to sign.

pressurise political bodies to place women and energy issues on their agendas, and to include women in the policy-making process. The WEG's initial activities included disseminating information to men and women at the local level and lobbying for women and energy issues to be taken up by local government structures. The WEG addressed gender interests in the energy sector and poor women's energy needs.

Energy Green Paper Drafting and Consultations

Some community groups could not imagine how to address women's access to energy beyond ensuring that women were appointed to all decision-making bodies. Others recognised that widening access to energy also depended on access to other rights. They proposed far-reaching measures: that women should be able to own land; women should have the same rights as men to inherit land; oppressive customary laws should be changed; and women should be represented on all development structures (James, 1999: 40). Makan (1994:11) warned against taking a sectoral approach to energy provision. She recognised that integration with other development initiatives was critical, and noted that only an integrated approach would ensure women's rights. The Green Paper consultative process was demanding and time consuming. The WEG's focus on women, gender and technical skills was dissipated as it had to organise around broader generalised categories, including the poor, previously disadvantaged people, and low-income households. This left some WEG members feeling left out and believing that women and gender interests had not been sufficiently protected.

The Energy White Paper

After the National Energy Summit, an editorial team, consisting of six men and two women, was appointed to produce the White Paper. The Women's Energy Group sought to increase the number of women on the team, but without success. The draft White Paper produced by the committee underwent further rewriting and editing within the Department of Minerals and Energy before it was finally published, but women and gender issues did not feature. The White Paper is primarily a product of the gender-blind integrated energy planning policy research process criticised by Makan. Little attention is given specifically to women, despite an explicit acknowledgement of women's subordinate position and gender imbalances in the sector.

No attempt is made to construct a policy statement that addresses women's disempowerment. There is only one policy statement that mentions women directly, and that is not solely concerned with women. The statement notes that women were under-represented in the sector, comprising 11% of the total workforce and 5% of management. (White Paper, 1998: 109)

The policy statement to address this imbalance reads as follows:

The Department of Minerals and Energy will strive to increase the number of black people and women on all policy development structures, forums, parastatal boards and similar structures. A target of at least 30% women and 50% black participants and 2% disabled persons by the year 2000, is envisaged, in line with the White Paper on Affirmative Action Policy (White Paper, 1998: 110)

There are many other instances in the White Paper where women could have been mentioned and targeted for assistance, but were not.

Throughout the 1998 White Paper, women are included within the categories of "the poor" and "low-income households", thus ignoring the qualitative and quantitative research that has provided

ample evidence that "the poor" and "women" are not homogenous categories. Although women generally have less access to and control over resources than men, some women are more powerful and better positioned than others. Furthermore, research has shown that there may be very different attitudes, and degrees of access and control over energy services, within "low-income households." The Green Paper discussion document recognised this and suggested that recognition of these factors should be included in energy policy statements. The Women's Energy Group argued for policies that target women's needs directly, for women to be included on all decision-making structures, and for funded education and training. However, in the final analysis, their suggestions were not included in the White Paper. ■

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Request for Information on Energy and Environment Courses

Our language editor, Giles Stacey, has been asked by a major funding organisation to prepare a list of short (up to three months) courses in the general field of Energy and/or the Environment. They are seeking courses that take place on a regular basis (e.g. annually) with a view to possibly sponsoring a few participants. If you help organise, or have attended, or know of, such courses he would be pleased to hear from you at: stacey@dds.nl

Upesi Rural Stoves Project-Kenya

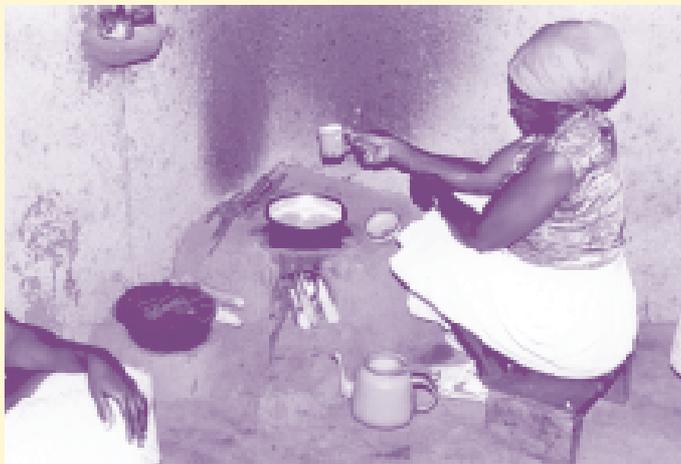
Beatrice Khamati Njenga

The Upesi Project, supported by the Intermediate Technology Development Group (ITDG), was initiated in 1995 to promote the adoption of more efficient stoves in rural areas of western Kenya.

Its goal was to improve the living and working conditions of women in rural households by enabling a significant and increasing number of women and their families to benefit from fuel-saving wood-burning stoves.

By working with interested women's groups, and involving them in the design and field-testing of the stoves, the project was able to take advantage of women's knowledge and experience. Besides training the women in stove production, distribution and installation, the project also focused on improving their marketing skills. This has been a critical element in enhancing the ability of women to earn income from stove-related activities.

Over 16,000 stoves have been installed; providing significant poverty alleviation for members of the women's groups and their families, improving the health and saving the time of users of the energy efficient stoves, and also relieving pressures caused by wood fuel shortages.



The UPESI (or Maendeleo) stove, which was developed in Kenya, is based on a standard ceramic liner that can be produced and used by artisans and women in the informal sector. The stove uses about 40% less fuel than three-stone open fires, producing up to 60% less smoke. (Photo: Courtesy of ITDG-Kenya)

Reliance on Wood for Rural Energy

Kenya has about 30 million inhabitants, 85% of whom live in rural areas. Overall, biomass is the largest single source of energy, meeting about 75% of final energy demand, and over 93% of rural household energy needs. For the majority of Kenyans, electricity and liquefied petroleum gas (LPG) are inaccessible. Only 3% use LPG for cooking.

Biomass in the form of charcoal is used by poor urban households for cooking while, in the rural areas, wood and agricultural wastes are the predominant fuels for cooking and heating. Approximately 85% of rural and 50% of urban households use kerosene for lighting. Only a few households have access to solar energy.

Improved Cookstove Development

The Kenya Ceramic Jiko stove, inspired by the "Thai bucket", was developed through a design process spearheaded by the Ministry of Energy. The Jiko stove easily found acceptance among urban stove producers who were initially offered free training and marketing support by the Kenya Energy and Environment Organisation (KENGO), in cooperation with the Ministries of Energy, Agriculture, and Environment and Natural Resources. The efforts by KENGO developed into a regional programme, with the Appropriate Technology Centre at Kenyatta University providing services and becoming the regional centre for cookstove design and testing. Although most producers and dealers of the Jiko stove have been men, many women in the smaller urban areas have benefited immensely from the technology. A recent study reported that women selling and using the Jiko stove in arid and semi-arid areas significantly improved their standards of living through gains in time and income. There have been many other collaborative efforts to develop improved stoves. For instance, UNICEF promoted an all-metal charcoal stove and also worked on Lorena-type domestic mudstoves; the Bellerive Foundation developed institutional wood burning stoves; and Apro Enterprises has developed a number of innovative waste burning stoves.

Rural Stoves Programmes

The success of the charcoal-burning Kenya Ceramic Jiko stove in urban areas affected subsequent programmes that aimed to introduce rural wood-burning stoves, primarily by creating false expectations among donors and implementing agencies. Over the years, it has been found that improved stoves are more difficult to introduce into rural areas because stoves cost money and the traditional three-stone cooking system does not. Rural people are generally very poor, and women and children usually collect their fuel wood without a financial cost. As a consequence, there is less incentive than in urban areas to spend money on a stove that uses less fuel. Promotion and sales of the stoves have also been difficult because of the poor transport infrastructure, and also because the production and the distribution of rural stoves tends to have been conducted by women's groups with little or no experience of competitive marketing.

In 1986, ITDG joined with KENGO and the GTZ-sponsored (the German technical cooperation organisation) rural stoves programme to assess the performance and acceptability of existing improved wood stoves. This study found that the most acceptable and efficient stove was the Maendeleo or Upesi stove designed and tested by GTZ at the Appropriate Technology Centre as part of the Women and Energy Project of the Maendeleo ya Wanawake Organisation. Groups of women potters around Kisumu were trained to produce the already successful Kenya Ceramic Jiko as well as the Upesi stoves. The same women's groups were also involved in tree planting and agricultural activities for income generation. The women stove producers were supported through GTZ funding, through which home economics and agriculture extension officers bought and distributed their stoves at a nominal and controlled price. ITDG's

stove project, Rural Stoves West Kenya, was thus able to support more women's groups by introducing improved production methods and improved kilns. It was evident from project evaluation that commercialisation was the missing link that would enable the stoves businesses of the women's groups to become sustainable.

The Upesi Project

In 1995, ITDG's Rural Stoves West Kenya project ended, and a new phase focusing on commercialisation was initiated as the Upesi project. The new project launched an intensive campaign to improve the profitability and sustainability of stove-related income generating activities among women's groups.

The intended outputs of the project included: the adaptation and production of quality Upesi stoves by women's producer groups and local institutions; strengthening the capacity of women's producer groups and distributors in appropriate costing and marketing skills; the development of concrete commercialisation strategies to expand consumers' stove choices; and increased incomes. The project worked primarily with eight women's groups who had different levels of marketing skills and knowledge.

Stakeholder Participation

Working partnerships among project sponsors in the region provided ITDG with learning opportunities to develop improved project strategies, and helped to establish a relatively stable background for the project. Project beneficiaries were involved from the beginning; in the design, development, selection, and field-testing of the stoves. The fact that the women had been in contact with women leaders in the field, the Home Economics officers, enhanced their participation. Many women became involved in stove production because they had pottery skills, acquired in connection with household activities, but needed training in marketing skills.

Commercialisation Strategy

The strategy used was based on insights gained from an ITDG stove project in Sri Lanka, as well as a marketing study in the project area. Relevant government departments, major NGOs, and existing stove producers in the area, were informed of the project's intentions and its interest in developing marketing plans. Producers were trained in group dynamics, stove production, costing and pricing, record keeping, forging marketing links, and responding to consumer demands. Promoters and installers were trained in how to use stove-promotion messages, how to carry out successful demonstrations, and ways of establishing linkages with communities. Promotion was aimed at creating an attractive modern image for the stove, and creating wider awareness of its benefits. Stove producers and distributors were encouraged to use non-motorised transport to link up to major roads. Marketing incentives were developed, including the award of quality stamps to producers, and advertising signs to distributors with over 150 stoves. Promoters selling 100 stoves per month were rewarded with a bicycle loan and a certificate.

Benefits to Women Users

The primary intended beneficiaries of the Upesi project were women and their families in rural households of western Kenya. At the time of the final project evaluation, 16,000 stoves had been manufactured, purchased and installed. According to the evaluation, users of the Upesi stove benefited from the following: income savings of up to KShs 7,200 per year (rural wages average KShs 800 per month.); health cost savings of KShs 260 per year; time saving of about ten hours per month; 60% smoke reduction; reduction in acute respiratory infections in children by 60%, and in mothers by 65%;

and reduction of conjunctivitis in children under five by 70%, and in mothers by 67%.

Income Generation

Typically, stove producers devoted two to three days a week to stove production, and were able to sell 510 stove liners a year, earning KShs 15,300, or KShs 1,275 per month. If producers sold directly to the users, they could make an extra KShs 50 per stove from installation. Stove promoters made an average of KShs 15,000 per year. Thus, as a result of stove-related activities, many women were able to enjoy a significantly higher standard of living.

The project has provided women with marketable skills in production and marketing. Women from the Keyo Women's group have had contracts to train producers from as far away as Tanzania. Women active in the producer groups have also learned useful new skills that they can apply to other business ventures. With increased income, women are able to help support their families and pay for children's school fees, thus reducing school dropout rates. The children of stove producers are also learning important skills for income generation, and acquiring knowledge about energy and environmental conservation as they observe and help their mothers.

Project Continuity

The project has made significant progress in establishing a market for improved stoves through a network of promoters, retailers and artisans who buy from existing producer groups and then construct and install stoves for customers. In the case of the Upesi stove, women producers and artisans have been able to come up with at least seven new innovative stove designs to meet consumer demand. Other indicators of project viability include the facts that 97% of the installed stoves are still in use, while seven out of the original eight women's groups that were trained are still producing stoves. Energy networks in the region (the Women and Energy Network, and the East African Energy Technology Development Network) provide new opportunities and impetus to sustain and systematically share the experience and skills further afield. ■



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Rural Microhydro Development Programme - Nepal

Arzu Rana-Deuba

continue to deter expansion of the national grid to the upper regions of the country.

The Rural Energy Development Programme (REDP), initiated in 1996, aims to enhance rural livelihoods and preserve the environment by supporting the installation of microhydro power systems.

The Rural Energy Development Programme

The programme was formulated based on earlier experiences of both UNDP and the Nepalese government in rural energy and in decentralised and participatory development. Decentralised microhydro systems enable people to undertake social and economic activities that improve the quality of their lives and also promote the conservation and optimal utilisation of natural resources.

The experience of the last 25 years has clearly shown that financial capital and technology alone are insufficient to ensure viable projects. Therefore, this programme has included additional components, such as the promotion of human capacity in local communities; co-ordination with local governments, NGOs, and the private sector; and the introduction of modern agricultural practices and market-oriented enterprises for economic empowerment. One of the goals is to create a wider acceptability of the programme's community-based, participatory approach. In recognition of the critical importance of good governance, emphasis has also been placed on mechanisms for effective coordination, transparency and accountability at every level of the programme.

Mobilising Communities and Giving Women Equal Consideration

Community mobilisation is the core of the programme. The following six principles have been adopted for community mobilisation: women's empowerment, skill enhancement, environmental management, capital mobilisation, technology promotion, and organisational development.

To initiate a project, villagers are given an orientation session on participatory development and the importance of rural energy systems for both individual and community development. They are then advised on how to form community organisations, and separate male and female community organisations are formed. Every participating household sends a male member to a male community organisation and a female member to a female community organisation.

The programme fits within the larger development plans and perspectives of the government of Nepal and is supported by UNDP. Overall, 64 microhydro demonstration systems, with a total installed capacity of a little over 1 MW, have been approved for installation. The programme stresses community mobilisation, bottom-up participatory planning, and decentralised decision-making. Productive income-generating activities are the intended end uses of the energy supplied, and skills training is provided to promote agricultural and home-based businesses.

Equity and empowerment of both men and women from every target household are ensured through the establishment of separate male and female community organisations. This project's emphasis on the inclusion of women coupled with due consideration to gender issues and power relations has made it a frontrunner in gender sensitive planning.

Energy and Women in Nepal

Most of Nepal's 22.8 million people live in rural villages and depend on agriculture for their livelihoods. The country's poverty is due in part to problems related to the difficult terrain and the vast diversity found within the population, combined with political instability and a relatively late start in terms of planned development programmes.

The impact of this poverty on the lives of women is magnified since social, political, and economic exclusion based on gender is both pervasive and ingrained in Nepal's patriarchal society. Gender discrimination restricts women's access to resources and systematically marginalises them in the decision-making processes within social institutions. The government of Nepal is working with national and international non-governmental agencies to mainstream women and gender issues into the development process.

In rural areas, less than 5% of the population have access to electricity, but a number of large-scale hydropower projects are currently under construction. These will allow rural electrification to expand across the plains, but the steep terrain and scattered settlement patterns in the hill areas will



Decentralised energy sources can help reduce the workloads of rural women. This woman in Nepal is grinding grain with equipment powered by a microhydro system.

The segregation of women and men into separate community organisations encourages men and women to discuss and analyse the specific problems they face. Women do not feel overpowered and they can actively engage. A women's community organisation can serve not only as a forum where women share their concerns, but also as a place where women's leadership qualities and confidence can develop.

Once community organisations are meeting regularly, carrying out savings and credit activities, taking collective decisions

(and documenting and implementing them), they form functional groups to perform specific activities. The programme stipulates equal representation from the men's and the women's community organisations in each functional group. A functional group is then responsible for overall planning, implementation, operation and management of the specific activity it supports. This could be a microhydro installation, or some other development activity.

Skills Training and Income Generation

Community members are encouraged to identify the specific skills needed to successfully manage and operate the rural energy systems, and to initiate income-generating activities. Skills training has been provided in forestry, agriculture, cottage industries, social conservation and animal husbandry.

In a number of areas, the programme has supported the introduction of new technologies to utilise the energy generated by the microhydro projects. Many of the enterprises have chosen to use appropriate technology to cut down drudgery, especially that of women. New activities include setting up bakeries, preparing broiler chickens, running agricultural processing mills and saw mills, operating photography studios, and producing incense sticks.

Benefits to Women

The women in community organisations have a distinct voice in local affairs and their self-confidence has increased, as has their capability for independent and collective action. Attitudes towards women are also changing due to the programme. Even in areas and ethnic groups where the status of women has traditionally been very low, there have been significant changes in behaviour towards women. For example, two out of the five microhydro schemes in a remote district in the far west of Nepal (an area where women have traditionally had the lowest social status) are chaired by women, and a woman has been accepted as the leader of a mixed group involved in a nursery project in remote Achham. Another indicator of change is the fact that during training conducted for women managers, husbands looked after their babies for the duration of the programme.

The changes brought about in the daily lives of participants, especially of the women, have resulted in reduced drudgery in household tasks and an increase in productive and community roles. The women in the community organisations are emerging as leaders and decision-makers within the programme, in the community, and within their households. Empowered through their involvement in community groups, literacy classes, leadership training, skills training; and by gaining access to credit and markets, time-saving technologies, and even to television in some areas; women are experiencing distinct changes in their lives. A change in the life of a mother means changes in the lives of her children and other members of the family. The positive effects brought about by the programme will also have enduring inter-generational impacts on the lives of the women in these remote villages.

From a gender and energy perspective, the REDP stands out as an exceptionally gender-sensitive programme. Microhydro and alternative energy forms are being promoted by a number of agencies in Nepal, but few go beyond technical, environmental and economic goals. This programme's additional effort in promoting women and analysing gender issues has paid rich dividends in its impact at all levels. Because of the many benefits to communities, local leaders are strong supporters of the REDP programme. Microhydro systems that power useful new technologies, plus environmental conservation activities, have helped meet overall developmental goals set out by local leaders for their constituents.

Project Viability and Replication

This programme has enjoyed success in very different geographical and demographic areas within Nepal. The main reason for this replicability is the fact that both technical and social aspects are carefully examined before selecting a target area. Besides identifying the technical viability of a microhydro site, the programme has other selection criteria, such as a community's financial resources, its willingness and ability to take out loans, the political commitment of the village development committee, the potential for end-use activities, distances from roads, and possible linkages with irrigation and drinking water projects.

In the broader context, the success of this programme has been supported by Nepal's policies which promote microhydro development. Delicensing of microhydro projects and the establishment of a credit line for alternative energy promotion, as well as the growth of private sector manufacturers and technicians, have resulted in a conducive environment for the growth of this sector. The recently enacted Self-governance Act of 1999 has given this programme an added impetus by moving the decision-making process for the microhydro sector to the district level.

The success of the programme has resulted in its expansion into a further five districts. It has also led to national and international recognition. In March 2000, the REDP was awarded the Energy Global Award, which recognises sustainable energy solutions and honours successful projects and initiatives around the world in the field of energy efficiency and renewable energy sources. The REDP was also featured at EXPO 2000 in Hanover, Germany in June 2000. ■

◆ Dr Arzu Rana-Deuba has been working in Nepal as a gender analyst, planner, and trainer since 1992. Her experiences include working with gender issues in areas as diverse as microenterprises, health, energy and water, environment, communications, empowerment, and violence against women; with groups ranging from high-level government policy makers, to NGO programmers and planners, bilateral and multilateral donor agencies, and groups at the district and grassroots levels. Currently she is the Chairperson and Executive Director of the Samanata Institute for Social and Gender Issues. Dr Deuba has an MA in Psychology and a PhD in Organisational Psychology, both awarded by the Panjab University, Chandigarh, India.

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Corrections

The *ENERGIA* editorial team wishes to apologise to Allan Cahoon for misspelling his name in *ENERGIA News* 4.2. The spelling as it appeared in the Bulletin Board Section, within the announcement of the Latin American Search Conference on Women and Energy and Environment, was incorrect.

The *ENERGIA* Editorial Team failed to acknowledge the source of the diagram of a Casamance Kiln featured on page 9 of *ENERGIA News* 4.2. The diagram was taken from the book, *Renewable energy technologies: their applications in developing countries*, written by L.A. Kristoferson and V. Bokalders (1987), ISBN 0-08-034061-X. *ENERGIA* would like to thank the Beijer Institute and the Stockholm Environment Institute (SEI) for allowing the use of this diagram.

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including policy dialogue and capacity building on sustainable energy issues. Attention to the role of women in energy options is a core part of these efforts, and is fully reflected in the definition of the priority service lines within the fund. We believe that this will be especially important for UNDP's

field work in the least developed countries (LDCs) where some of these issues are the most pressing, but for which existing global funding mechanisms to support sustainable energy options are limited. The policy and programme lessons derived from our work in commissioning "Generating Opportunities: Case Studies on Energy and Women" has been an extremely important input in this

regard. UNDP remains committed to increasing the focus on the important development linkages between energy, poverty reduction, the situation of women, economic growth, and opportunities to improve the local and global environment. We believe this is the only truly sustainable development. ■

Continued from page 11



◆ Makereta Sauturaga has been involved in a variety of energy activities at the Department of Energy (DOE) for the last 12 years. She is currently managing a GEF/UNDP-funded project on promoting the sustainability of renewable energy technologies and renewable energy service companies (RESCOs) in Fiji. Prior to assuming this role she managed the Rural Electrification Unit within the DOE, where she was responsible for the control, management and implementation of Fiji's rural electrification policy and programme. Her responsibilities at the DOE also extend to that of Office Manager and the co-ordination of the Department's energy conservation programme. Ms Sauturaga has a BSc (1990) from the University of the South Pacific, Suva, Fiji; and in 1998 was awarded a Master of Engineering degree in Energy Planning and Policy by the University of Technology, Sydney, Australia.

◆ For more information on this review, please contact: **Makereta Sauturaga, Project Manager, Office for the Promotion of Renewable Energy Technologies, Department of Energy Fiji; Tel: +679.(0).386885, Fax: +679.(0).386301, Email: msauturaga@opret.gov.fj**

◆ The entire UNISE publication - and the separate chapters - can be downloaded from the UNDP web site at: www.undp.org/seed/eap/Publications/2000/2000a.html. For more information on the publication, please contact: **Energy and Atmosphere Programme, Bureau for Development Policy, UNDP, 304 East, 45th Street, 9th floor (Room 9100), New York, NY 10017, USA; Fax: +1.(0).212.9065148, Email: eap@undp.org**

The Bulletin Board

COURSES

A course on Women, Gender and Development in Southeast Asia, is to be held from 18-28 February 2002, followed by a Conference on Gender and Southeast Asia from 1-3 March 2002.

Both the course and the conference will be held in Bangkok, Thailand and will be organised by Women's Action and Research Initiative (WARI).

The training workshop hopes to enhance both the gender sensitivity and the capacity of participants to understand, analyse and utilise gender considerations.

The course is at the upper undergraduate/graduate level designed to create a better understanding of gender concepts and how to integrate gender issues with development projects.

The aim is to develop the necessary knowledge and expertise needed to initiate, implement, formulate and evaluate gender programmes, and to lead to a clearer understanding of the historical and cultural aspects of gender construction in Southeast Asia. Appropriate participants will have a good command of English, an interest in

gender issues, and should be able to apply the course contents in their work. There are two scholarships available for course and conference participants from Indochina (Burma, Cambodia, Laos, Vietnam and Thailand). There are no scholarships available for applicants from other countries. Participants are thus encouraged to seek their own resources or donor/organisation support.

◆ For more information, please contact: **Women's Action and Research Initiative (WARI), 52/619 Muang Ake, Rangsit, Pathumthani 12000, Thailand; Tel/Fax: +662.(0)997.7279, Fax: +662.(0)997.7536, Email: wari9@yahoo.com Website: <http://www.geocities.com/wari9>**

Course on Gender, Organisational Change, Agriculture and Leadership (GOAL), to be held from 13 January-2 February 2002, in the Netherlands

The course will be organised by the International Agricultural Centre (IAC), Wageningen. The course will focus on "mainstreaming gender in agricultural and rural development organisations" and has three core themes:

1. Vision, strategies and tools for gender equity planning and assessment in agricultural and rural development.
2. Instruments for a supportive organisational structure and culture.
3. Leadership, facilitation techniques and methods for managing change processes within organisations.

The course is designed for those managers, senior staff, gender experts, trainers, and consultants who are expected to incorporate a gender perspective in agricultural and rural development organisations and programmes. This includes women and men involved in decision-making processes within governmental, non-governmental, and international organisations, rural development projects, and donor agencies.

◆ For more information, please write to: **IAC-Gender Training Programme, P.O. Box 88, 6700 AB Wageningen, the Netherlands; Tel: +31.(0).317.495495 or 495363, Fax: +31.(0).317.495395 Email: training@iac.agro.nl or res@iac.agro.nl, Website: <http://www.iac-agro.nl/frametraining.htm>**

The Bulletin Board

CONFERENCE INFORMATION

Special Session on Gender and Sustainable Energy, to be held at the ISES 2001 Solar World Congress, 25 November to 2 December, in Adelaide, Australia

Members of *ENERGIA* are planning this special session on Gender and Sustainable Energy. The objective of the session will be to review the challenges and opportunities facing gender and renewable energy in the Oceanic region as well as to discuss the possibilities of establishing a gender and energy network in the region. Donella Bryce and Jane Lynch are coordinating the organisation of the session.

◆ For more information on the outcomes of the session, please contact: *ENERGIA Secretariat*.

Energy and Quality of Life – Policy Directions in the New Millennium, 29 November to 1 December 2001 in Valodara, India

The Conference is organised by the M.S. University of Baroda, Gujarat, India. At this international conference, issues will be discussed that need policy decisions to give further impetus to the penetration of renewable energy technologies, and to enhance their positive impact on health, indoor air quality, environment and the attainment of sustainable development. The major thrust will be on policy issues, research agenda and initiatives related to renewable energy forms, and electricity for indoor and outdoor lighting, applicable to urban-rural residential and non-residential sectors and water resource management. Energy and gender issues are among the ten subthemes to be covered.

◆ For more information, please contact: **Prof. Rachel George Ph.D., Conference Secretariat, TBSU-NPIC, H. M. Dept., Faculty of Home Science, The M. S. University of Baroda, Fathegunj, Valodara, 390 002, India;** Tel: +91.(0).265.794864, Fax: +91.(0).265.794864, Email: rachel_george1@rediffmail.com

PUBLICATIONS

The Power to Change: Women and Energy in Central America. September 2001

By G. Hanff and D. Mesquita

This paper describes how the Central America Regional Electricity Project (PREEICA), with support from CIDA, tries to address the existing problems with regard to gender equality in the electrical regulatory agencies, planning units and ministries of Central America. In Central America not only is there a marked difference in how women and men participate in energy related decisions, but also there is an enormous difference in how -or if- they benefit from those decisions. There is a need for both women and men to increase their understanding of gender equality issues in the energy sector.

◆ The paper can be viewed at: <http://www.energia.org/resources/papers/hanff-mesquita.html>

Toolkit on Gender Indicators in Engineering, Science and Technology. UNESCO/GAB.

By S. Huyer and G. Westholm

UNESCO has developed a toolkit to promote the collection of gender-disaggregated data in scientific and technological activities related to national and international policy. It presents a method to ensure the systematic collection of gender-disaggregated data in science and technology related areas.

◆ This publication can be downloaded from: <http://gstgateway.wigsat.org/ta/data/toolkit.html>

Ministry of Non-Conventional Energy Sources: Women, Energy and Development. Special issue of Urja Bharati, June 2001

This special issue of "Urja Bharati" focuses on the multidimensional topic of "Women, Energy and Development" in the Indian context. The newsletter discusses a number of important issues such as the issue of women's time and human energy; forestry; fuel rights; the national stove programme; health; and the various sources of renewable energy. Although some of the material is not new, it does contain some thought-provoking and interesting items, and it provides people's personal views and experiences.

◆ For more information about this newsletter, please contact the: **Ministry of Non-Conventional Energy Sources at: secmnes@x400.nicgw.nic.in**

Yong C. Gender Impact of Resettlement: The Case of Babagon Dam in Sabah, Malaysia. In Gender, Technology and

Development, Vol.5, no.2, May-August 2001, pp223-244.

The resettlement of a local community has resulted in a restructuring of gender relationships, livelihoods, value systems, and culture. The study shows that the burden of change is far greater for women who have even less access to the benefits of 'development' than do men. There is need for a greater involvement of indigenous communities in resettlement efforts, supported by more adequate state and community resources.

Carol Yong recently wrote on the same subject for *ENERGIA News* in issue 4.2.

◆ Back issues of Gender, Technology and Development can be viewed at: <http://gendevtech.ait.ac.th/gtd/gtd.htm>

WORKSHOP REPORTS

Workshop on poverty alleviation through the introduction of improved stoves

The workshop was held on 17 October 2001 at the UK Government's Department for International Development (DFID) in London, UK.

The workshop was one step in the dissemination of results from a project investigating poverty reduction aspects of improved household stoves programmes, mainly in urban areas in Ethiopia, Kenya and Uganda. The project results show that improved stove programmes, particularly in Ethiopia and Kenya, have had positive effects on the livelihoods of producers, and positive impacts for the consumers. The major findings of the project can be viewed on the following website under "Summary":

<http://povertystoves.energyprojects.net>

◆ For more information, please contact: **Ottavia Mazzoni at: ottavia@esd.co.uk**

VACANCY

UNDP is Seeking an Environmental Law and Institutions Specialist for its Energy and Environment Practice Area in Kathmandu

◆ For further information, and to apply, please visit: **The UNDP website at: http://roo.undp.org/jobs/view_job.cfm?job_id=5**

Next Issue

The next **ENERGIA News** (vol. 4.4), due in December 2001, will be a special issue on Gender, Energy and Health. This issue will include not only well-known energy and health issues, such as indoor air pollution, but also broader health issues with particular gender relevance in the energy sector, such as those related to biomass production systems, non-biomass fuels such as kerosene and electricity, workload, safety and personal security issues. For this special issue, Professor Jyoti Parikh of the Indira Gandhi Institute of Development Research and Dr Yasmin von Schirnding of WHO, are acting as Guest Editors, Elizabeth Cecelski is the **ENERGIA** Consulting Editor and Anja Panjwani-Koerhuis will backstop the production of the issue in the **ENERGIA** Secretariat.

Using material from **ENERGIA News**

Any information contained in **ENERGIA News** may be copied or reprinted, subject to the condition that it is properly credited and cited.

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, Kurten, 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 ask in exchange that our subscribers contribute to the newsletter by sending in their own articles, letters, publications, reports, notes, resources, announcements, photographs, news and events. To become a subscriber to **ENERGIA News** or with any query, please contact:

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Themes for future **ENERGIA News**

Gender, Energy and Social Development: Volume 5 > Issue 1 > March 2002

Deadline for submissions 5th January 2002

Women and Sustainable Energy in Asia: Volume 5 > Issue 2 > June 2002

Deadline for submissions: 19th March 2002

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Design
Kon. BDU Grafisch Bedrijf bv

English Editing by
Englishworks, Hengelo

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

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

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