GENDER AND SUSTAINABLE ENERGY

ENERGIA News

9.1

VOLUME 9 ➤ ISSUE 1 ➤ MAY 2006

NEWSLETTER OF THE NETWORK FOR GENDER AND SUSTAINABLE ENERGY

Contents

Fried bean cake seller (Baiana do acaraje) in Salvador, Brazil, uses LP gas for her enterprise (Photo: André Oliver, Winrock Brazil)

Gender, Energy and Urban Poverty

Adriana Alvarez, Joy Clancy, Feri Lumampao and Joanna Olu Maduka

While much has been researched and written about the effects of energy on the rural poor, very few studies have documented how energy is related to the livelihoods of the urban poor. There is even less known about how gender issues crosscut urban poor livelihoods. That the urban poor have better access than the rural poor to the benefits of cleaner forms of energy remains no more than an assumption and is a serious concern in studies about urban poverty[1].

This issue of ENERGIA News focuses on the gender-energy-poverty nexus and tries to throw some light on to this little researched area. Two studies funded by the UK's Department for International Development's Knowledge and Research Programme are featured: *Enabling urban poor policy making: understanding the role of energy services in Brazil, Nigeria and the Philippines* (three articles by the country team leaders) and *The Impact of energy on poor urban livelihoods in Arusha, Tanzania*. A fifth article focuses on a study into gender and prepayment electricity in Merlo, Argentina. This editorial discusses the general results and conclusions from the first study while making linkages with the two other studies.

It should be emphasised here that the three-country study was not comparative in nature and did not collect the same data in all three countries. In order to contribute towards an understanding of the factors that play a role in moving people out of poverty, it was decided to focus on the enterprises of the urban poor in the study. What role does energy play in such enterprises and

what can be done to enhance that role? The enterprise sectors covered were: fish processing, cassava processing, akara (bean pastry) frying and pottery (Nigeria); street vendors, bakeries/small markets (Brazil); food processing and preparation (in households) and shoe making (the Philippines). There was a good gender balance in the ownership of the enterprises selected. In Nigeria, data were collected using questionnaires from four poor urban communities in Lagos and Abuja (two in each city). A total of 598 households and 147 enterprises were interviewed. In Brazil, data were collected in two poor communities in Salvador, North East Brazil. Two hundred and fifty-nine households were surveyed in Plataforma and 255 in Canabrava. Case studies involving 25 small enterprises in each community were completed, and two focus group discussions, one in each community, were held. In the Philippines, 600 respondents from six districts in Manila and 400 from Marinka were interviewed in general household surveys. Sixty respondents from Manila and 40 from Marinka were selected for focus group discussions. Both quantitative and qualitative data were collected. The study did not specifically focus on gender but gender analysis was integrated into the methodology.

The following hypotheses were used to provide a framework for data collection and analysis:

- Clean and affordable energy services are key factors in creating good physical wellbeing and acceptable productivity in urban households and enterprises;
- Social networks and relationships facilitate access to urban energy services;
- Energy services are key factors in sustainable energy livelihoods by increasing the viability of existing enterprises and enabling the establishment of new ones; and
- Energy sector reforms lead to improved access to energy services by urban enterprises.

Here we will focus on the results related to the first hypothesis, with particular attention given to the gender aspects. The indicators used to test the first hypothesis included health, water purity and sanitation, meals and the perception of wellbeing. Naila Kabeer, well-known gender specialist, has noted that "health is the key to productivity among the poor" since they depend on their own energy for making a living. First, we will give some general background on energy and urban poor enterprises in the three countries and then report on findings related to the indicators.

Members of the research team presenting their findings at the international workshop hosted by DFID in London. More information on page 8. (Photo: Joy Clancy)

Household Energy and Enterprises

What emerged from the surveys is the strong linkage between household access to energy and enterprises. Many of the enterprises in the study are located, at least for part of the process, within the household. This makes it difficult to disaggregate energy and equipment use between productive and reproductive activities. Many enterprises use standard household equipment for operating their businesses, and these are frequently located within the household itself. For example, food-processing enterprises use blenders, refrigerators, freezers and stoves, while hair salons use hairdryers, curling tongs and electric razors. In Brazil, this has meant that enterprises have been able to benefit from packages designed to benefit the family, such as the LPG voucher scheme which entitles a family to a small free cylinder of LPG. Similarly, electricity in the household is also used for enterprise activities at a lower tariff than applicable for commercial premises.

LPG and electricity were the main sources of energy used in the enterprises surveyed in this study in Brazil and the Philippines (48% use LPG and 16.5% electricity in the latter). Kerosene is also significant in the Philippines (22.5%). In Nigeria, since process heat is necessary for the enterprises surveyed, 40% of the enterprises use fuelwood, followed by kerosene (26%) and charcoal (21%). Despite Nigeria being a major oil producer, the use of LPG is severely restricted with only five enterprises reported using LPG.

Electricity is used for lighting and other enterprise activities. Women seem to benefit by increasing the range of services they can offer with access to equipment running on electricity (or at least continue to offer a service that becomes cleaner and involves less drudgery, such as ironing). In the Philippines, many enterprises are providing services such as washing and ironing clothes involving the use of electrical appliances and, in Brazil, hairdressing and clothes making also benefit. Electrical appliances reduce drudgery, a benefit which appears not to have yet reached women in Nigeria who continue to make major inputs of metabolic energy in the preparation of their products. The Nigerian study revealed that electricity is the most commonly used energy form by the poor for lighting, both in the old and the newer urban areas. However, because of the irregular supply, residents have been switching back to using kerosene which is a more reliable source. Kerosene use, however, creates soot and black smoke with the attendant pollution and health problems.

Access to electricity by the urban poor is often complex and not always cheap or legal. Bureaucratic barriers (such as the need for a registered address) can be circumnavigated by the use of informal services which can also be cheaper than the official providers. However, these services can be dangerous (often involving electric wiring installed by untrained people). In their article in this issue, Wendy Anneke and Marialba Endelli report that, even for those with a legal connection, electricity can be expensive if the connection is owned by a 'slum lord' (or lady) who charges all those who lead off it exorbitant rates, making a tidy profit in the process. In our survey, it was apparent that the utilities were not making efforts to legalise the "illegal" connections (and many owners indicated that they would prefer a legal connection if the barriers could be removed). Wendy and Marialba report on a scheme in Argentina that is trying to do this in which prepayment meters are installed in exchange for debt cancellation. The consumers then have to buy prepayment vouchers from machines similar to automatic teller machines (ATMs) installed in convenience shops. It is interesting to note that it is mainly men who go to buy the vouchers, although the authors could not find an explanation for this phenomenon. In Nigeria, the utility company has also introduced prepaid coin-operated meters in some areas due to significant non-payment of bills. To its credit, the utility is not charging a higher tariff for slot meters, as is commonly the case elsewhere including in Europe.

Health

Even when sick, entrepreneurs and their families continue to

work and manage home-based family businesses. This is especially common in the informal sector where people do not have the luxuries of a formal-sector employee of sick leave from work or the possibility of consulting a doctor paid for by a company policy. It is of particular concern that many food vendors continue to work when they are ill since this has implications for the transmission of diseases. However, it is not only energy which can play a role in reducing waterborne illnesses but other simple hygiene practices such as the washing of hands. In one of the six study districts in Manila, Approtech Asia facilitated the implementation of a Water, Sanitation and Hygiene (WASH) campaign with the Water Supply and Sanitation Collaborative Council (WSSCC) in 2002. The community leaders, mostly women, make soap and hand cleanser. A ferrocement rainwater tank was constructed by men. Daycare Centres teach the importance of hand washing in maintaining good health.

Interestingly, in Brazil, where households and enterprises were generally using clean fuels, it emerged that, at least in the households sampled, respondents reported ailments which are usually more associated with "non-clean" energy sources – eye irritations, coughs, sinus problems and shortness of breath – among the leading health complaints. Since the research is not an epidemiological study, it is not possible to give an explanation for these health problems.

The enterprises in Nigeria were using fuelwood and producing a lot of smoke. Questions need to be asked about the levels of exposure to wood smoke these women experience. The health impacts of outdoor use of woodstoves for household cooking have been studied to a limited extent. The very incomplete evidence indicates that, at least for the cook, there is no significant difference between indoor and outdoor cooking[2] . If this is really the case, given that the entrepreneurial women in Nigeria are being exposed to wood smoke for considerably longer periods than if they were just cooking the family meal, and since time exposure is known to be a significant factor in terms of health impacts, this is a real cause for concern. It is an area where epidemiological studies are urgently needed.

Water Purity and Sanitation

Water purity and sanitation are linked to energy in the sense that people sometimes need to boil water to ensure that it is potable. In Nigeria and the Philippines, water quality was found to be a major concern. In Nigeria, the residents of the communities surveyed obtained their water from a variety of sources, with less than one-fifth of households having a tap within their own house or compound. Despite this, diarrhoea is not reported as a major health concern, since people are able to treat the illness through easy access to appropriate medication. Water quality was clearly considered to be a more important issue than continuity of supply (46.8% of respondents compared to 24.4%) and kerosene was used to boil drinking water as a preventative measure. In the Philippines, although the supply is piped, the utility is not always able to provide a continuous supply. When there are supply problems, there tend to be related quality problems. During these periods, the few who can afford it buy bottled water (only two participants in the focus groups reported doing so). Others will boil water, although this is expensive in terms of energy as well as being time consuming. During focus group discussions, women reported spending considerable amounts of time waiting for the household's daily water requirement to trickle from taps.

In Brazil, waterborne illnesses were generally considered to be linked to human waste disposal rather than poor quality of the supply. A sizeable percentage of the surveyed population report suffering from parasitic worms (13.9% in Plataforma and 17.3% in Canabrava). These percentages show a reasonable match with those drinking untreated tap water – 12.8% in Plataforma and 25.9% in Canabrava). This suggests that there may be a link between drinking untreated tap water and suffering from worms[3] . Boiling the tap water is likely to reduce infections generally.

Meals

The increased energy costs experienced, due to the increase in world oil prices and the privatisation of energy utilities, has induced behavioural changes in respondents with regard to food preparation. In Brazil, energy management strategies such as pre-soaking beans (to reduce cooking time) and/or using pressure cookers were reported during focus group discussions. In the Philippines, approximately one-quarter of the households sampled reported changing their food preparation techniques due to increases in energy costs, in some cases this can be as extreme as skipping breakfast (1%) and buying cooked foods (3.7%). In Nigeria, most of the households surveyed have reduced the number of times they cook to only once or twice daily. Households appear to be increasing their purchasing of pre-cooked food - in part due to high energy costs (particularly in the Philippines), and partly because women increasingly work long hours outside of the household (potters, fish smokers and cassava processors, during focus group interviews, were reporting working days of 12 to 14 hours, three days a week).

Wellbeing

Good health was identified as a key aspect of wellbeing and linked to the ability to work by more than half of the respondents in the Brazil survey. Interestingly, money was not the highest priority for the respondents – only around a quarter cited this as a factor in wellbeing despite nearly half reporting a lack or shortage of money as a current household problem. In the Philippines, people in the focus group discussions reported changing jobs for health reasons.

An interesting perception of wellbeing comes from Kwali in Abuja, Nigeria. Wood ownership is linked to wealth status: the larger your woodpile the wealthier you are. It was found that women generally accumulate firewood for their daughters to inherit by reserving some each time they cook. The daughters inherit the accumulated firewood on the death of their mother. The greater the quantity of firewood inherited, the higher the status accorded the daughter in the community. Therefore, the larger her pile, the greater the psychological wellbeing of a mother; secure in the knowledge that she is providing for her daughter. This will make it difficult to persuade this community to switch to another fuel.

Improving Access to Modern Energy in Poor Urban Households

Careful energy management is particularly important for poor households who are currently spending up to one-third of their limited incomes on energy. A pertinent question is thus how to reduce these costs. Sheilah Miekle gives some insights into possible answers to this question. In her study, *The impact of energy on poor urban livelihoods in Arusha, Tanzania*, switching to modern energy sources could lead to time-saving and the more efficient use of energy (and hence potential cost-savings), not only by women but also by men and others in the home. In order to do this, our knowledge and understanding of the performance of various fuels and how best to use them has to be improved. Such information is needed in order to be able to advise households on how best to manage their household energy budget. Sheilah found that if women's and girls' access to modern energy was improved they would be willing to use it and would also save time. However, to achieve effective and sustainable changes in the household energy process, it will be necessary to work with both women and men.

This is certainly in line with our findings linked to decision-making

within households. In the two higher-income countries, there appears to be a more gender-equitable decision-making process in households about gender and energy issues. However, in Nigeria, it is still men who predominantly make the decisions about energy forms and gadgets used in the household. Of the households surveyed[4], 226 reported the man made the decisions about fuel, 63 the woman and in only 22 was it a joint decision. A similar pattern was found in decision-making on the purchase of electrical appliances. Given the close relationship between household energy and urban informal-sector enterprises, the decisions made largely by men about household energy impact on women's enterprises. If women are to have access to modern energy services, decision-makers should bear in mind that as well as developing mechanisms to assist women, men also need to be convinced of the benefits. ■

[1] *J S Clancy (2006),* ***Urban poor livelihoods: Understanding the role of energy services.*** *Best Practices paper prepared for DFID KaR R8348. March.*
[2] *Professor Kirk Smith, University of California, Berkeley: http//ehs.sph.Berkeley.edu*
[3] *Causality is not proposed here but rather an indicative correlation that needs further epidemiological investigation.*
[4] *The totals cover all households (married/unmarried male/ female heads).*

The authors of this editorial conducted the DFID-KaR funded research study on **Enabling urban poor policy making: understanding the role of energy services in Brazil, Nigeria and the Philippines**. Joy Clancy was principal investigator of the study with Adriana Alvarez, Feri Lumampao and Joanna Olu Maduka as team leaders of the country programmes in Brazil, the Philippines and Nigeria respectively.

◆ Adriana Alvarez is Programme Manager for the Leadership Development Unit at Winrock – Brazil. She has a Bachelors degree in Anthropology and a Masters degree in Social Work from the University of Arkansas in Little Rock, USA. Adriana has experience in project coordination, research and fieldwork within minority populations, with a special focus on gender and children's issues.

◆ Winrock International Brazil, Rua Manoel Barreto 415, Graça, Salvador-Bahia, Brazil. Tel: +55.(0)71.3339 6900;
E-mail: aalvarez@winrock.org.br

◆ Joy Clancy is a Reader (Associate Professor) in Development Studies with the Technology and Sustainable Development Group, University of Twente, The Netherlands. She is a founder member of ENERGIA, and is currently the Technical Advisor on Capacity Building and Regionalisation. Joy Clancy is a co-convenor of the Gender and Development Working Group of the European Association of Development Institutes (EADI). Dr Clancy's research has focused, for more than 20 years, on small-scale energy systems for developing countries. Gender and energy has been an important factor addressed in this research. Joy Clancy has developed and delivered training courses on gender and energy, which focus on gender analytical tools for use in the energy sector, both at the policy and project level. In addition to her academic duties, Dr Clancy has carried out a number of consultancy assignments for international development agencies.

◆ Contact details on back cover

◆ Feri G. Lumampao led the Philippines' research team in the DFID-KaR research project on "Enabling Urban Poor Policy Making: Understanding the Role of Energy Services on Gender and Urban Energy". She is an accomplished researcher, trainer and social development worker. She has coordinated international training activities on technology development and dissemination for the past fifteen years. She is currently the Executive Director of APPROTECH ASIA (The Asian Alliance of Appropriate Technology Practitioners, Inc.) based in Manila, the Philippines.

◆ Approtech Asia, PSDC Bldg, Magallanes corner Real Street, Intramuros, Manila 1002, Philippines;
Tel. No: +63.(0)2.527 6514, Fax: +63.(0)2.527 3744;
E-mail: fglumampao@yahoo.com, fglumampao@approtech.org

◆ Joanna Olu Maduka is a chartered electrical engineer, a Fellow of the British Institution of Electrical Engineers (FIEE), and Fellow of the Nigerian Society of Engineers. As the first female registered engineer in Nigeria, Olu has always been interested in girl child education and women's issues. She established the Association of Professional Women Engineers, Nigeria (APWEN), in 1986 to encourage girls in the study of mathematics and science. In 1993, she set up Friends of the Environment as an NGO for initiatives in environment, gender issues and energy.

◆ P.O.Box 10627, Lagos Nigeria. Tel: +234.(0)1.264 7435;
E-mail: fote@gacom.net

News from the Secretariat

Institutional Development

Advisory Group

ENERGIA is pleased to announce the establishment of its Advisory Group. The process of consultations and the selection of Advisory Group members took place between January and March 2006 with the active participation of all the National Focal Points (NFPs). The Advisory Group comprises of: Lydia Muchiri (Practical Action Kenya) representing the African NFPs; Wendy Annecke (Gender and Energy Training, South Africa) as a Technical Expert from the African region; Feri Lumampao (Approtech Asia) representing the Asian NFPs; Kamal Rijal (UNDP Sustainable Energy Programme, Bangkok) as a Technical Expert from Asia; Venkata Ramana (World Bank) as a co-opted member; Semida Silveira (Swedish Energy Agency) representing ENERGIA's core donors and Elizabeth Cecelski as a core founding member of the network. May Sengendo (RNC-Africa), Soma Dutta (RNC-Asia) and Sheila Oparaocha (ENERGIA Coordinator) will participate as ex-officio members.

The inaugural meeting of the ENERGIA Advisory Group took place on 14th to 17th March in the Netherlands. Unfortunately, not all the members were able to participate at this meeting: Ganesh Shrestha (CRT Nepal) NFP in Nepal stood in for Feri Lumampao and Joy Clancy replaced Elizabeth Cecelski. Venkata Ramana was also unable to attend the meeting.
Among the important issues discussed at this first meeting were the future and sustainability of the network, improvements to the network's procedures and communications within the network. The members also took time to discuss in detail their role as an Advisory Group. Wendy Annecke was chosen as Chair. The Advisory Group members will be in office for a period of two years.

External Evaluation

ENERGIA's Phase III programme, funded by the Dutch Directorate for Development Cooperation and the Swedish International Development Agency, is currently being evaluated by two external evaluators – K.V. Ramani and Priyanthi Fernando. As part of the evaluation, and to gain a better understanding of the network and its activities, the evaluators have attended an advocacy event at the World Bank Energy Week and were observers at the inaugural meeting of the Advisory Group. Several more visits and interviews with network members were scheduled before the end of April 2006.

New Member of the Secretariat

The International Secretariat warmly welcomes Ana Rojas who joined the team in December 2005. Ana is from Costa Rica and is an environmental lawyer. Ana has substantial experience in the development sector in dealing with environmental issues, and particularly climate change, in international negotiations. She will provide support in coordinating several key activities of ENERGIA and will play an active role in ENERGIA's preparations for the forthcoming CSD meetings.

Members of the ENERGIA Advisory Group and Secretariat at the inaugural meeting in March 2006 in the Netherlands (L to R: Odile Beckers, Kamal Rijal, Chesha Wettasinha, Wendy Annecke, May Sengendo, Lydia Muchiri, Joy Clancy, Ana Rojas, Ganesh Shrestha, Sheila Oparaocha, Soma Dutta)

Network Building

Approtech Asia Gets UNDP Funding

In September 2005, ENERGIA received a request from UNDP for gender-sensitive pilot projects within the framework of its Regional Energy Programme for Poverty Reduction (REP-PoR) for the Asia-Pacific region. A proposal from Approtech Asia, the ENERGIA NFP in the Philippines, entitled "Ambulant Food Vendors: Energy-Efficient Stoves and Hygienic, Healthy Food (A Pilot Project for the Urban Entrepreneurial Poor in the Philippines)" was supported by UNDP and is now being implemented.

Seed Funding for AIWC

ENERGIA has approved seed funding for the All India Women's Congress – the National Focal Point in North India - for activities to strengthen the Gender and Energy Network in India. Among the activities planned for 2006 are the establishment of an active Steering Committee in collaboration with EPTRI (NFP for South India), developing a training course and conducting two training workshops to raise awareness on gender and energy issues at grassroots level, and a one-day workshop on mainstreaming gender issues in energy policy in India for a range of stakeholders including policy planners and development managers.

Testing Gender and Energy Tools in Asia

ENERGIA has sought the expertise of the Technology and Sustainable Development Group of the University of Twente, the Netherlands, in developing a module that presents tools and frameworks that can help in planning a gender-sensitive energy project. These tools have been tried in Africa, and are currently being tested in Asia in three locations by ENERGIA's local NFPs: (a) in the village of Narian Khorian, a project site of the Alternative Energy Development Board in Pakistan; (b) in the integrated water mills project of GEWNET, Nepal; and (c) in two communities in Northeast India, the matrilineal Khasi in Meghalaya and the patrilineal Naga people in Nagaland.

Gender Assessment of Micro-hydro Programme

A gender assessment of the micro-hydro programme (MHP) of the Aga Khan Rural Support Programme (NFP in Pakistan) will be undertaken in the coming months. A situation analysis of all stages in the project management of the MHP will be undertaken, the findings of which will be matched with the needs and priorities of men and women (i.e. the end users), thereby helping to identify successful integration (extent and project stage) of gender concerns.

Capability Building

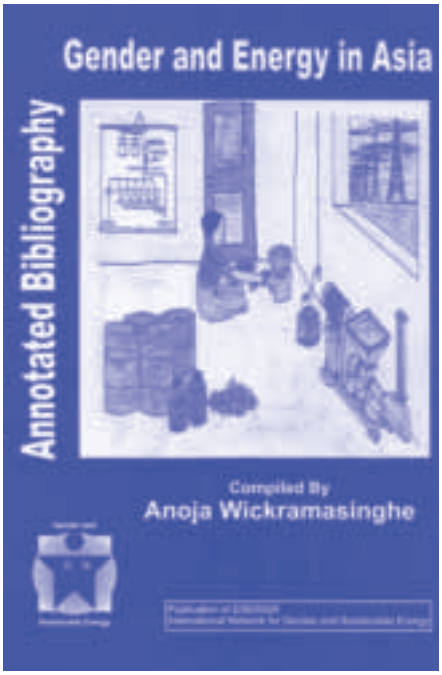
Gender Audit in Botswana

The first of three national gender audits of energy policy that are planned under the EU-funded TIE-ENERGIA project has been concluded in Botswana. The gender audit was conducted by a team of national experts with the Botswana Technology Centre (NFP) in the lead with technical support from the ENERGIA Regional Network Coordinator. The audit identified a number of gender gaps in the national energy policy and in sectoral practices, and went on to provide recommendations to remedy the situation. Several debriefing meetings and a one-day workshop were held to share the findings of the audit with key national policymakers within the energy sector. The report on the gender audit and other relevant information is available at www. energia-africa.org.

Knowledge Resources

Bibliography of Gender and Energy in Asia

The annotated bibliography of gender and energy in Asia is now available in printed form. This was an initiative by the National Network in Gender and Energy - NFP in Sri Lanka - and was supported by the ENERGIA Secretariat. The bibliography has over 170 annotations of publications related to gender and energy from the Asian region. Copies of the publication can be obtained from NANEGE, Department of Geography, University of Peradeniya, Sri Lanka.



Regional and International Advocacy

World Bank Energy Week

For the first time ever, in March 2006, gender and energy featured prominently during the World Bank Energy Week. Three gender and energy sessions explored lessons and challenges in integrating gender into energy policies, programmes and projects. The first session focused on the operational relevance of gender in the energy sector and identified possible "viable entry points" to mainstream gender in energy policies and operations. Three of the four case studies presented at this session were based on the experiences of the ENERGIA NFPs from Sri Lanka, Uganda and the Philippines. The second session was a panel debate on the question "Does gender matter in the delivery of energy services?", and highlighted the need to find ways to build the individual capacities of women for voice and choice in the energy sector. The third session was on domestic energy, environmental governance and gender inequality, in which it was argued that investing in energy infrastructure is an important means to reduce women's and girls' time burdens in both the domestic and productive spheres. ENERGIA took an active role in these sessions and has contributed substantially to getting gender and energy issues firmly on the agenda of this Energy Week. Elizabeth Cecelski, Sheila Oparaocha, Anoja Wickramasinghe, Feri Lumampao and May Sengendo represented ENERGIA at this event. The sessions were organised in close collaboration with Dominique Lallement (water and energy department) and Waafas Ofosu-Amaah (gender and development group) of the World Bank.

Preparations for CSD-14

The Commission for Sustainable Development (CSD) held its 14th Session (CSD-14) from 1-12 May 2006 with a focus on energy for sustainable development. ENERGIA, in collaboration with the Women's Environment and Development Organisation (WEDO), was an organising partner to CSD-14 on behalf of 'Women as a Major Group'. In addition, ENERGIA and WEDO together with IUCN (The World Conservation Union) and LIFE/WECF (LIFE/Women in Europe for a Common Future) formed the 'Women's Working Group'.
Through this role, ENERGIA representatives were able to participate in two Regional Implementation Meetings (RIM) planned by the CSD Secretariat in preparation for CSD-14. These were the Asia and the Pacific RIM, and the Latin America and the Caribbean RIM; both meetings taking place on January 19th and 20th 2006. ENERGIA was represented at the Asia and the Pacific RIM by Anoja Wickramasinghe (Sri Lanka), Jyoti Parikh (India), Yogita Bhikabhai and Makereta Sauturaga (both Fiji); and in Latin America and the Caribbean RIM by Adélia Branco (Brazil), Hazel Brown (Trinidad and Tobago) and Evelyn Solano (Guatemala).

The hard work and inputs made by the network members resulted in the outcome documents of both RIMs including text that reflect the need to take gender considerations into account when dealing with energy projects, as a means of ensuring the Millennium Development Goals are met.

As part of the preparations for CSD-14 and CSD-15, ENERGIA and its National Focal Points organised national dialogues and produced national reports to identify the progress of governments in achieving the MDGs. The documents produced during this cycle of discussions include recommendations for national governments to improve their energy policies; and projects and best practice case studies which showcase the benefits that gender-sensitive projects and activities bring to poor women and communities, and how these can feed into the efforts towards achieving the MDGs by 2015. The national reports were published and distributed during CSD-14 and CSD-15, as an advocacy tool for using best practices and encouraging gender-sensitive energy projects. The regional and national reports can be found at: www.energia.org/csd14

ENERGIA's activities at CSD-14 were very successful in getting gender and energy into the outcome doscuments. The Chairman's summary (parts 1 and 2) can be found on the CSD website at: http://www.un.org/esa/sustdev/csd/review.htm. A detailed article on ENERGIA's advocacy at CSD-14 will appear in the next issue of ENERGIA News. ■

Meeting ENERGIA Members

May Sengendo

ENERGIA Regional Network Coordinator for Africa

Interview by Chesha Wettasinha

Could you give us a brief sketch of your professional background?
I am a Ugandan with thirteen years of experience in policy, programme planning and training in the areas of Trade Policy, Gender and Energy Policy and Programmes, Social Service Delivery, Institutional Strengthening, Gender Analysis and Mainstreaming in Social Sectors, Decentralisation and Governance, Environment and Shelter, Human Rights and Conflict Resolution. This has included both short- and long-term assignments.
I am a lecturer and gender trainer in the Department of Women and Gender Studies at Makerere University. My involvement in both university and NGO work has enabled me to undertake capacity enhancement activities within the government sector, NGOs and community-based organisations. I have also conducted research, carried out planning, training, policy formulation and monitoring programmes for governments, civil society organisations and private companies at national and international levels.
My training and work for a PhD in Gender Studies, at the African Gender Institute of the University of Cape Town in South Africa, enabled me to critically assess and look for ways of ensuring that trade policies for the export of horticultural products responded to gender concerns in Africa. Access to energy-consuming post-harvest handling technologies is a key need within the value chain for these products. The Masters Degree in Social Policy and Administration (with a specialisation in Women in Development) that I worked on at the University of Nottingham in the UK enabled me to learn how to analyse, plan for and monitor social and other sector policies and programmes where energy, water and transport are needed to improve the livelihoods of all people. My Bachelors Degree in Sociology and Social Administration, from Makerere University in Uganda, has provided a wonderful basis for all that I am working on at the moment.

You have been involved in various networking initiatives. Could you outline them for us?
At present, I am the Chairperson of the East African Energy Technology Development Network (EAETDN), a regional energy network of organisations and people in East Africa (Kenya, Tanzania, Uganda) working on the issues of energy, gender, environment and sustainability in development. I also participated in establishing women's rights and human rights training and advocacy work in Uganda that focus on designing strategies to address the discriminatory practices faced in daily life. I participated in establishing the Uganda Women's Network, the Council for Economic Empowerment in Africa and the East African Sub-regional Support Initiative (EASSI), all of which are involved in planning, implementing and advocating for economic policy reform and for women's right to participate in and benefit from development.

You were Gender Advisor and Focal Point for Uganda at the Fourth World Conference on Women in Beijing in 1995. What has been your role in the follow-up?
As a follow-up activity, I have provided technical services in the areas of formulating National Action Plans (in Eritrea), planning National Gender Policies (Uganda and Mauritius), formulating guidelines for integrating gender in selected sector policies and programmes, and building capacity through training technical officers in government ministries, and the staffs of donor organisations (UNDP) and NGOs. ENERGIA resulted from the deliberations on gender and energy after the Beijing Conference, and my participation in its work is another contribution to implementing such actions.

Since April 2005, you have been the Regional Network Coordinator (RNC) for ENERGIA in Africa. What encouraged you to take on this role?
As the contact person for ENERGIA in Uganda, my main interest in taking on the position of RNC is to ensure that the network is strengthened in Africa. There is a great potential for the network in Africa and I am committed to contributing my expertise and experience to building it up. There is a great need to coordinate energy activities in the African region in order to contribute to sustainable development. In addition, I am sure my experiences as RNC will enable me to make use of my practical and theoretical skills to enhance teaching, research, policy as well as project planning, implementation and monitoring activities in Africa from exposure to activities in different countries.

What are your plans for the ENERGIA network in Africa?
At present, I am providing technical support to the EU-funded TIE-ENERGIA project which focuses on gender and energy training in twelve countries and gender audits of energy policy and programmes in three (Botswana, Kenya and Senegal). As a follow-up to this training and the gender audits, I hope to stimulate the network members to document country-level experiences to show how skills enhancement and gender-responsive policy planning lead to improved effectiveness of policies and projects and to the empowerment of women. I also hope to guide and facilitate the National Focal Points in using the results of the gender audits to advocate for gender-responsive policy planning, implementation and monitoring in their own countries. Establishing demonstration/pilot projects that illustrate the linkages between gender, poverty and energy is also an activity that is planned.

How do you as a woman balance this enormous amount of work with your role as a wife and mother?
This is a good question as it concerns the way women have to balance work and family. I have a very supportive husband who contributes his share to work in the home and in caring for the children. We take time to sit down together and discuss our work plans and how these fit in with the family schedules. Good communications and planning in good time help us to cope with work and family. I should also add that the university offers family-friendly working conditions which help me to balance my roles as a working mother. ■

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

◆ EAETDN-U, P.O.Box 5593, Kampala, Uganda. Tel: +256(0)41.531520

Gender and Urban Energy – Workshop to Share Research Findings

Adriana Alvarez

The International Workshop for the project entitled "Enabling Urban Poor Livelihoods Policy Making: Understanding the Role of Energy Services" took place in the Development Planning Unit at University College London on November 23, 2005. This project, funded by the United Kingdom's Department for International Development (DFID) Knowledge and Research (KaR) Programme, was coordinated by the University of Twente (the Netherlands). The workshop presented the study findings of the three partner organisations - Friends of the Environment (Nigeria), APPROTECH ASIA (Philippines), and Winrock (Brazil) to a wider audience and enabled the partners to receive general feedback on the project. The workshop was attended by researchers involved in urban energy research plus representatives from DFID and the Global Village Energy Program (GVEP). The three researchers from Brazil, Nigeria and the Philippines presented their cases. Several discussions took place as a result of the information presented and the participants compared the research findings to other DFID-funded studies in other parts of the world.

Gender was a cross-cutting issue in the discussions between the research team and the participants. Mainstreaming men was recommended as a strategy to be used in the data-gathering process. In Nigeria, decisions are made by men and one can only speak to the women after having spoken to the heads of their households who are mostly men. In Brazil, the household head, regardless of gender, is usually the decision-maker and almost half of the sample households were headed by women. The concept of household head is also changing in Brazil, as women begin to earn more than their spouses or become the only one working in the family, although men may still consider themselves the head even if they are not working or earning less than their spouses. In the Philippines, whoever earns the income becomes the chief decision-maker within the household – and men and women tend to make decisions jointly. There are an increasing number of male-headed households as women go overseas to work: mostly as nurses, carers and domestic workers. In all three countries, one could easily detect the importance of involving men in the decision-making process – the participants discussed how decisions are usually made by the couple as a unit, and thus it is essential to involve both men and women in the data-gathering process.

The workshop participants questioned the three country-case presenters about the use of fuel by entrepreneurs – and although each country study had chosen different types of enterprises, they had all focused on ones where women were particularly active. There have also been some distinct reactions to the recent sharp increases in the cost of petroleum products. In the Philippines, women preparing food to sell on the streets have switched to using kerosene and charcoal due to the high price of an LPG cylinder; whereas in Brazil, even though LPG prices have increased considerably, the poor urban female entrepreneurs studied are not going down the energy ladder to lower quality fuels. In Nigeria, despite being one of the world's major oil producing nations, women entrepreneurs remain on a low rung of the energy ladder, predominantly using fuelwood with the associated negative consequences for their health. The price of fuelwood has also increased because transport costs have risen due to the oil price rises.

In the Philippines, shoemaking used to be a male-dominated business, but now women are involved. This has reflected a change from a factory-based business to a home industry, with some families subcontracted to produce footwear for export. Electricity is essential as families use sewing machines and work at night during peak demands to produce their shoes on time. In Brazil, women entrepreneurs have also set up their businesses in their homes, and their services are often extensions of their domestic chores: they sell food and beverages, sew clothes, and provide manicures and hairdressing services. Women rely on electricity (for refrigerators, hair dryers and sewing machines) and LPG (for cooking) in these activities. Although the concept of household heads is changing in Brazil, the labour division within the family remains unchanged, as well as the nature of the enterprises taken up by women. In Nigeria, most of the enterprises studied were also headed by women – fish smokers, potters, and akara (fried bean cake) makers – and they use fuelwood, charcoal and kerosene. Women in some communities express their status by fuelwood ownership. Women accumulate wood for their children to inherit, and the greater the amount of firewood inherited, the higher the status of the daughters in the community.

This study was not meant to be comparative, with different contexts in each target country. Although the overall methodology was the same (livelihood framework linked to four hypotheses), each country was free to develop their own questionnaires and research techniques. Universal generalisation was seen as less valuable than the nuances that each individual country presented – for instance, in Nigeria, the urban poor targeted in the study have their health affected by the use of fuelwood and kerosene. Again, in Brazil, the main health complaints found are those usually associated with smoke inhalation (eye irritation, cough, and tired eyesight), even though most did not make use of these sources of energy. It would therefore seem, at least in Brazil, that these health symptoms must be associated with other hazards such as asbestos roofs.
It was both informative and useful to have representatives from other DFID-KaR funded projects present. It provided an opportunity to meet one another, exchange information, and supply joint recommendations to international development agencies. ■

◆ Adriana Alvarez's contact details are on page 4

Regional Strategic Planning and Awareness Raising Workshop of the Pacific Gender and Energy Network

Yogita Bhikabai

The Pacific Energy and Gender Network (PEG) was formally established through the regional workshop "Gender, Energy and Sustainable Development" in August 2003, in Nadi, Fiji (see EN 6.2, pp 10-13). Currently, the network is coordinated through the PEG Working Group with its Secretariat hosted by the South Pacific Geoscience Commission (SOPAC) and works towards "gender equity in all aspects of energy development".

During the period 2004-2005, PEG undertook a key project on building awareness of gender and energy issues in the Pacific region. This was funded through PEG partners, the ENERGIA Secretariat and the Technical Centre for Agricultural and Rural Cooperation (CTA), and resulted in several outputs including a PEG website and listserver, a Pacific Gender and Energy Bibliography, and communication material in the form of a video and a series of radio spots, posters and flyers (see page 20).

2005 PEG Workshop and its Purpose

SOPAC hosted the "Regional Strategic Planning and Awareness Raising Workshop - Pacific Energy and Gender Network (PEG)" from 5-9 December 2005, in Nadi, Fiji. CTA funded the event, whilst ENERGIA supported the participation of Ms Christina Aristanti of ARECOP (Indonesia) as workshop facilitator and trainer. Eleven women and eleven men from the Pacific Island countries of Cook Islands, Federated States of Micronesia, Fiji Islands, Niue, Palau, Papua New Guinea, Samoa, Solomon Islands, Tuvalu and Vanuatu participated in the event. The purpose of the workshop was to support the mainstreaming of gender in national and regional energy policies and planning, and to enhance awareness of the need to ensuring equitable access to energy by the rural communities in the Pacific Island countries. Towards achieving this purpose, the workshop set out to prepare a strategic action plan for the period 2006-2008, a PEG Terms of Reference and, further, to conduct a short awareness-raising session on gender and energy.

Opening and Updates from Countries

Mr Anare Matakiviti, SOPAC Energy Adviser, welcomed the participants and opened the workshop on behalf of the SOPAC Director. This was followed by country presentations from the participants of the different countries represented. It was a great opportunity to share information among the participants and to update on each country's involvement in gender and energy.

Participants of the Pacific Gender and Energy Workshop in December 2005 in Suva, Fiji (Photo: Yogita Bhikabai)

Strategic Planning Session

The strategic planning session started with the participants looking at events that had had a bearing on gender and energy during the period 2000-2005 at various levels: global, regional, national and organisational. Following this, the participants went on to map trends in the Pacific region in relation to these discussed gender and energy developments.

Over forty trends were identified, and similar trends were grouped together. In the first sweep, ten groups were identified; and after a second sweep, the ten groups were further consolidated into three groups. The trends in each of these three groups were analysed further by the participants working in small groups. They identified actions and achievements that had led to good trends and so produced pride and smiles, but also sorrow and long faces because of the lack of action and things not done to improve the negative trends. For instance, one of the groups was "proud" of "women gradually coming into the energy sector (technical and managerial areas)" and "regretted" the "mentality/culture that acted as a barrier to full participation of women in the energy sector".

Finally, ideas on what could be done in the short-term (2006-2008) to bring about a "dream situation" were listed as "common ground" ideas. These common ground ideas were used as a backdrop to the discussion on strategic planning.

The participants at the 2005 Regional Strategic Planning and Awareness Raising Workshop reaffirmed the challenges and constraints identified at the 2003 workshop, namely:

- Addressing the gender linkages to energy is not a priority for the governments involved;
- Insufficient research and information on energy and gender linkages in the Pacific;

- Lack of gender analysis of energy projects in the Pacific;
- Limited technical, human and institutional capacity for gender analysis;
- Women in the Pacific are generally unaware or uninterested in energy and gender linkages;
- Limited representation of women in the energy sector;
- Cultural restrictions influence gender roles; and
- Unequal participation of men and women in decision-making.

After brainstorming on ways to meet these challenges, six broad strategies were determined:

- Incorporate gender concerns in energy policies, both nationally and regionally;
- Raise awareness of energy and gender linkages in the Pacific Islands region;
- Conduct research and analysis on energy and gender linkages in the Pacific Islands region;
- Build the capacity of energy decision-makers, project officers, National State Actors (NSAs), village electrification councils and local communities in terms of incorporating gender-sensitive participatory approaches and gender mainstreaming tools in energy project planning, implementation, monitoring and evaluation;
- Increase the representation of women in energy education and training programmes and on decision-making committees;
- Strengthen networking cooperation with relevant international, regional and national groups and institutions.

These six strategies form the headlines of the Pacific Energy and Gender Network Strategic Action Plan (PEGSAP) for 2006-2008. In prioritising the strategies, capacity building got the highest ranking, followed by gender mainstreaming of energy policies. A digital copy of the PEGSAP can be obtained from the SOPAC Secretariat.

Awareness-raising Session

In addition to strategic planning, the programme also included a short awareness-raising session for the participants on gender and energy. This was led by Ms Christina Aristanti using Module 1 of the gender and energy training package developed by ENERGIA. The recently launched PEG video - "Linkages between energy and gender in the Pacific" - was also very useful in developing this training session.

The short time allocated to the training session was used to address several topics that could be useful to the participants in their gender and energy work, particularly in relation to engendering energy projects. These topics included: gender considerations in energy planning and projects, gender mainstreaming and "women-only" energy projects (and types of approaches), practical and productive gender needs and strategic interests in gender projects, and gender goals in energy projects.

The training was participatory in nature, and the trainer allowed questions and comments from the floor on all aspects of the training exercises. All the included group exercises were preceded by, and based on, concepts presented on PowerPoint slides with reference to the ENERGIA training modules.

The participants found the training sessions informative and their understanding of energy and gender concepts improved. On the evaluation forms, the training sessions were rated highly.

A key recommendation from the training session was that PEG should adapt the ENERGIA training modules to the Pacific context, highlighting Pacific case studies and scenarios.

Looking to the Future

The 2005 workshop delivered the following outputs:

- Pacific Energy and Gender Network (PEG) Strategic Action Plan (PEGSAP) 2006-2008;
- Regional paper for presentation at the Commission on Sustainable Development (CSD) 14/15 and at the World Summit of Rural Women 2006 in Africa;
- Increased understanding and capacity in dealing with gender and poverty issues in the energy sector;
- PEG Terms of Reference.

The proceedings of the workshop have been published and are being disseminated.

Funding will be sought to carry out the activities in the Pacific Energy and Gender Network Strategic Action Plan (PEGSAP)

The participants were enthusiastic about the outcomes of the workshop and were challenged to work together to put gender firmly on the Pacific's energy map. ■

◆ Yogita Bhikabhai is a Project Officer at SOPAC. Yogita has been coordinating the Pacific Energy and Gender Network (PEG) since 2003 and has actively linked with national and regional partners working in the area of energy and gender. She has been with the SOPAC Secretariat since 2002, assisting with the regional information database, technical publications, coordinating regional earth-day competitions, energy policies and other energy projects. She has a Graduate Certificate in Management from Central Queensland University (June, 2004) and a BSc in Physics and Information Systems from the University of the South Pacific (2001). She is continuing with part-time postgraduate diploma studies on Governance at the University of the South Pacific.

◆ SOPAC Secretariat, Private Mail Bag, GPO, Suva, Fiji Islands. Tel: +(679) 3381377;
Fax: +(679) 3370040; E-mail: yogita@sopac.org

Christina Aristanti facilitating a trends mapping exercise at the workshop (Photo: Yogita Bhikabai)

International Programmes

DFID's Research into Gender and Energy

Jeremy Doyle

DFID (Department for International Development, UK) recognises the strong links between gender and energy issues. Indeed, in order to achieve progress, they are inseparable. This is because billions of people still burn wood, dung, coal and other traditional fuels in their homes. The resulting impact of indoor air pollution and the drudgery in collecting these fuels falls primarily on women and children.
The issues involved are extraordinarily difficult. Over recent years, research supported by DFID around the world has tried to understand and respond to this complexity. This article looks broadly at the research issues and offers some thoughts on the future.
As many as 2.4 billion people are thought to use traditional fuels for cooking and they suffer many serious social and economic consequences. Hilary Benn, the Secretary of State for International Development, publicly recognised the implications after a visit to a villager's home in Ethiopia:

"…her three children were blinking at me in the darkness from behind her skirt. The woman was extremely ill and had a racking cough, and I remember the blackness inside the home and the stench of wood smoke which was overpowering." (Feb 2005)

The World Health Organisation has estimated that indoor air pollution causes the deaths of over 1.6 million people, mainly women and children, each year. This is more than three people every minute – more than those dying from malaria and more than half the estimated number dying from HIV/AIDS (3.1m deaths globally in 2005).
However, taking a look back at recent research in this important area, it is clear that we have come a long way. As recently as 1996, ENERGIA, in its first newsletter, identified that research on women, energy and environment is "scattered through the literature…. Not even an annotated bibliography exists to reflect the current state of knowledge."
Thanks to a wide range of local and international activities, this is no longer the case. The core messages surrounding gender and energy are now significantly better documented, disseminated and practised.

One of the initiatives that have contributed to the debate is the DFID Engineering Knowledge and Research (KaR) Programme. This was designed to ensure that investment in the provision of basic services for the poor is carried out with the benefit of enhanced knowledge and technology. The idea being that such services are essential to economic growth and the reduction of poverty.
The energy component of the KaR programme has delivered many useful contributions to the energy and gender debate. Major research projects on key themes were undertaken, usually featuring work in a spread of appropriate countries. There are many excellent examples – and these KaR projects are a very useful guide to some of the complex issues we face. We should seek to build on this experience.

There are perhaps too many lessons to summarise in this short article and so, to get "the bigger picture", I called someone in my network for some advice.

I asked: what is the main lesson, so far, in gender and energy? This colleague, who has a lifetime of experience in such matters, advanced the view that many active in the energy sector have now been "genderised", and the main findings are now starting to be integrated in energy development policy. However, he added, the "gender specialists in the wider development sector still need to be energised."
If this is true, it suggests first that some very important links have been made. The success of ENERGIA is a good example of this link building. However, perhaps knowledge is still being retained within the energy sector and not being shared. In short, we still need better communication links across the wider development community in order to achieve faster progress. It is fair to say that while some key challenges from the past remain, new research questions have inevitably arisen. For instance, we face the new prospect of sustained high oil and gas prices. This has very serious consequences for millions of poor people, particularly women and children on the threshold of benefiting from modern household energy services. What are the appropriate policy responses? A review in 2002, Research for Poverty Reduction, showed that much of DFID's research effort, including the KaR programme, is having a positive impact. This review was also the catalyst that brought all our research together under a Central Research Department (CRD), formed in 2004, in order to eliminate duplication and build on best practice. The CRD spent £82 million in 2002/03. This amount has been increased significantly to £119 million under the new research framework and will include new work on energy. The CRD budget will increase further to £136 million for 2007/08 (£1 = Euro 1.46). The CRD also launched a new research portal called R4D in March 2006. This provides information about all of DFID's centrally-funded research across all sectors including Rural Livelihoods, Health, Social Sciences, Education and Infrastructure, Urban Development and Communication. The information goes back to the mid-1990s, although in some sectors (especially forestry) there is research information back to the mid-1980s. It is an extremely powerful and valuable tool.
DFID supports and is working towards an even more joined-up, partnership approach to development research.
We all need to build upon past experience and find imaginative ways to take solutions forward to a much larger scale in support of the MDGs. You can access material on DFID research projects and find out more about DFID's future research programme at: http://www.research4development.info
Details on the Energy KaR programme can be found at: : http://www.dfid-kar-energy.org.uk/ ■

◆Jeremy Doyle works in the Policy Division of DFID in London. He is an Infrastructure Adviser, working primarily on access to affordable and reliable energy for the poor. He focuses on policy issues with other donors and multilateral agencies, and advises on research and bilateral spending programmes. His 12 years of experience in international development include managing policy research, rural service delivery, disaster relief and infrastructure construction programmes.

◆DFID, 1 Palace Street, London SW1E 5HE, UK. Tel: +44.(0)20.7023.1848; Fax: +44.(0)20.7023.0864; E-mail: j-doyle@dfid.gov.uk

Smoke Gets in Their Eyes: The Women Fish Smokers of Lagos

Joanna Olu Maduka

There is very little empirical evidence showing the role of energy in informal sector urban enterprises, and in particular in women's income-generating activities. Given the recent large increases in oil prices, we urgently need to see how these businesses, which play a significant role in the income of poor households, are responding to these shocks. The DFID-KaR financed "Enabling Urban Livelihoods Policy Making: Understanding the Role of Energy Services" project is geared towards contributing towards a holistic understanding of the role of energy services in sustainable urban livelihoods, as well as forming a basis for making policies that address these issues. As part of this project, Friends of the Environment (FOTE) from Lagos, Nigeria, surveyed 147 enterprises in four peri-urban communities in Lagos and Abuja. The enterprises chosen were active in fish harvesting/smoking, cassava processing, pottery making and akara (bean pudding) frying. These are all activities where women are active as owners and operators. This article reports on the findings related to the women fish smokers from the Amukoko community in Lagos.

Women fish smokers in Lagos, Nigeria (Photo: FOTE, Nigeria)

The Amukoko Community

Amukoko is one of the five low-income communities, with a total population of 120,000, that make up the Ifelodun Local Government Area of Lagos State, Nigeria. Amukoko is the largest of these communities with a land area of about 41 hectares and a population of about 50,000 people. It has a tribal mix of Yoruba, Ibo, Ijaw and Hausa plus some minority groups. The major occupation for both men and women is trading, although some are engaged in white-collar jobs. There is a significant demand for potable water which residents obtain from boreholes, wells and water vendors. Kerosene is used to boil water before drinking.

Most of the entrepreneurs involved in fish smoking are women. Generally, Nigerian women are very entrepreneurial, learning the necessary skills from an early age by accompanying their mothers to the markets. Where their religion does not allow them to go to the market, women engage in home-based enterprises, and their children or even their husbands take their products to the markets to sell.

Amukoko Fish Smokers Association

The Amukoko Fish Smokers Association is a women's cooperative, with about fifty members, formed about twenty years ago to assist women in regulating the cost of fish and to assist members financially, for example with the costs of funerals, child dedications and weddings. The association also helps its members to solve social issues such as marital problems. All the women interviewed in the FOTE survey were members of the association.

Interviewing the Fish Smokers

Focus group discussions with the women were used to gather preliminary information about their enterprises before conducting a more detailed survey. The women were very enthusiastic because they hoped that FOTE would be able to assist them in their enterprises. There is always this danger of raised expectations and anticipation of something in return when communities provide you with information about their lives. FOTE, therefore, intends to "repay" the women in the follow-up activities to the DFID project by raising public awareness of the conditions under which these women work. It is hoped that this will pressurise the government to introduce policies that will support the women in their livelihoods.

The survey team consisted of two facilitators and two translators. The team met with members of the association including the market leader, who is the president of the cooperative, to sensitise them to the team's mission.

The questionnaires covered both enterprise and household incomes and expenditures, with a particular focus on energy-related expenses, their impact on the sustainability of the enterprise and the corresponding influence on the livelihoods of the respondents. However, it was very difficult to get a clear idea of the income and expenditure of the householders interviewed because the women were unwilling to disclose their incomes fearing that the interviewers could be tax officials.

Fish Smoking as a Livelihood

Women become fish smokers either by inheriting the business from their mothers, or by taking it up because it is seen as a profitable activity that needs little capital investment. Women do not usually have too much difficulty mobilising the necessary finances to set up in such a business: the capital required is usually small, and family members willingly contribute money towards the initial capital.

The women are fully in control of their businesses without interference from their spouses. The money earned is first used for their children's education and other family commitments before meeting their own needs including re-investment in their businesses. Indeed, most of these women are their families' breadwinners. Therefore, the families are generally highly dependent on the women's incomes, and any threats to the women's enterprises increase household vulnerability. Generally, these women do not rely on their

husbands for their social life, the care of the children and other family maintenance needs. However, in many cases, despite the fact that they look after their husbands, the women still regard their men as the head of the family.

The women are conscious that their enterprises are the major source of income for their families and this makes them rather reluctant to take risks. They generally do not have plans to expand their businesses, or to switch to another business which would have higher returns and be cleaner. They perceive their enterprise as an asset that will eventually be handed over to their children.

Energy Use in Fish Smoking

Fish smoking is mainly done using fuelwood. The association plays no role in influencing the members' access to fuelwood, and the women, individually, make purchases from wood vendors. Although weather changes do not affect the availability of fuelwood, it was reported that the recent increase in the price of petroleum products in the country has resulted in a hike in the price of wood due to increased transportation costs for bringing the wood into the cities.

A few women use kerosene and sawdust for fish smoking. However, despite the increasing cost of kerosene, there has not been an increased demand for fuelwood for fish smoking: instead the enterprises have reduced their output due to their shrinking purchasing power for inputs.

Old petrol drums are usually adapted as stoves for fish smoking (as shown in the photograph). The top of the drum is removed and discarded, and a hole is cut in the side to insert the firewood; the mouth of the drum is covered with wire netting, on which the fish are placed in layers. Apart from the fuelwood smoke, there are fumes of unknown toxicity from the petroleum residues in the drum. There has been no research done on the long-term effects of the chemicals in the fumes, either on the women preparing the fish or on those who eat the product.

Women Identify their Priorities

The women's perception of wellbeing is having a successful business, a healthy appearance and having prosperous children. The women have their own ideas on how to upgrade their enterprises.

The main need identified by the women was for the reconstruction of the field kitchens they use for fish smoking, which in most cases are unhygienic with old, leaking roofs and mud floors. Those using fuelwood would like to improve the method of fish smoking but they are not willing to switch to a better quality fuel, such as LPG, that would produce less smoke since they are concerned that the fish will lose the flavour of the wood smoke and that this will result in the loss of customers. The women would also like goggles to shield their eyes from the smoke.

The women complained about the lack of access to micro-credit financing schemes that would help them improve their working conditions and improve their product quality.
The women also have priorities for improvements in their own lives and their children's futures. Most of the women do not have time for leisure activities as they are busy in the kitchen seven days a week. They smoke and sell the fish for about seven hours a day while the preparation takes a further three hours. The only time they formally break from work is for three hours every Thursday, when the state government has made it compulsory for the women to clean their markets and the surroundings. Their daughters tend to do the cleaning. Not unsurprisingly, the women wish they had more time for social activities.

Although many of the women are illiterate, they all send their children to school, and the children only help them after school hours. In most cases, however, the children stop their education after high school, at about 16 years of age, due to the high cost of sending them to higher institutions of learning in the country. Most of the women would like their children to attend tertiary institutions so that they would have a chance of a better future. Fulfilling both of these wishes requires more profitable enterprises.

What Can the Government Do?

Clearly, given the key role the informal sector enterprises play in household security, there is a need for the government to develop policies that reduce enterprise vulnerability. In addition, much more needs to be done to identify the health hazards that women and men are exposed to in the course of their daily work, and to find simple and low-cost solutions that eliminate these threats to health. Healthy workers are crucial for high productivity and for increasing household income. Often, such informal sector enterprises revolve around one family member who cannot afford to be ill, and usually continues to work even when they should be receiving medical treatment.

So what can be done? Firstly, there is a need to educate the women on the hazards of their daily exposure to smoke from the fuelwood and the petroleum residues in the drums. A priority must be to work with the women to find solutions to smoke exposure. Access to improved technology and safety equipment, such as the goggles to protect against smoke, could be acquired with the help of micro-credit programmes.

The women are worried about losing customers if they switch to using kerosene or LPG. This requires a two-pronged approach: allaying the women's fears about loss of customers, and educating consumers about the benefits of eating fish prepared in more hygienic conditions. Since a number of women have clearly found benefits in using kerosene, they could be used to persuade the other wood smokers of the benefits of fuel switching. The fish smokers association would provide an excellent entry point for working with the women.

Encouraging a change in fuel use also requires the government to look at its fuel pricing policies so that the price of kerosene or LPG is not a barrier to low-income users switching from fuelwood to such better quality fuels. Also the impacts that the oil price rises have had on transport costs need to assessed, and smart subsidies used to ensure that low-income households are able to cope with such shocks.

General support to enterprise development could also encourage informal sector businesses to upgrade fuels. This was one of the findings from the pottery industry, which was also part of the FOTE survey. A small number of entrepreneurs were found to be using electricity and LPG, which they had switched to as part of a government programme of general support (not specifically aimed at upgrading the energy source used) to develop an industry with a high-value product. There is clearly a need to make the government in Nigeria aware that also "low-value" products, such as the food the poor eat produced by enterprises that support families, also need support. ■

◆ Joanna Olu Maduka's contact details are on page 4.

Taho Factory: The Story of a Poor Woman's Enterprise

Feri Lumampao

The DFID-KaR research project on "Enabling Urban Poor Policy Making: Understanding the Role of Energy Services" reported a number of success stories on how poor women's micro-enterprises using energy-efficient technologies were helping to reduce their families' vulnerability to economic shocks. This is the story of Aling Nena from the Philippines and her taho factory. Taho is a nutritious food made from soft soybean curd in syrup, however the production is very energy intensive.

The Crisis Begins

An unemployed husband, four children and retrenchment – this is Aling Nena's nightmare. She was employed for over ten years at one of the leading companies engaged in agriculture and food products in the Philippines. Since she was dedicated to her work, she was confident this would be lifetime employment, and this gave her some sense of security.

In the late 1990s, however, Aling Nena's crisis began when, one night, as she was preparing to rest after a long day's work, a neighbour came and informed her that they had seen her husband, Glenn, laying in the grass along the road, bathed in his own blood, and unable to walk.

Aling Nena, with only a few pesos in her wallet, rushed to the nearby houses of her work colleagues to borrow money to rent a vehicle and take her unconscious husband to the hospital for treatment. After an almost two-hour drive along a dark and slippery road at midnight, Glenn arrived at the hospital – thanks to the generous and helping hands of neighbours. Glenn had received several deep knife wounds and a broken skull. Friends and colleagues offered assistance from taking care of the children and watching over Glenn in the hospital, to lending cash to help offset transport costs and medical expenses. This is a good example of how strong social networks help poor people overcome threats to their livelihoods brought about by everyday incidents such as medical bills. Aling Nena's social network came to her aid a number of times during this event.

An Enterprise to Overcome the Deepening Crisis

A year after Glenn's recovery, and before Aling Nena could repay her debts, the company where she worked downsized. Aling Nena was one of those affected. She felt the world had collapsed as she was left alone to take care of the increasing needs of her family without a source of income.

Returning to their farm did not seem a good option if they were to provide their children with a good education. The alternative was to make productive use of the small compensation payment Aling Nena had received from the company on the termination of her employment. She decided to invest this money in an appropriate business. Here again her social network helped in finding a business. A friend recommended the taho business of a neighbour who was wanting to sell his business. At first sight this did not seem such an attractive option. The business was no longer profitable since it was faced with the problems of expensive fuelwood, increasing transportation costs and uncertainty over a steady source and supply of fuelwood. Not surprisingly, nobody was keen to take over a

Taho vendor in Manila (Photo: Approtech Asia)

bankrupt business with nine workers and vendors plus a factory, equipment, utensils, land and building facilities.
Thus, if Aling Nena was to make this business work, it would need careful planning. With help from Glenn, her friends and the *taho* employees, a simple formula was devised that could make the business profitable. The existing employees were the key to success since they knew the customers and the operations well. The operation of the business relies on a tight cash flow: all the *taho* made each day has to be sold by the vendors to pay their employees and buy the raw materials for the following day's operation.

Fortunately, a reliable source of fuelwood was not difficult to locate since Aling Nena's parents own a farm with a woodlot planted with *ipil-ipil* (Leucaena leucocephala) and ***kakawate*** (Glyrecidia sepium). Their farm is two hours drive away, and transport costs could be kept to a minimum if they collected fuelwood just once a month. So the energy issue, which had been a major problem to the previous owner, could be easily solved. A decision to buy the business could now be made.

Micro-credit Rejected

Despite the tight operating budget, Aling Nena did not attempt to avail herself of the micro-credit facility operating in her district. She learned, in one of the orientation meetings, that the cycle of poverty created by borrowing money and trying to repay the capital and interest could lead to serious financial problems. She explained this to herself as meaning that she should never borrow money if she was unsure of her capacity to pay back the loan: missing payments would mean higher monthly amortizations. Also, she learnt that going into business means taking a risk, especially in the first twelve months when you lack regular customers. She took this as a warning sign for a struggling business.

For the first three months, the business was operating at around break-even point. Aling Nena and Glenn took the risk of increasing the volume of production and hiring four more vendors to sell in residential areas and in front of schools during specific hours of the day. The business picked up after six months and profits continued to increase.

Improved Cookstoves – Attractive Option

In 2004, Aling Nena learnt from a friend about the Improved Cookstove Programme offered by APPROTECH. With the help of this friend, she visited the Improved Cookstove (ICS) Center and inquired about the activities of the programme, and explained her situation. Together, Aling Nena and the staff agreed on the need to reduce fuel consumption in order to increase profits. Aling Nena became excited not only about the financial gains from improved fuel efficiency but also the health benefits from using the improved stove. She then arranged a visit by the technician to her taho factory to discuss the investment involved. The half-day visit paved the way to improving the kitchen and the construction of an energy-efficient stove.

The ICS Center staff told Aling Nena to record her fuel expenses and any complaints of the cook before the improvements to her kitchen and again over a three month period after the stove was installed. In the fourth month, the staff assisted Aling Nena to compare her fuel expenses before and after the installation of the improved cookstove. The staff also interviewed the cook and the helpers in the kitchen and observed the cleanliness of the walls and equipment.

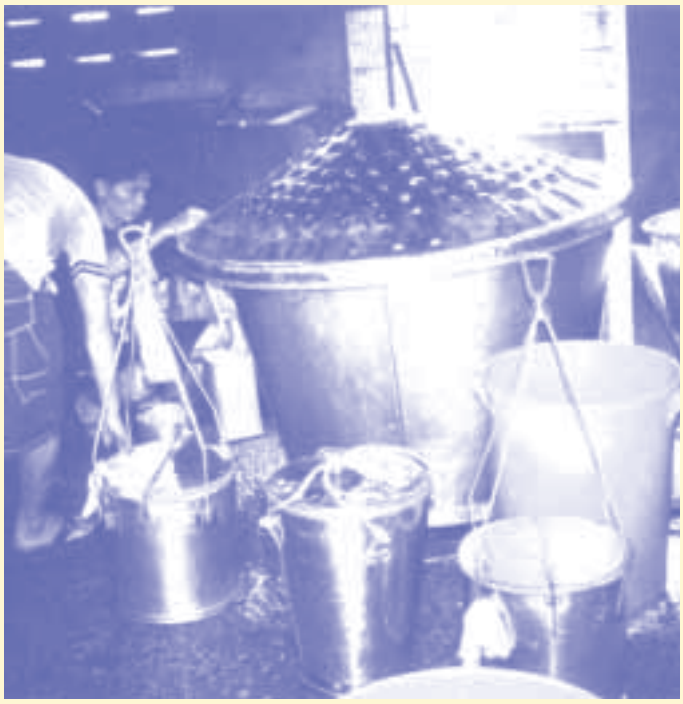
Aling Nena realised that her benefits were not only in terms of fuel saving but even more importantly in protecting the health of her cook and her family, as well as in the clean and hygienic preparation of the products. Despite it being common knowledge that soybean curd will not be of the highest quality unless it is kept clean and carefuly processed, *taho* processors tend not to pay attention to the cleanliness of their clothing. However, the clean and energy-efficient kitchen environment now reminds the *taho* processors that they too should physically look clean to attract more customers. The improved hygiene in *taho* preparation would also be good for customers.

Keeping Ahead of the Competition

The *taho* business is rapidly growing. The economic crisis in the Philippines has seen the number of *taho* vendors double in the past year. This means that Aling Nena is facing increased competition, and she needs to ensure that her business stays profitable. Aling Nena is willing to invest further in the business. She plans to mechanise her kitchen and use stainless steel equipment for processing the ingredients. She has grown in confidence and is now seeking assistance from a micro-finance organisation, the very type of organisation whose help she had shunned a few months earlier. The organisation provides assistance to micro- and small-scale industries, and is helping in the preparation of feasibility studies to determine the financial investment needed to upgrade the *taho* processing facility and how grid electricity can best be utilised within her enterprise.

Lessons Learnt

This case study shows how energy has played a key role in the vulnerability of an enterprise that requires process heat. Once a cheap and reliable source of biomass was found, the business could begin to move to a more secure future. It also shows how women entrepreneurs are reluctant risk takers. Aling Nena refused micro-credit when first starting her business. However, this might possibly be due to the approach of the organisation, which was not supportive to Aling Nena in the way that the ICS Center was. An energy technology with multiple benefits, as we see here with the improved stove, can be more attractive to entrepreneurs than options with only one benefit. Although the increased efficiency of improved stoves receives a lot of attention, the significant improvement in hygiene standards that accompanies the use of such a stove should not be underestimated in commercial situations. ■



Aling Nena's taho factory (Photo: Approtech Asia)

◆ Feri G. Lumampao's contact details are on page 4.

Urban Energy and Poor Women's Enterprises in Salvador, Brazil

Adriana Alvarez

This article is based on the research study undertaken by Winrock-Brazil as part of the international team on the DFID-KaR funded project "Enabling Urban Livelihoods Policy Making: Understanding the Role of Energy Services". The study focused on the role of energy in small family enterprises in poor urban neighbourhoods of Salvador in Brazil.

The Survey and Its Findings

Winrock-Brazil conducted surveys in Canabrava and Plataforma, two impoverished suburban neighbourhoods of Salvador. The survey questionnaires targeted family businesses, with questions focussing on the main characteristics of the enterprise. In total, 26 entrepreneurs were interviewed in Canabrava, and 25 in Plataforma. The 51 interviews were consolidated into a single database for data analysis.

Women led the vast majority of the enterprises (88%), with only 12% being the responsibility of men. In terms of business segments, 39% of those interviewed worked in services and 52% in an enterprise combining production and retail; the remainder worked either in production or in commerce. Three business categories were identified: 54.9% worked in the production/sale of food and beverages, 25.4% owned beauty salons and 19.7% were seamstresses. It is not surprising that women head the majority of the enterprises identified through the survey since these are considered as typical female occupations in Brazil.

All of the enterprises found were in the informal sector, as reflected by the following indicators:

- In Plataforma, 84% of the women had not legalised their businesses. In Canabrava the percentage was 92%;
- In Plataforma, 60% of the interviewed women said they worked alone, as did 61% in Canabrava;
- Forty-four percent of the enterprises in Plataforma are seasonal; with 24% of them working for just a few months per year, often during the summer and coinciding with the main tourist season in Salvador when most of the popular festivities happen. In Canabrava, 27% of the women considered their businesses to be seasonal, with 15% saying that they worked whenever they had customers;
- Thirty-six percent of those interviewed in Plataforma were completely unaware that their activities were liable for tax duty. In Canabrava, half of those interviewed were similarly unaware.
- The enterprises were mostly home-based and often an extension of domestic tasks[1] , with no special production facilities, commercial outlet or service centre.

Poor Women's Small Enterprises in Salvador

A popsicle maker, a dressmaker, and a *"baiana do acarajé"* (an Afro-Brazilian who sells bean cakes fried in palm oil in the streets) are used as examples to illustrate some of the typical features of small enterprises, particularly those of women, amongst the poor in Salvador.

Popsicle Maker (Canabrava)

Ms Ivonice produces popsicles at home. Her stove sits in her tiny and steamy room. She dedicates every other day entirely to making popsicles. On these days, she wakes up, serves breakfast to her children and starts this activity, sometimes with the help of her daughter. She uses fruits, sugar, milk and packaging material (small polythene bags).

She usually shops at a street market but, whenever there is not enough money for transport, she goes to her neighbourhood's grocery store. She uses various fruits, but always those in season because they are cheaper: guavas, mangoes, passion fruit, umbú, acerola, peanuts and coconut. She relies on LPG and electricity for the production process. She says she does not use much of either in the process of operating the stove and the blender. She uses her fridge to store the popsicles but, according to her, fridges do not consume much energy.

The production process consists of washing, peeling and chopping the fruit and then putting them in the blender. Thereafter, the pulp is strained and water and sugar added until the mixture thickens. The mixture is then poured into plastic bags, the ends are tied up, and the bags are put in the fridge.

When peanuts are used, they have to be toasted in the oven for about 20 minutes and then peeled. After that, the nuts are blended with milk powder, water and sugar, until the mix reaches the right consistency.

Dressmaker (Plataforma)

Her house is divided into two areas: the home is on the first floor and the dressmaker's space on the second, also known as the "laje" (flagstone). The dressmaker spends most of her time on this second floor, which is still under construction – noticeable by the unfinished rooms, unplastered walls and bare columns, with iron extrusions. There are two rooms on the second floor, one for cutting and one for sewing, plus an uncovered space with a clothes line. The remnants of construction material - rocks, bricks and wood - lie around. The floor is made of cement and the roof is made of asbestos tiles. There are five sewing machines on separate tables and many bags on the floor. Some are open and contain tags, trimmings and cloth. There are many dress/fashion magazines, which customers pick up and choose styles and

The dressmaker of Plataforma (Photo: Winrock Brazil)

Canabrava, one of the suburban neighbourhoods in which the survey was conducted. (Photo: Winrock Brazil)

patterns from, and a mirror on the wall to be used by the customers when trying on their clothes. In the cutting room there is a large table, surrounded by mannequins, steel shelves and an old broken sewing machine. This upstairs area also has a bathroom with a toilet and a door that leads to a backyard with plants. Energy-saving fluorescent lamps are present in all rooms and are only turned on after dusk, with the dressmaker working until 11 p.m.

Acarajé and Abará Producer (Plataforma)

This small enterprise is located at Rua Paissandú, in Mr Raimundo (60 years old) and Mrs Benedita's (55) house. They live with their children: daughters Katis (34), Ivonete (33), Ivone (29), Cristiane (29), and Tatiane (23), and son Ivan (28). The enterprise is a small acarajé (fried bean cake) and abará (boiled bean cake wrapped in banana leaf) bakery/ manufacturer. The owner does not accept this definition as an enterprise and vehemently says that he supports his family with his job as a security guard (around US$ 120 per month) and that his profits on the cake sales are not relevant. In his opinion, the small enterprise is just a side income, "small change to buy bread'.

The enterprise operates with a traditional gender division of labour: business management, transportation of materials, shopping for raw material and input control (accounting) are tasks handled by the men. The women are responsible for food preparation (using LPG) and for sales both on the streets and in three different shops they own around the city. It was impossible to get more data on their business.

In reality, although Mr Raimundo takes care of the accounting, Mrs Benedita is considered the owner because she does most of the production work and she is the one who appears in public to sell the product. People know her for the business, not Mr Raimundo.

The three businesses described above have common traits that were shared by most of the small enterprises identified in the study – they are run by women who rely on energy sources (electricity and LPG) to deliver their services or sell their products. Energy consumption in these families may absorb 30% of their income, and so the high cost of energy services (including transportation) have a significant direct impact on these small enterprises run by women. Another common trait is that these are poorly organised and inconsistent businesses – those who run them do not possess knowledge on business operations and management. They also lack access to credit because most could not afford to pay back debts. Many do not register their businesses to avoid paying the high taxes charged by both the local and federal governments.

'The greatest difficulty in an enterprise is finance. Nobody is able to invest and usually they have to pay in order to work', says Ms Lina, a Plataforma resident who buys and sells scrap iron. Most of the entrepreneurs started up their business with their own funds, with only 6% of those interviewed admitting to having made use of some type of loan or financing. The size of these loans ranged from R$ 100 to more than R$ 1500, and were taken out in the name of the entrepreneur and obtained from financial institutions.

The lack of access to credit reflects how vulnerable these enterprises are. In Plataforma, 88% of the interviewed women had never had the opportunity of a loan. The 12% that had, had been offered financial assistance from a business that offered loans with high interest rates and never more than US$ 700. In Canabrava the situation was even worse: being a poorer neighbourhood, the people who live here rarely get offered a loan. Indeed, none of the people interviewed had had the option of a loan.

Making Women's Enterprises More Successful

Providing access to credit is essential in increasing women's ability to improve the success rate of their enterprises. Further, low-cost training on business management and finance is just as important as providing access to credit. The 2002 Global Entrepreneurship Monitor (GEM) positioned Brazil seventh among those countries with high rates of entrepreneurship, and first in the list of countries where people set up businesses based on necessity rather than on opportunity (due to the high unemployment rate, people are forced to create jobs for themselves). Among the entrepreneurs in Brazil, over 40% are women and more than 20% are people between the ages of 18 and 24[2] . According to statistics from SEBRAE (Brazilian Support Service for Micro and Small Entrepreneurs), between 30% and 61% of entrepreneurs (depending on the region) shut down their businesses within the first year.[3]

If women from the poorer communities were better qualified to run their businesses, their success rate could be much higher. Interventions to support enterprises where profit margins are low need to tackle the issue of access to micro-credit. In particular, they need to take account of the impact that energy costs (including electricity, LPG and transportation) can have on small enterprises, as presented in this article, and to stimulate the use of micro-credit for investments in energy efficiency. ■

[1]*Many already cook, sew, make desserts, etc. They try to sell what they already make, and use their house as a facility for selling goods or providing services such as haircuts, manicures, etc. It is informal, and their clients are people from the neighbourhoods and advertising is by word of mouth.*

[2] *Brazilian Institute for Quality and Productivity (IBQP – PR) GEM Report 2002.*

[3] *Pequenas Empresas Grandes Negócios, 2001, Editora Globo S.A.*

◆ Adriana Alvarez's contact details are on page 4.

Gender and Prepayment Electricity in Merlo, Argentina

ENERGIA News vol. 9 nr 1 • 2006

Wendy Annecke and Marialba Endelli

One of the challenges for developing countries is the rapid rate of urbanisation and the pressure this puts on local authorities to provide basic services. Most have fallen woefully short of adequate provision of water, sanitation and energy delivery - and many have given up trying to address the problem altogether. The results are visible in the vast shack settlements in cities throughout the developing world: millions of households are not legally recognised and endure squalid living conditions with few if any basic services.

Access to Electricity in Very Low Income Urban Areas

Recent studies in low-income urban areas around the world show that even within the poorest communities, except in Africa[1] , electricity is used by most residents (US AID 2004)[2]. This has led researchers to say that the problem is not one of access to electricity, but of legality and affordability. However, to call this process electrification would be an exaggeration. Most are illegal connections, cables or wires taken from poles or a legal supply point to feed other points. The electricity is usually carried in dangerous wiring and the supply may be interrupted at any time – such as when a car drives over a lead across a road, or a child trips over a lead which runs through several shacks. Sometimes these leads are run off the main supplies and are not paid for (i.e. the electricity is stolen). More often, there is a 'slum lord' (or lady) who has a legal connection and charges all those who lead off it exorbitant rates for their supply - making a tidy profit. This has led researchers to say that most poor urbanites do pay for their electricity – but not always to the utility. The illegal supply is often sufficient only for lighting, although in some cases free electricity is used extravagantly.

Customer buying prepayment credit in Merlo, Argentina (Photo: Wendy Annecke)

Such illegal connections are a problem for both utilities and households. For the utilities, illegal connections mean unpredictable loads, damage to the infrastructure and a loss of revenue. For the consumer, illegal connections are unreliable and dangerous, and expensive if the household is at the mercy of a slum lord. Over the past decade or so, a variety of innovative approaches have been undertaken to address illegal connections in low-income areas. Recovery of electricity service costs in low-income areas[3] is difficult throughout the developing world. Ways have to be found to balance the value equation: on the one hand the utility has to be financially stable and viable, and has to have the ability to be innovative and reduce service costs, on the other hand, the utility has to meet the expectations of communities and other stakeholders while dealing with issues of equity and access, especially of customers in low-income groups (in developing countries the majority of household customers are often in this group).

The Prepayment Approach Used in Merlo, Argentina

This article reports on an approach followed by the utility Edenor in the suburb of Merlo in Buenos Aires, Argentina, to legalise illegal connections and to recover consumption costs by installing prepayment meters. In particular, we look at the different impacts this approach has had on men and women[4].

In December 2001, Argentina defaulted on a US$132 billion loan repayment. The consequences of this included devaluation and one-fifth of the population becoming overnight the 'new poor'. Thousands of the 'new poor' lost their jobs and could not pay their bills. Electricity bills proved especially difficult to pay since they were issued bi-monthly and required relatively large amounts of cash to settle. Thousands of households were cut-off and, subsequently, many reconnected themselves, usually illegally. After two years the utility was faced with the severe and familiar problem of electricity being used and not paid for, and of the network being damaged and becoming dangerous through overloading and illegal lines.

In a pilot programme in 2003, 4,500 households in Merlo, who had a history of non-payment and/or illegal connections, agreed to have prepayment meters installed inside their houses in return for having their debt cancelled. The installations were at no cost to the households. Having a prepayment meter requires households to buy credits in the form of a voucher with a printed number which has to be keyed into a pad on the meter – very similar to a pay-as-you-go cellular phone. Vouchers are bought from machines similar to automatic teller machines (ATMs) which are installed in convenience shops. In theory, no-one should have to walk more than 1.5 km to the nearest vending point. Vouchers are available in conveniently small denominations from 1 peso (US$0.30) upwards. The meters allow

households to monitor their consumption and manage their energy expenditure through assessing their consumption and balancing this against their financial position on a daily basis.

A socioeconomic impact study, which was commissioned to report on the customers' perspective on the intervention, led to some interesting discoveries about women's self-taught knowledge of energy efficiency and their role in managing energy efficient practices in their homes[5]. One hundred and fifty interviews of about 45 minutes each, and a group discussion with men and women, were conducted over a two-week period, and the results highlighted once again the role of women in managing household energy, even when this is in the form of electricity.

The sample included a disproportionate number of men: 60% of the respondents were men and 40% were women. No-one under the age of 16 was interviewed, although several children under the age of 16 had been observed buying electricity vouchers at vending machines. Generally, incomes were recorded as low and irregular, with 46% of households reporting incomes from 'unstable sources'. Social benefits of 150 pesos a month were received by 49% of households ('Plan Jefes y Jefas'). Around 10% of respondents gave a social subsidy as their main income. In terms of major 'bread winners' in the households, 64% were men and 27 % were women (with subsidies dominating in the remaining households as indicated above). Overall, 75% of respondents had incomes below the poverty line, defined as 700 pesos a month.

Table 1 – Incomes in pesos per month

INCOME	Less than 150	151-350	351-700	701-1,300	More than 1,300
	9%	34%	32%	15%	8%

In the survey, 90% of the men and women were satisfied with the new system with nine men and six women not satisfied. Being able to buy electricity in small quantities was seen as a positive feature of this project: a quarter of the households interviewed bought 1-2 pesos worth of electricity every day or two.

The move to prepayment technology created a change in responsibilities within these households with more men going to buy vouchers than women. The interviews showed that, with the old billing system, equal numbers of men and women had gone to pay the bi-monthly bills, whereas, with the new system, 66% of the time men or boys went to buy vouchers. Unfortunately, by the time the analysis was carried out, it was too late to ask the reason for this and it had not been included in the structured interview. Since vouchers are available almost 24 hours a day it may be that, if the household is running out of electricity at night, men are the ones who go out into the notoriously dangerous streets.

How Women Teach Themselves about Consumption

With regard to 'electrical work', the participants in the group discussion agreed that men still do all the changing of light bulbs and plugs and wiring, while women and girls stay in the background, saying they feel they are not competent, confident nor responsible for practical, technical chores. This is in accordance with the common notion: that practical matters and knowledge about electricity is mediated by gender roles, and men are assumed to be superior in this kind of knowledge.

However, left to their own devices, and in their own time, the women had worked out consumption patterns and ways to save electricity. This became apparent when interviewees and participants in the group discussions were asked about energy efficiency and it was the women who started describing their strategies. While the interviews showed that men had theoretical knowledge on electricity consumption and which appliances used the most amount of electricity, women had acquired equally valid knowledge through practical experience. Having received their prepayment meters, the women had used trial and error methods to establish which household appliances used the most electricity. Some experimented by unplugging all their appliances and then plugging them in and turning them on one by one, watching the meter to see how quickly the units 'got used up'. In this regard, the meter inside the house was more useful than the old fashioned 'clock' outside, and the women were able to quickly see and correlate consumption and cost. The women said that they had wanted to work this out because they were alone at home all day and responsible for using most of the electricity. The women then used this knowledge to reduce their own consumption by using appliances with heavy demands less (such as washing machines and irons), and by trying to limit household consumption (by turning off lights and discouraging space heating). This confirms what we know about women as managers of household energy, and extends their management, at least in these low-income households, to electricity use as well.

Energy Efficiency and Energy Deprivation

Prior to prepayment metering, 28% of respondents reported trying to save electricity at home. After installation, 90% of women respondents and 60% of men reported trying to save electricity. Investigating energy efficient practices threw up some interesting questions about what was enough energy to meet basic needs and minimum comfort as opposed to too little electricity for health and comfort. The terms 'energy efficiency' and 'energy deprivation' were used to distinguish between the two. If a respondent said *I turn off lights when no-one is in the room* the action was classified as efficiency driven, and 47% of the responses fell into this category. If the response was *Now I turn on only one light for everyone*, the practice was considered as deprivation driven, and 17% of the responses fell into this category.
Other 'deprivation' statements included *I limit reading to daylight hours* and *we heat less water and all of us use the same water to bath*. The report documents some 7% of women turning off fridges with questionable effects on the food and budget, of women using the washing machine less or going back to bending over the bath and washing by hand, of women using cold water for washing clothes where they had used hot water before, and of women not heating the house during the day or reverting to kerosene or wood for space heating. Women and small children were generally the ones at home during the day so they were the ones suffering the cold of uninsulated cement-block houses. The alternative heat sources are not healthy either: kerosene and wood smoke may exacerbate respiratory infections and makes eyes itch.

Men, even those who were unemployed, escaped the household cold and made use of heated public spaces such as bars and coffee shops during the day. Although 60% of men also tried to save electricity, this was predominantly through turning off the lights if they were not needed and, in 20% of cases, advising their wives not to use certain appliances. Men in this survey, as elsewhere, showed a preference for using electricity to watch television, to have beer in the fridge and to have lighting for all. *'We use things that are not heavy on electricity'*, was what they said in the group discussion, showing little compulsion, as the women had, to disadvantage themselves personally. The problem is where to draw the line between using electricity efficiently and rationally, and depriving the household of electricity to its detriment. It is good that both women and men have become aware of their energy consumption, but it could be that being too conscious of the meter and/or unable to afford enough electricity will result in illness and become a social cost to the health system.

The intervention of the utility, in providing legal connections in return for agreeing to prepayment meters, was appreciated by 90% of the respondents, all of whom, both men and women, would rather have legal than illegal connections. The study showed that women use the prepayment meters to teach themselves how to watch their consumption costs and save electricity, even if this involves discomfort. One of the recommendations resulting from this study was that education should accompany installation of prepayment meters, and should be targeted at women, and that follow-up educational demonstrations should be held at regular intervals at clinics and shops frequented by women. ■

1 In most African countries less than 40% of urban households are electrified.
2 US AID (2004) Innovative approaches to slum-electrification project. US Agency for International Development, Washington, D.C.
3 Ibid. This report documents approaches in Brazil, India, the Philippines and South Africa.
4 Annceke W, Endelli M, Carpio C (2004). Report on the acceptability and socio-economic impact of prepayment meters in Merlo, Buenos Aires. Report for ACCESS programme, Electricité de France Paris.
5 Ibid

◆ Wendy Annecke is a South African with a PhD in gender, energy and development studies. She held senior positions in the Energy and Development Research Centre at the University of Cape Town and at the Human Sciences Research Council before opting to work on her own and with the Women's Energy Research Collective. Recent studies have included international comparisons of urban electrification in low-income areas, and an audit of women in the energy sector in South Africa.

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

◆ Marialba Endelli has a Master's degree from the National University of Buenos Aires. Since 1997, she has worked in the private and public sectors on the design, implementation and evaluation of programmes on urban integration and the improvement of the quality of life of low-income households. Currently she works for the Secretariat of Social Policies and Human Development on programmes for social inclusion.

◆ Santa Maria de Oro, 2736, CP:1712, Buenos Aires, Argentina. E-mail: mendelli@fibertel.com.ar

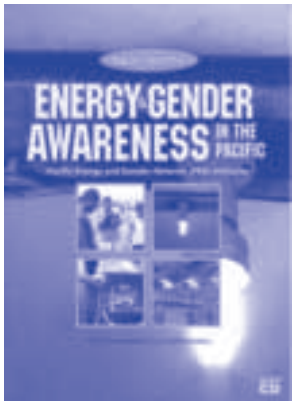
Gender and Energy Resources from the Pacific

The Pacific Energy and Gender Network has produced a number of interesting resources on gender and energy during the past year. These were developed as part of a project on building awareness on gender and energy issues in the Pacific region with financial support from the Technical Centre for Agricultural and Rural Cooperation (CTA) and ENERGIA.

Video

A 20-minute video called "Linkages Between Gender and Energy in the Pacific" in English presents successful rural sustainable energy projects highlighting the gender linkages. Driti Community Solar Refrigeration project (Fiji Islands), Lakhan Family Biogas Project (Fiji Islands), Atata Community Solar project (Kingdom of Tonga) and Palau Entrepreneur Laundromat experience are among the cases used in the video. The video has already been launched on national television – *Fiji TV* and *The Pacific Way* programme.

Radio Programme



Radio spots for six Pacific Island Countries in English and seven local languages (Fijian, Hindi, Kiribati, Samoan, Solomon Pidgin, Tuvaluan and Vanuatu Bislama). These radio spots focus on three themes – energy efficient appliances and bulbs; solar energy and gender aspects in energy. All three spots underline the importance of energy and how it improves livelihoods.

Posters and flyers

A poster and flyers with a "game" in three languages – English, Fijian and Hindi – have been prepared for general awareness raising.

The Impact of Energy Use on Poor Urban Livelihoods in Arusha, Tanzania

Sheilah Meikle

Poor urban families may spend a third or more of their income on energy. Despite this fact, there are very few micro-level studies on energy use and the impact of energy on the livelihoods of the urban poor. Furthermore, existing studies tend to address technological/ economic issues, rather than the social aspects of energy use and are quantitative rather than qualitative in their approach. The study described here addresses this imbalance by examining energy/poverty/ gender relationships in two urban wards in Arusha, Tanzania[1].

The Study

The study perceives poverty as multidimensional and uses a sustainable livelihoods framework to structure poor men's and women's perceptions of their condition. It acknowledges that urban poverty is qualitatively different from rural poverty and recognises the significance of gender roles within a household. It accepts that energy has a significant role to play in improving the lives of the urban poor and sets out to clarify the nature of the transforming process. In particular, it tests the assumptions underlying Millennium Development Goals (MDGs) 2 and 3.[2]

The study had two aims:

- to provide stakeholders (including policymakers, planners and implementers in the public and community sectors, and poor people themselves) with an improved understanding of how access to energy impacts on the livelihoods of poor urban women and girls. In particular, to consider how changes in the energy decision-making process, and in women's and girls' energy responsibilities, might affect their capacity to take advantage of educational opportunities and contribute to their greater empowerment and greater equality in the household; and
- to contribute to improving the livelihoods of poor urban women and girls in Arusha by providing them with information on how to optimise their use of energy and to begin to strengthen their capacity to take part in the energy decision-making process.

The study is in two parts, the first is research-focused and the second practice-based. The former sets out to test two hypotheses:

- *"time saved by using modern energy will result in women's and girls' greater participation in educational activities"; and*
- *"access to modern energy will contribute to gender equality and women's empowerment."*

The second part of the study enabled residents in each of the two study wards to design an energy-focused project that could contribute to improving the livelihoods of poor urban women and girls in Arusha.

In testing the hypotheses, the study adopted a socially sensitive and gender aware perspective. Specifically, it was concerned with processes relating to livelihoods, resources, knowledge and rights that can be perceived as either enhancing or constraining energy use for men and women. It examines micro-level evidence about the use of energy and the energy decision-making process, and compares the situation in poor and non-poor, male- and female- headed, households.

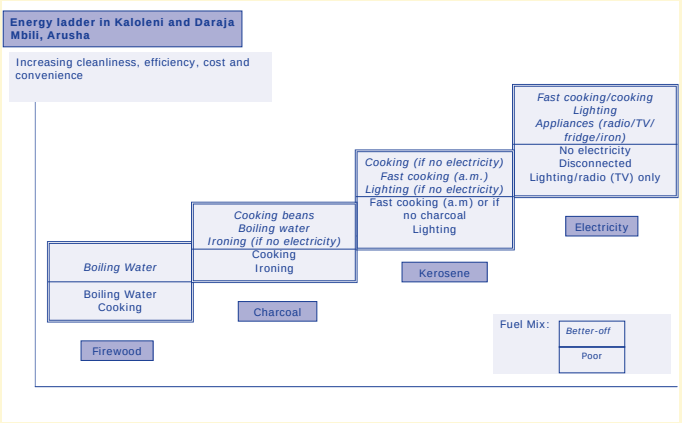
The fieldwork was undertaken in two urban wards, Daraja Mbili and Kaloleni, in Arusha, Tanzania. The study compared the energy roles, responsibilities and rights of women in poor and better-off households.

The study was participatory and primarily qualitative in approach. It incorporated inputs from a variety of stakeholders including the residents of the wards and the research team, and uses a range of tools including semi-structured interviews, case-studies, focus group discussions, key informant interviews and four sets of workshops.

Findings

Fuel Use

The study found that households, both poor and better-off, do not exclusively use just one fuel, nor is each fuel type used for only one activity. For a mixture of practical and cultural reasons, households use a combination of modern and traditional fuels (see figure).



The following observations on fuel use can be made:

- Electricity is the fuel that all households aspire to. However, its cost and the quality of supply mean that it is used sparingly by both poor and better-off households.
- Households are often not willing to use gas, which they perceive as unsafe because of past accidents.
- Kerosene, the easiest available fuel, is popular for cooking and lighting amongst all the household groups.
- Charcoal is the most popular of the 'traditional' fuels. It is used by nearly all households for some cooking and, in poorer households, for ironing.

Time-saving Strategies and Use of Time

Women have a number of time-saving strategies:

- in so far as they can, they mix their use of fuels in order to save cooking time;
- they cook large quantities of food at one time;
- they buy fuel in bulk quantities, and
- they change to a different type, or number, of cooking stoves.

The use of modern energy forms would result in less time being needed by women for reproductive[3] activities, providing time for new activities. However, less than one-third of the women in Kaloleni, and one-fifth of those in Daraja Mbili, expressed a desire to take up education or education-related activities (including girls having more time for homework and mothers helping children with homework). Whereas the majority of the women - half in Kaloleni and two-thirds in Daraja Mbili - would aim to take up an income-generating activity. This is perhaps not surprising in households that lack income and assets.

The Energy Decision-making Process

The energy decision-making process falls into three areas.

- Men are most likely to make decisions about expenditure on household appliances.
- Women are most likely to decide on the type of cooking stove to be used unless the stove costs more than they are allowed to spend, in which case they will defer to their husbands.
- Decision-making about the type of energy to be used is less clear cut, with men sometimes making the decision and sometimes the decision being made jointly.

The residents of Daraja Mbili and Kaloleni have conservative attitudes towards gender roles, responsibilities and rights. The generally accepted paradigm is one in which men are seen as the breadwinners and household decision-makers, while women are responsible for reproductive tasks and are subservient to men. In the better educated households, there is a greater likelihood of joint decisions being made.

Woman holding a kibatori lamp (Photo: Patrice North)

There is anecdotal evidence that men are more willing to share in energy-related tasks if the process is easier, cleaner and quicker. The use of modern fuels would therefore appear to be desirable if there is to be a more equal sharing of household energy-related tasks between men and women. It is a contention of this study that greater gender equality and women's empowerment in the energy process can be achieved through making energy a focus of community interest, and working with men and women to increase their knowledge and understanding of the performance of various fuels and how best to use them.

Conclusions and the Way Ahead

In relation to the first hypothesis it can be concluded that, in the study areas, if women and girls had improved access to modern energy they would be willing to use it and thus save time. However, in the current context, it is unlikely that more than a third, and perhaps as low as one-fifth, of women would be interested in using the time saved for education or education-related purposes. Constraints unrelated to energy – the lack of spare money for education, cultural constraints and the lack of educational opportunities - also need consideration if women and girls are to benefit educationally from improved access to modern energy.

To achieve effective and sustainable changes in the household energy process - and hence energy roles, responsibilities and rights - and thus move towards *gender equality and women's empowerment*, it will be necessary to work with both women and men. Further, because of the unique use of energy in each locality, it will be necessary for any changes to be context-sensitive. Two sets of issues have been identified which, if changed, could lead to time-saving and the more efficient use of energy, not only by women but also by men and others in the home.

- The first is concerned with increasing knowledge and understanding of the performance of various fuels and how best to use them.
- The second relates to changing approaches towards energy issues in the community and government sectors.

In a very short period of time it has proved possible for the two communities to establish interventions in the form of energy focal points which will, if sustained, contribute to improving the lives of poor households, especially women and girls, in Daraja Mbili and Kaloleni. It would be beneficial to monitor the development and utility of these energy focal points.

The research highlights the need for more data on the amount and cost of energy used for each domestic activity. Such information is needed in order to be able to advise households on how best to manage household energy budgets. Careful energy management is particularly important for poor households who are currently spending about one-third of their limited incomes on energy.

In view of the relatively limited research on the energy, poverty and gender relationships in urban areas, and the context-specific nature of this study, there is a need for further follow-up research in other towns both within and outside Tanzania, possibly in west and southern Africa and also outside Africa, to assess the generic application of the findings. ■

[1] A ward is an administrative unit below the municipal level.
[2] Specifically, the achievement of primary education (MDG 2) and the promotion of gender equality and the empowerment of women (MDG 3).
[3] Child bearing and daily tasks associated with child rearing and domestic tasks.

◆ Dr Sheilah Meikle was, at the time of undertaking this research, a senior lecturer in the Development Planning Unit ((DPU) of University College London. She is now a DPU Senior Associate and Independent Social Development Specialist with a particular interest in the design, implementation and evaluation of socially-sensitive development policies, programmes and projects and the execution of training programmes. She has experience in research and appraisal of a wide range of issues including energy and poverty.

◆ 9 North Hill, Highgate, London N6 4AB, United Kingdom. Tel: + 44.(0)208.340 7467. E-mail: s.meikle@ucl.ac.uk

The Bulletin Board

PUBLICATIONS

Training Manual for SODIS Promotion EAWAG/SANDEC 2006
Based on experiences with solar water disinfection (SODIS) projects carried out in more than 20 countries worldwide, this manual provides guidelines for organisations in planning the promotion and dissemination of similar projects in areas where people do not have access to safe drinking water. The manual can be downloaded from: http://www.sodis.ch/files/TrainingManual_sm.pdf

Integrating Indigenous and Gender Aspects in Natural Resource Management: Guidelines for Practitioners WWF, IWGIA, KULU, Nepenthes & DIIS, 2005
This is a publication by the Network on Indigenous peoples, Gender and Natural Resource Management (IGNARM). The aim of the publication is to offer some conceptual and practical tools for improving natural resource management activities and to open a dialogue among practitioners as to how gender and indigenous concerns can best become an integrated part of any natural resource management process anywhere in the world. The publication can be downloaded at: http://www.ignarm.dk/resources/resources.htm

Beyond Firewood: Fuel alternatives and Protection Strategies for Displaced Women and Girls Women's Commission for Refugee Women and Children, 2006
The risks to women and girls during firewood collection have been well known for years. The Women's Commission for Displaced Women and Girls therefore initiated a project to investigate methods for reducing the vulnerability of displaced women and girls to gender-based violence during firewood collection. The project set out to assess alternative fuel options, firewood collection techniques and other protection strategies, appropriate to the local context and in all phases of an emergency. In accomplishing these goals, a researcher undertook desk reviews in various internally displaced persons camps worldwide and conducted site visits in Darfur, Sudan and in the Bhutanese refugee camps in eastern Nepal. The findings of this study in terms of physical protections strategies as well as alternative fuel sources for cooking are reported in this paper together with key recommendations. The paper can be downloaded from: http://www.womenscommission.org/pdf/fuel.pdf

Energizing the Millennium Development Goals: A Guide to Energy's Role in Reducing Poverty UNDP, August 2005
While there is no Millennium Development Goal (MDG) specifically on energy, access to energy services is a prerequisite for achieving all eight MDGs. If viewed as an integral part of MDG strategies, energy can be an important instrument in helping promote economic growth, social equality and environmental sustainability. This booklet is intended as a guide for development practitioners and addresses some of the most pertinent issues regarding development and energy. It provides suggestions and examples on how to address energy within broader efforts to reach the MDGs while also highlighting gender and energy issues and providing examples. The document can be found at: http://www.undp.org/energy/docs2/ENRG-MDG_Guide_all.pdf

EVENTS

International Solar Cookers Conference Granada, Spain, 12-16 July 2006
The aim of the conference is to bring together researchers and practitioners to exchange knowledge and decide future actions and collaborations to spread access to solar cooking, water purification and related solar food processing applications. The goal is to reduce the health and environmental hazards linked to traditional open-fire cooking and the growing fuel shortages. The conference will also evaluate the requirements, technology, costs and benefits of solar cooking technologies. More information can be found at: www.solarconference.net

WEBSITES

www.solarfood.org is a new website that has been launched as a platform for dialogue and information exchange by the worldwide solar food community. It is an initiative by the International Solar Energy Society aimed at promoting and expanding the use and application of solar food processing and conservation technologies. The website is a free service to encourage interested individuals, organisations and companies to join this network and share information and become involved in developing existing activities and standards.

CALLS FOR ARTICLES

Women and Climate Change
Women and Environments International Magazine is seeking contributions for a forthcoming issue on women and climate change to be published in January 2007. The editors are in particular looking for case studies that analyse climate change from diverse gender perspectives. The areas of interest mentioned include gender perspectives on climate change related to energy and transportation, health and reproductive health, and human settlements and livelihoods. Within the sub-theme on instruments, submissions are sought on gender mainstreaming methods and tools, women's participation, leadership and empowerment, and young women's leadership. The deadline for abstracts and indications of interest is 15th June 2006, and for final manuscripts 30th August 2006. Editorial guidelines and further information are available on www.weimag.com

Gender and Energy Case Studies for CSD
The call for case studies on gender and energy, originally intended for use at CSD-14, has been extended to July 2006, as examples of best practices and illustrations of lessons learnt will also be presented at CSD-15, to be held from the 30th April to 11th May 2007. Submission information can be found at: http://www.un.org/esa/sustdev/csd/casestudies/caseStudies.htm

DONORS

USAID Calls for Energy Proposals
The US Agency for International Development's Energy Team has issued an Annual Program Statement concerning Innovative Approaches for Energy Markets and Enterprise Development. This calls for proposals related to a broad array of energy interventions including household energy, electricity access and energy sector governance. The closing date is September 30, 2006. More information can be found at: http://www.grants.gov/search/synopsis.do

ENERGIANET

ENERGIANet is ENERGIA's electronic bulletin service and it is issued four times a year. It contains information on the network's activities, publications, events, donors, internet resources, etc.
To subscribe, simply send an e-mail to a.panjwani@etcnl.nl

Next Issue

This issue of ENERGIA News focuses on the linkages between gender, energy and urban poverty. It is based largely on the findings of the DFID KaR funded research project on "Enabling urban poor livelihoods policy making – the role of energy services" and also draws on other similar research. The cases reviewed in this issue examine some of the linkages between energy and poverty in urban settings with a special emphasis on the gender aspects.

The next issue of ENERGIA News will be on gender and productive uses of energy and energy enterprises. The issue will focus on Asia and highlight some of the work being carried out by ENERGIA partners in the region. If you have an interesting case study from Asia that illustrates the links between gender and productive uses of energy, please contact us or send us an abstract and we will get in touch with you.

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

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

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

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

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

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

EDITORIAL TEAM FOR THIS ISSUE

Guest Editors:
Adriana Alvarez
Winrock International Brazil
Rua Manoel Barreto 415
Graça, Salvador-Bahia, Brazil
Tel: +55.(0)71.3339 6900;
E-mail: aalvarez@winrock.org.br

Feri Lumampao
APPROTECH Asia
G/F PSDC Building, Magallanes Cor. Real Streets
1002 Intramuros, Manila, Philippines
Tel. +63.(0)2.527 6514; Fax +63.(0)2.527 3744
E-mail: fglumampao@yahoo.com

Joanna Olu Maduka
P.O. Box 10627
Lagos, Nigeria.
Tel: +234.(0)1.264 7435
E-mail: fote@gacom.net

Consulting Editor:
Joy Clancy
Technology and Sustainable Development (T&SD)
University of Twente
P.O.Box 217, 7500 AE Enschede, The Netherlands
Tel: +31.(0)53. 489 3537 / 3545 ; Fax: +31.(0)53.489 3087
Email:J.S.Clancy@bbt.utwente.nl

Coordinating Editor:
Chesha Wettasinha
ENERGIA Secretariat
P.O. Box 64
3830 AB Leusden , The Netherlands
Tel: +31.(0)33.432 6044 / 0000; Fax: +31.(0)33.494 0791
E-mail: c.wettasinha@etcnl.nl

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

Design
Kon. BDU Grafisch Bedrijf bv

English Editing by
Englishworks, Hengelo

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

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