

## IMPACT OF WOMEN'S ENERGY GROUP ON NATIONAL POLICY

# SOUTH AFRICA

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**T**his case study describes the efforts of women in South Africa to influence national energy policy-making. In 1993 a small group of women activists in South Africa attended a National Energy Forum and were struck by the lack of women at the meeting and in its task groups. They requested that more women be able to attend the Forum and initiated a support group for women participants. By the end of the year, having learned some important lessons, the group decided to consolidate their experiences and form a network, the Women's Energy Group (WEG). Starting in 1994, this group contributed to a draft discussion document—the Green Paper—that was prepared to establish energy priorities for the new South African Government, and argued determinedly for national policies targeted to women's needs. In the end, most of their suggestions were diluted or omitted in the final energy policy adopted in 1998—the Energy White Paper—but their efforts helped put the issue of women's energy interests on the national policy agenda.

Greater attention is now being paid to women's needs, and to addressing gender imbalances in the energy sector. In 1994, a female Deputy-Minister of Minerals and Energy was appointed and in 1999, after the second democratic elections, a woman was appointed as Minister of Minerals and Energy. The new Minister appointed a transformation officer whose responsibilities include addressing past inequities in race and gender, and who introduced a gender equality pledge for all departmental employees within the ministry. In addition, the Minister introduced an annual award on Technology for Women in Business and held a workshop on the contribution of the energy sector to much-needed rural transformation. The growing awareness of women's energy needs came as a result of a number of initiatives and lobbying efforts, including actions by the Women's National Coalition and the Commission for Gender Equality, as well as the Women's Energy Group.



South Africa has large energy reserves. It has abundant supplies of low-grade coal which underpin its position as the largest generator of electricity on the African continent. Nuclear power accounts for about three per cent of the electricity supply, and hydro power storage stations are used to meet peak load requirements. South Africa imports petroleum, and has plans to import natural gas from Mozambique and Namibia. Solar and wind power resources, as well as hybrid systems, have potential but are not yet widely used.

During the apartheid years, energy policies were driven more by a desire for security and self-sufficiency than by concerns about meeting the energy needs of the majority of the population. Until the late 1980s, little thought was given to the needs of the domestic sector. A million middle-class households had electricity but this represented only 25 per cent of the population. By 1994, only 44 per cent of households were electrified, mostly in urban areas; only 12 per cent of rural households had access to electricity. Since the early 1990s there has been an electrification drive that has added two and a half million households to the grid, bringing the number of urban households with access to electricity to 68 per cent and the number of rural households to 48 per cent.

In South Africa the period from 1990-1994 heralded an unprecedented wave of democratisation that provided opportunities for previously disadvantaged groups—including women—to have greater input into government planning than ever before. New policies that addressed the needs of all citizens were required in every sector, and in 1994 the new democratic Government of National Unity asked each sector to begin putting appropriate policies into place. The energy sector first produced a Green Paper, which was a discussion document, and later the final energy policy document, the White Paper, which was published in 1998. The Energy White Paper marked a paradigm shift from the previous emphasis on energy security and self-sufficiency towards a focus on equity, efficiency and environmental sustainability in energy service provision.

The policy priorities stated in the Energy White Paper were: increasing access to affordable energy services; improving energy governance; stimulating economic development; managing energy-related environmental impacts; and securing supply through diversity

Each policy priority was then detailed in terms of demand, supply and cross-cutting issues. It is clear that the intention was to enable the whole country, rather than just businesses, to gain access to energy. For the first time, energy services for low-income households were addressed in a South African policy document. Yet, the articulation of the new policy is still somewhat weak:

Government supports the concept of "energisation," i.e., the widening of access to a safe and effective energy package within the grasp of low-income households, and will promote its implementation where appropriate.  
(White Paper 1998: 38)

This, along with other aspects of the Energy White Paper—such as its acknowledgement of the need for social forestry programmes, subsidisation of the extension of the grid and the electrification programme to previously disadvantaged customers, and its support for renewables to supplement grid electrification—have had an impact on women. The changes have been felt differently by individual women depending on whether they received grid connection, or whether they could afford to buy electricity and the appliances necessary for cooking and cooling. Some have benefited from solar lighting but still have to use wood or kerosene for cooking.

### Identifying women's needs and challenges

Apart from fuel wood, which can still be collected in some areas without monetary costs (although with increasingly high time and opportunity costs), all energy resources have to be purchased. Over 50 per cent of the South African population is poor and struggles to pay for energy. Thus, there is a need for sustainable income generation, as well as safe, affordable, accessible and secure energy sources. These were the needs highlighted by women at a national energy workshop held in Johannesburg in 1999.

**Safety.** At present the majority of women use fuel wood, coal or kerosene for cooking, none of which are safe fuels. The negative impacts on health of having to carry fuel wood over ever-increasing distances are well known, as are the respiratory and eye disorders which are exacerbated by extended periods of contact with smoke from burning fuel wood or coal. Using kerosene may also have a negative effect on air quality, but the primary health hazards associated with its use are the poisoning of children through accidental ingestion, and the potential for fires that start in urban slum areas and spread rapidly, leaving devastation in their wake. When women at the national energy workshop said they wanted safe fuels, they also said they wanted to be safe themselves when they go to purchase fuels or collect wood; they currently face threats from muggers, rapists and murderers.

**Affordability.** South Africa both manufactures and imports oil for kerosene, and recent increases in oil prices have led to a 70 per cent increase in the price of kerosene over the last year, so that many women have had to revert to using biomass fuels. Women have called for a stable kerosene price that does not include a Value Added Tax. The extension of the grid has been a positive programme, and connections to the electricity grid are heavily subsidised. Nonetheless, many low-income households cannot afford to use electricity for anything other than lighting. The cost of appliances also creates barriers to increased use. In rural areas where the grid will not be extended within the next five years, solar home systems are being installed by means of public/private joint venture schemes. At present the costs of installation and maintenance are borne by the households. These costs are much higher than for grid connections,

and many of the poorer households are excluded because they cannot afford the payments.

**Accessibility.** Kerosene is widely available, but the distribution systems for coal and liquefied petroleum gas (LPG) are limited primarily to urban areas, which means that these fuels are not accessible to most women and are generally not affordable when they do reach rural areas. Another accessibility issue relates to dwindling wood supplies. It is believed that South Africa may have sufficient wood supplies, but the cost of moving the wood from areas of supply to areas of fuel wood demand is prohibitive. Lastly, the women at the national energy workshop wanted to be assured of a secure supply of the fuel of their choice, so that if they invested in appliances and connections, the energy resource required—whether electricity, biogas, kerosene, or low-smoke fuel—would be consistently available.

### Formulating gender sensitive energy policies

The challenge for the government and energy suppliers lies in delivering appropriate energy services to all areas. What is appropriate may vary widely, and thus should be determined by involving all interested stakeholders. The requirements of small businesses, agriculture, health and education facilities, as well as households, need to be considered.

In the early 1990s, an integrated energy planning (IEP) methodology was used to try to produce the strategies necessary for equitable access to energy, and a research team produced many reports using this framework in an effort to contribute to the development of new policy. A member of the research team, however, produced a critique of the IEP framework suggesting that it was insensitive to gender as it “overlooks the fact that women are the primary users and managers of energy at the household level, treats “the poor” and “households” as homogenous categories and thus both ignores the different needs and interests within these categories and fails to address the unequal gender relations within households” (Makan 1994: 5). She also argued that the reports’ recommendations remained largely gender-blind on the grounds that the research was informed primarily by secondary sources and was based on quantitative and statistical research methods (Makan 1995: 188). Yet these sources and methods need not be gender-blind—quantitative research and statistics can be used to argue in support of actions to meet women’s needs. The IEP framework could be conceptualised differently to include a gender-sensitive analysis of suppliers and users, and to examine the relationships between users within households. This would provide the disaggregated data necessary to develop policies equitable to women.

In trying to think through what a gendered approach to domestic energy policy and planning might entail, Makan identified several elements that need to be considered. Because of

the division of labour, men and women have different roles, and different access and control over resources in the household, community and society in general. As a result, differing needs and interests on the basis of gender (as well as other factors such as income, class, age, etc) should be addressed in national policy.

Makan warned against taking a sectoral approach to energy provision. She recognised that integration with other development initiatives was critical, and noted that such an integrated approach would include ensuring that women were able to own land and have access to financial resources (Makan 1994: 11). She also encouraged policy researchers to challenge conventional social relations in order to meet women’s needs, noting that one of the reasons it is difficult to address gender inequity through policy is that conventional policy statements tend to identify women’s current roles, running the risk of further entrenching existing divisions of labour rather than attempting to address unequal power relations.

### Women’s Energy Group activities

**Development of technical expertise, alliances and lobbying skills.** The initial priorities of the Women’s Energy Group members were to develop their own and other women’s technical expertise, to develop alliances in order to be heard, and to learn to lobby successfully. The group’s technical focus, its determination to build the capacity of women to engage in technology development, and its strategy of lobbying decision-making groups, were evident in its constitution, which was adopted in 1994. The constitution also clearly stated the rights and responsibilities of members: everyone had to share information and teach each other technical skills.

The group was inclusive, acting as a link between energy professionals and broad political organizations. Women from a number of different spheres, from grassroots organizations to parliamentarians, were mobilised to participate.

From the beginning the WEG members operated without adequate funding or facilities. The group’s coordinator found that although everyone she met in NGO forums and in government departments thought that formation of the group was a good idea, she had difficulty finding funding to run it. As 1994 was the year of the first democratic elections, there was a great deal of work to do. Women in the energy sector were under enormous pressure to act on a number of fronts, including analysing the gender-blind research agenda and methodology used in policy development and addressing issues of affirmative action in organizations. At the same time, the political events taking place in the country demanded that WEG members pressure political bodies to place women and energy issues on their agendas, and include women in the policy-making process. In the first year there was much enthusiasm and participation from the growing membership.

The WEG’s first activities included disseminating informa-

tion to men and women at the local level and lobbying for women and energy issues to be taken up by local government structures. Public presentations were particularly successful. Feedback from many listeners indicated that this was the first time that they had understood the importance of energy issues and realised that they could make conscious choices with regard to energy use and efficiency. On their part, members of the WEG learned that to be successful in politics they needed to move faster and be ready to seize opportunities. This was difficult, as all the women were volunteers under pressure in their full-time work; many lacked political training, and some had pressing commitments at home. Still, each member did what she could and by the time new government policies for the energy sector began to be discussed, the WEG was recognised as a force to be reckoned with and a necessary participant in the policy-making process.

***Energy Green Paper drafting and consultations.*** Starting in 1994, WEG members contributed to the writing of what became known as the Green Paper discussion document, a lengthy exposition on the status of the energy sector that also described key issues and presented various scenarios for debate and discussion. The draft policy document included a section on domestic and household energy use, which reflected some of the progressive research that had been done since the late 1980s, and brought it into the national decision-making process for the first time.

It was envisioned that public comments would be solicited on the contents of the Green Paper and that consultations would be held to discuss it. WEG members were invited to a workshop to plan this series of consultations—the first in the history of the sector. The process was conceptualised by the organizers as a series of one-time workshops for various stakeholders such as big business, and “small users of energy,” which would culminate in a National Energy Summit. Representatives of all stakeholder groups would attend this National Energy Summit which, it was hoped, would produce consensus on goals for the sector (Marquard 1999: 35). The WEG objected to this process as unrealistic, especially for those unfamiliar with the energy sector and unable to digest the 200-pages of technical language in the discussion document. The WEG was subsequently contracted to design and conduct workshops which would mobilise and prepare “the poor” for the Summit.

In preparation for community consultations, the discussion document was simplified and printed in the vernacular, and workshops for community organizations were arranged in centres around the country. These were aimed not only at women, but also at small-scale farmers, and poor urban and rural men and women running small enterprises. The people who attended the workshops were politically aware and articulate. They were interested in learning about energy and the policymaking process, and in taking an active role in this process.

Some community groups could not imagine how to address women's access to energy other than by ensuring that women were appointed to all decision making bodies. Others recog-

nised that widening access to energy depended on access to other rights as well. They proposed far-reaching measures: that women must be able to own land; women must have the same rights as men to inherit land; oppressive customary laws must be changed; and women must be represented in all development structures. (James 1999: 40).

A few days before the Summit a joint preparatory meeting was held for the 150 community participants to enable delegates to discuss strategies for their participation in the important meeting. The community representatives participated as planned at the Summit but felt that they were being marginalised. During the plenary they took issue with the technical language, which they felt excluded them. They argued that their voices were not being taken seriously by the 300 more powerful delegates, and threatened a walkout if the situation did not improve. Overall they felt they were not really listened to at the meeting.

From this experience WEG members learned that:

1. It is unrealistic to expect that marginalised people, and particularly previously-oppressed women, should be able to consolidate their positions and engage with powerful groups over an issue as complicated as energy within a short time. A beginning has to be made, however, and once this has happened it can be built on over time, through energy agents, extension workers, teachers, and civic and business organizations. What is required is an ongoing educational and consultative process.
2. The WEG should not have been confined to commenting on traditional domestic and household issues and mobilising the poor, as this diluted their focus from gender issues to general social equity issues and entrenched their low position on the status ladder.
3. More experts in technical fields were needed as members of the WEG, in line with its initial focus.
4. The WEG members needed time to think carefully about how to articulate policies that would address gender inequality and the quality of life of women, and then lobby for these.

The Green Paper consultative process was demanding and time consuming. The WEG lost its focus on women, gender and technical skills when it had to organize around broader generalised categories which included the poor, previously disadvantaged people and low-income households. Because of the nature of the facilitation work and country-wide venues, only two women, who were contracted to conduct the exercise, were fully involved and understood the dynamics among community-based organizations and among men and women. This left some WEG members feeling left out and believing that women's interests had not been sufficiently protected. Most members agreed, however, that the WEG's participation in the Green Paper process and the National Energy Summit was meaningful and had prepared them for the next step which was the drafting of the White Paper for the Minister's approval.

## The Energy White Paper

After the National Energy Summit, an editorial team consisting of six men and two women was chosen to write the White Paper. The Women's Energy Group sought to increase the number of women on the team, but without success. A stormy writing process ensued, including many debates about what should be included. Finding themselves in a small, male-dominated forum, the women involved were unable to hold onto decisions and progress that had been made in the Green Paper and the Summit. According to the two women, they were gradually eased out of the decision-making process. (James 1999: 41). Because the editor did not think that women deserved specific mention or targeted policies to assist them, most suggestions for gender sensitivity and policies to benefit women were simply edited out, despite heated arguments from the WEG members.

The draft White Paper produced by the committee underwent further writing and editing within the Department of Minerals and Energy before it was finally published, but women and gender issues did not re-appear. Although the final 1998 White Paper reflects a significant shift from the old supply-side paradigm to considerations of demand-side management and social equity, it contains only a watered-down version of what had been suggested earlier with regard to women and gender issues.

The White Paper is primarily a product of the gender-blind integrated energy planning policy research process critiqued by Makan. It focuses little attention specifically on women, and mentions women infrequently (six times in 120 pages), despite an explicit acknowledgement of women's subordinate position. In the section on low-income households there is a paragraph which reads:

6.1.1 A further important factor to consider when formulating energy policy is that most household energy users are women. The gendered division of labour traditionally means that women are a "disempowered" class. They are responsible for managing household resources and doing menial work in the home—using appliances to perform energy tasks and purchasing fuels. However, unless they are breadwinners and command power in the household by virtue of holding an income-earning position, it is often the man who makes decisions about appliance purchases. Past formulation and implementation of energy policy has given virtually no consideration to women's needs in this context. (White Paper 1998: 37).

No attempt is made to construct a policy statement to address women's disempowerment. There is only one policy statement that mentions women directly, but it is not concerned with women alone. It falls under the section on Human Resources:

8.6 A recent study of government energy institutions as

well as the electricity, petroleum and nuclear sub-sectors showed that 46 per cent of staff were black, and only seven per cent occupied managerial positions. Women were under-represented in the sector, comprising 11 per cent of the total workforce and accounting for five per cent of total management. Black women were particularly under-represented, comprising one per cent of the total workforce and accounting for one per cent of total management. (White Paper 1998: 109)

The policy statement to address this imbalance reads as follows:

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

These targets have not yet been met, but some progress is being made.

Another example of the White Paper's recognition of the importance of women is to be found in the section on households:

3.3.1 Energy services for low-income households have not been adequate since the previous governments' emphasis was to create a modern industrial urban society to meet the needs of the industrial sector and a privileged white minority. Households suffering unemployment and poverty rely on less convenient and often unhealthy fuels. Grid electrification may not satisfy all the energy needs of low-income households. Although most consumers are women, past energy policy has largely ignored their needs. Energy policy has also not adequately addressed energy conservation by high-income electricity-dependent households. (White Paper 1998: 13)

In this case, however, there is no specific proposal to address women's needs.

There are many other instances in the White Paper where women could have been mentioned and targeted for assistance but were not. For example, the section on rural fuel wood states:

7.7.3 Government will facilitate the production and management of woodlands through a national social forestry programme for the benefit of rural households, where appropriate. (White Paper 1998: 92)

The need to have women closely involved in such programmes has been well established, especially since women do not always have the same right to land, inheritance and crops as men do, and a policy that supports these rights would make a worthwhile contribution to more equitable energy services.

Throughout the White Paper of 1998 women are included in the categories “the poor” or “low-income households,” ignoring the careful qualitative and quantitative research that has provided ample evidence that “the poor” and “women” are not homogenous categories. Although most women are likely to have less access to and control over resources than men, some women are more powerful and better positioned than others. Furthermore, research has shown that there may be

very different attitudes, and degrees of access and control over energy services, within “low-income households.” The Green Paper discussion document recognised this and suggested that recognition of these factors should be included in energy policy statements. The Women's Energy Group argued for policies to target women's needs directly, but in the final instance their suggestions were not included in the White Paper.

## LESSONS AND CHALLENGES

The context for attempting to engender energy policy in South Africa was important because the rapidly-changing situation offered opportunities that had to be recognised and responded to promptly. The political terrain changed so fast that the Women's Energy Group had to struggle to keep up with the changing demands of politicians and thus lost its original focus on building technological capacity among all women. Several women, including the voluntary coordinator, were drawn into parliament or institutional positions and had less and less time for WEG activities. In addition, the rush of research projects for the Green Paper and the White Paper process sapped the capacity of WEG members.

Involvement in the energy policy process taught WEG members a great deal, despite the difficulties involved. In a workshop held at the end of 1995, the members drew up a list of what they had accomplished, what obstacles they encountered and what they had learned.

1. The presentations to mass-based organizations and consultative workshops created a public profile for the WEG and, according to feedback, were informative and initially empowering for those who attended. The lack of channels and structures through which poor people and especially women could be heard, however, proved to be an obstacle to getting their issues on the political agenda. Members believed that marginalised people were deliberately excluded from policy processes, and that to include them would mean building capacity and new structures at the local level over time. The group saw a need to work consistently at the local level and find ways of providing information derived from that work to the Department of Minerals and Energy.
2. It would probably be most successful to have a mobilised and vocal group of lobbyists continually in touch with community organizations and able to feed the Department and other government organizations with frequent “sound bites” of information on women's interests. This was an impossible task for most WEG members, who had full-time jobs and other commitments.
3. Rather than being supported by “progressive” actors in the energy sector, as they expected, the women encountered

barriers to entry and resistance to change. The WEG members found that men who supported them privately or who made favourable public statements often changed their positions when it came to allocating resources or putting their promises in writing. Women and gender issues were generally dismissed as unimportant.

4. Lots of stamina was needed to deal with the energy sector. The WEG members had to support each other in order to face the barrage of scepticism they met from engineers involved in the energy sector who were not gender sensitive or easily moved from their narrow focus. The group had to find ways to work with this and change the views of men.
5. The WEG did not know enough about institutions and issues in the energy sector, which range from social forestry and petroleum supplies to electricity generation and the technicalities of photovoltaics. There was a need to build capacity among members. Although women realised their limitations and wanted to share their expertise and improve their knowledge, they often lacked the time or resources to do so.
6. The WEG needed alliances to increase its effectiveness. The group's links with other stakeholders were new and tentative. They did not have an “old boys” network to fall back on, and relied on newly made contacts among politicians, business people and community organizations. These needed to be consolidated, but there were few opportunities for casual interaction, and the WEG could not offer other parties access to power or a constituency since it needed to build one first. Its membership was small (40 women) and other sectors such as health and water, which had mobilised women earlier, commanded greater attention.
7. In its desperation to be recognised the WEG got involved in everything. This was a mistake and at the workshop WEG members argued that they needed to be more strategic. The original vision had been formulated by women engineers around technical capacity issues and this was indeed an area which needed attention. Later, the members who got involved in the policy-making process were social and political scientists and the vision of the group shifted. The WEG needed to assess the areas in which members

were working and prioritise specific areas for action—however difficult that might be in light of other urgent claims.

8. The group lacked support within the energy sector. Funding for space and resources were not forthcoming. When a participatory process or a voice from the poor was needed, the WEG was called in, but when significant national decisions about the electricity grid and domestic connections were made, it was not. The WEG workshop decided to raise funds for a part-time coordinator, but was not successful and, without a dedicated leader, the group disintegrated.

The WEG members also drew up a list of what they had achieved, showing how they had influenced events in a number of significant ways. The group had rapidly developed and raised the profile for women and energy in South Africa, brought together a broad spectrum of women from communities, industry, government, and research institutions, and got women committed to transforming the energy sector. They put women's interests on the policy agenda, got women nominated to positions of power, for example, in the Electricity Control Board, and demonstrated that there were competent women in the energy sector. In terms of public outreach, they pioneered the design and development of consultative workshops, became known by communities, and established a potential national energy network. Perhaps most importantly, the WEG served as a catalyst for poor people to speak and wealthy ones to listen, using a participatory methodology that achieved a high profile and acceptance in the energy sector. The group built capacity among its members as well as other people in the sector, and ensured that women contributed to the discussion document and the White Paper—even if this was diluted in the end.

Overall the WEG accomplished a great deal in a short time.

Although the group was distracted from its primary focus it did not lose sight of how important it is for women to be competent in technical fields. In a brief period the WEG managed to ensure that there was increased participation of women in decision-making processes in the energy sector. The WEG also attempted to find ways in which women could support each other—although the timing was not quite right for it to link strongly with ENERGIA, an international network focusing on gender and energy issues, which might have offered support for WEG efforts.

Exhaustion, a change of focus, dwindling membership as experienced women moved into institutions, lack of success in engendering the policy process, taking on too much and a lack of leadership, funds and resources all contributed to the disintegration of the WEG. Women in similar positions would do well to decide on a few strategic areas and concentrate on building the capacity and alliances needed to reach their goals.

The first two energy Ministers under the new government were not interested in gender issues and failed to take much of WEG's work into account. Only when a woman minister was appointed in 1999, were gender considerations put back on the agenda. So far these have not been translated into practice, but the burdens of some poor women are being addressed to some extent by the grid and non-grid electrification programmes, and by extension of the fossil fuel distribution systems.

Women in the energy sector in South Africa should mobilise to entrench gender issues while there is the opportunity to do so. The re-launch of a women's energy group, this time linked to an international network, the appointment of gender-sensitive women to senior positions, and the emphasis on women and energy at the African Ministers' Conference held in Durban, South Africa, in December 2000, all indicate new opportunities for furthering the position of women and gender considerations in the energy sector.

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*... women do not always have the same right to land, inheritance and crops as men do, and a policy statement towards upholding these rights would [make]... a worthwhile contribution to more equitable energy services.*



## PHOTOVOLTAIC PROJECT FOR RURAL ELECTRIFICATION

# UGANDA

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**T**he UGANDA PHOTOVOLTAIC PILOT PROJECT FOR RURAL ELECTRIFICATION (UPPPRE) was designed as a three-year pilot project, funded by UNDP/GEF, with a goal of promoting the use of solar photovoltaic technology in Uganda. The project aimed at overcoming financial, social, and institutional barriers that hinder the widespread dissemination of this technology. The strategy was to establish viable financial and institutional mechanisms for offering solar photovoltaic systems on a commercial basis to households, businesses and communities.

The project, which started in 1998, focused on rural areas, and areas on the outskirts of cities, that were projected to remain off the national electric grid for a period of at least five years. The project has led to installations by solar companies of 576 solar home systems and 42 institutional systems. Some of the institutional systems have been installed in collaboration with the Ministry of Health and local government agencies to provide clinic lighting and vaccine refrigeration.

During the implementation stage, special efforts were made to encourage women entrepreneurs to purchase solar systems by offering credit through a women's bank. These efforts have not been very successful, however, because of high interest rates, short repayment schedules and collateral requirements.



Uganda is an East African country with abundant sunshine due to its location on the equator. It has a population of approximately 19 million, which is increasing at a rate of about 2.8 per cent annually. Close to 90 per cent of the people in Uganda live in rural areas, and annual per capita income is estimated at US\$170.

Biomass, in the form of fuel wood, charcoal, agricultural residues and animal dung, provides 96 per cent of the total energy consumed in the country. Wood is the most widely used fuel, especially in rural areas. Significant quantities of fuel wood are consumed for household uses, as well as for tobacco curing, tea drying, fish smoking, brick-making, baking, and cooking in hotels. Men specialise in commercial fuel wood harvesting, while women and children collect fuel wood for domestic use.

Petroleum-based products provide only about four per cent of Uganda's energy needs. About 85 per cent of petroleum use is for transportation. Petroleum is imported, and product availability is affected by foreign currency constraints. High prices have caused many industries to switch from petroleum to other products (particularly wood fuel and electricity). In households, kerosene is used mainly for lighting, and dry-cell batteries are used to run electrical appliances.

Less than five per cent of Uganda's population has access to grid-based electricity. Electricity accounts for only about one per cent of the total energy consumed in Uganda and five per cent of commercial energy consumption. Power generation is mostly from hydro electric stations, and although there are possibilities for extending the grid, the high cost of establishing electricity connections is a major constraint in a country with a widely dispersed population.

Uganda's rural electrification strategy aims at reducing inequities in access to electricity and associated limits on opportunities for increased social well-being, education, health and income generation. The strategy suggests the need for policies to support decentralised electricity development, and accessible financing mechanisms.

Renewable resource technologies (other than hydro) utilise biogas, solar, wind and geothermal resources, as well as crop wastes and industrial biomass residues. These mostly involve new technology innovations, and currently contribute only one per cent of the total energy consumed in Uganda. They are viewed as luxury items, requiring relatively high capital costs for manufacturing, as some of the mechanical parts have to be imported, and equally high retail costs. Moreover, there is little awareness in some areas of Uganda about the existence of renewable energy technologies and their availability for purchase.

### Focus on women in project implementation

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

the project were men because most of the solar companies in Uganda are headed by men. Project staff nevertheless made an effort to involve female electricians, installers and researchers in the design process, and to encourage training of women entrepreneurs and technicians.

In Uganda, the National Gender Policy now requires all policies, programmes and projects to consider gender issues, based on findings that men dominate the decision-making positions and that women shoulder most productive, reproductive and community management responsibilities, many of which are not remunerated or reflected in national statistics. In the case of the UPPPRE project, therefore, emphasis was placed on women in order to address their roles, needs, rights and responsibilities, and to address discrimination against them as project actors and beneficiaries.

UNDP also encouraged project staff to seek guidance on how to make the project's activities more gender sensitive. As project implementation started, the project staff and solar companies came to realise that women had particular needs related to the use of solar equipment for lighting, domestic activities and income generation.

Women were viewed primarily as users rather than manufacturers or distributors of the solar equipment. Moreover, despite project efforts to actively involve women as users at the village level, more men were present whenever consultations and public seminars were conducted. Men were involved in the project not only as users but, more significantly, as manufacturers and agents of solar companies. In the manufacturing and assembling group for solar photovoltaic systems, there are 32 registered members, including only one woman.

During the implementation stage, the project particularly targeted women by involving the Uganda Women Finance Trust in a special lending programme for the purchase of solar PV systems.

Another strategy for gender sensitivity was to promote a woman to the post of Assistant Project Manager. Although representation of women in such decision-making positions does not necessarily ensure inclusion of women's needs and priorities in the design and implementation of projects, use of female personnel is one of the initial strategies used for integrating women's concerns into project activities.

### Stakeholder participation

The design and implementation of the project was undertaken within the framework of Uganda's Ministry of Energy and Mineral Development. The project is administered through the Directorate of Minerals and Energy, which is headed by the Commissioner for Energy and is responsible for activities related to new and renewable sources of energy.

Private sector companies were directly involved, most of them small enterprises that sell and install PV systems. The project worked closely with members of the Uganda Renewable

Energy Association, a group of 25 private companies, training institutions and consultants.

In addition, UNDP Kampala provided a grant of US\$1 million to the Government of Uganda to facilitate the development of credit mechanisms for purchases of solar PV systems in collaboration with local financial institutions, including the Uganda Women Finance Trust and the Centenary Rural Development Bank.

One of the first activities for UPPPRE was to increase awareness in rural areas about environmental issues in general, and about the availability, advantages, and costs of household and community-based PV systems, in particular.

The strategy of first targeting local leaders in the pilot districts enabled the project to obtain institutional support. Public awareness seminars were held for leaders in the districts of Mbale, Tororo, Pallisa, Mbarara and Bushenyi and other surrounding districts. Working through the district administration, the project was able to set up PV demonstrations in institutions like health centres, and to identify potential customers, trainers and suppliers.

The project also selected and used the services of intermediary agencies that already had good networks in the pilot districts. These non-governmental agencies, including women's organizations, used their existing networks to link solar companies to women and men who would like to purchase solar systems. By August 2000, about 30 seminars and meetings had taken place, involving about 800 participants. Special exhibitions and seminars were organized for clients of the Uganda Women Finance Trust to enable them to make informed decisions about purchases of solar PVs through the credit scheme.

Both men and women from the Uganda Renewable Energy Association participated in awareness raising activities which included advertising through trade fairs, exhibitions and seminars at the district and sub-county level. The project also used advertisements in various newspapers and on radio and television to inform people about the benefits of solar power. The result of the project's information campaign was to generate numerous inquiries at the project offices, and at the offices of the banks involved with the project.

### Access to credit

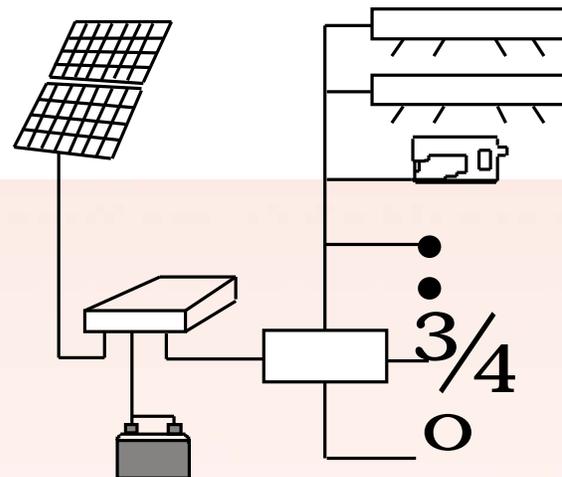
Consultations with credit institutions in Uganda were undertaken in order to identify the most suitable way of providing access to solar PV for those who could not afford direct purchase of the systems.

The project established collaborative credit agreements with the Uganda Women Finance Trust, which was chosen because of its focus on female clients, and the Centenary Rural Development Bank, selected due to its achievements in lending to low-income wage earners in various districts.

The plan was to provide credit to users and vendors. Nine months after the establishment of the credit system, The

## CONVERTING SUNLIGHT INTO HOUSEHOLD ELECTRICITY

**A household photovoltaic system includes the solar panel, which is usually installed on the roof and converts sunlight into electrical power. This electricity is then passed by wire through a regulator, which keeps the battery from overcharging or draining, converted to the appropriate voltage (if necessary) and delivered through a distribution box to the end-use devices. One panel can be used for lighting or for running small appliances.**



**Though the initial costs of residential solar systems are high, running costs are low, since no fuel is required. Solar systems are also:**

- ▲ **Modular, so they can be expanded to meet growing needs, or dismantled and used for other applications.**
- ▲ **Long-lived: most panels have 15-year warranties, whereas batteries need to be replaced every few years.**
- ▲ **Reliable, as they have no moving parts and are thus unlikely to break down.**
- ▲ **Low maintenance.**
- ▲ **Capable of charging batteries.**
- ▲ **Environmentally friendly, as their operation releases no pollutants or greenhouse gases.**

Source: UPPPRE project brochure.

Uganda Women Finance Trust had only provided credit to one female client and only two solar companies had obtained credit from the Centenary Rural Development Bank.

The banks found it difficult to provide the type of loans that the project had suggested for several reasons.

Banks consider solar PV systems to be consumable goods and require the client to have a regular source of income to cover the repayment of the loan. Most of the clients who inquired about the loans did not have regular income. These borrowers lacked the type of documentation that would enable the lenders to judge credit histories and prospects for repayment. Such uncertainty on the part of banks increases the risk premium attached to these loans. The interest rates charged by the banks for solar system purchasers were 28 per cent to 30 per cent, too high for most customers.

In addition, potential borrowers for solar PV systems under the UPPPRE project were subjected to the banks' collateral requirements, even though under the collaborative agreement these loans were guaranteed by UNDP. The banks did not view the solar system equipment as satisfactory collateral due to its limited resale potential.

Banks also expressed concerns about the high operational costs for such loans. Although the financial institutions have internal information systems to enable them to compute these costs, solar credit requires a long-term payment period which requires a special credit scheme.

Potential solar credit clients mainly have seasonal income based on agriculture-related economic activities and have difficulty borrowing from micro finance institutions due to the short repayment periods allowed (usually only nine months) and requirements for regularly scheduled payments. Solar companies offering credit for equipment purchases have designed mechanisms for "hire purchase" that allow clients to pay over somewhat more flexible time periods. The hire purchase arrangement is very similar to financing for leased equipment, and generally takes into account various possible cash flows that a household can use to meet the payments.

### Benefits to women

Women and men who bought solar PV systems have reported improved living conditions. The benefits of solar PV include: provision of energy for equipment that could improve on the

quality and effectiveness of work done for purposes of income generation (e.g., refrigeration and battery charging); reduced drudgery while performing daily tasks; improved health conditions; greater opportunities for income generation; and greater conservation of natural resources.

Through public awareness seminars, the project undertook community assessments of needs that could be met through solar power equipment. In rural areas, most of the needs were related to household lighting, especially for working extended hours and reading by school children. People from urban areas reported somewhat different needs, primarily related to income generation and improvements on existing energy services. In these areas, solar systems have been used to provide power for refrigeration, lights, and recreation, such as television and video shows.

Institutional needs for solar PV systems included health related needs, especially refrigerators for vaccine storage, lights for the maternity ward and delivery beds, and lights for night studies at secondary schools.

Besides improving living conditions, the solar PV project has allowed people to acquire new skills. Women technicians have had an opportunity to participate in private sector delivery of PV electrification. Under the project, three female and 30 male technicians were trained in design improvement, and four women and 20 men participated in management and company improvement training at Uganda Management Institute in Nakawa.

### Environmental management

The main impact of the project in terms of environment management has been to encourage people to switch from use of wood fuel, kerosene and paraffin to solar photovoltaic systems. This reduces deforestation and emissions of carbon dioxide and other greenhouse gases. The shift from kerosene and paraffin lanterns to solar lanterns also helps to improve the quality of indoor air.

Concerns were raised about the current use of disposable dry cell batteries because they contaminate soil and water sources and thus affect local health conditions. The project made arrangements to establish mechanisms for recycling lead acid batteries used in connection with solar systems, which can cause heavy metal poisoning.

## LESSONS AND CHALLENGES

**S**takeholder participation. Through publicity efforts, the project has enhanced participation of women as users of solar PV. It has been less successful in engaging women in the manufacturing and distribution of solar systems.

The project offered women training in technical skills and system installation, with the idea that this would produce benefits to women that would extend to other household members and the community at large. Existing levels of participation, however, have not really allowed many women to benefit from the project. More effective strategies and training opportunities are needed to enable increased numbers of women to get involved in the manufacturing and distribution of equipment, and to help them use the systems to improve their incomes and purchasing power. The project should also work on initiatives to involve men and women users in the design and implementation of PV-related projects in order to provide greater benefits to household members and communities.

In addition, more people need to be trained in maintenance and installation of solar equipment, and end-user training should be strengthened through formalised instruction in system management, maintenance, and trouble shooting. The project should help solar companies build capacity, especially with methods and techniques for training solar users. This could be accomplished in part through simple user manuals, preferably in the local language. Such manuals should also include information about equipment specifications.

**Financial mechanisms.** The financial mechanisms that were designed to work through micro-finance institutions did not prove to be effective in providing credit for solar end users in Uganda, even with a guarantee from the donor organization. The challenges included:

- ▲ high interest rates charged by micro finance institutions.
- ▲ short repayment periods (six to nine months).
- ▲ focus on a regular income for repayment.
- ▲ requirement of collateral.

The high prices of solar PV systems make them unaffordable for women from poor households. As a result, beneficiaries tend to be those who are the better-off members of the community. There should be choices available for more affordable, smaller solar panels. Affordability concerns also hinder female and male users from using rechargeable solar batteries (deep cycle batteries), which are highly taxed and therefore expensive.

If the project is to have success in poverty alleviation and improving livelihoods for male and female users, another financing model should be used. Although provision of subsidies would have been the most appropriate short-term strategy, subsidies are problematic because they can create a dependency syndrome among solar users. The project should explore strategies for providing credit facilities through community level cooperative societies and village level micro-finance organizations. Such organizations are near the users and can guide those who would like to borrow money to purchase solar systems and service the loans through payments acquired from agricultural product sales and other seasonal income.

In cases where subsidies can be used, the project should help companies to advocate for improvements in the tax exemption strategy through exemptions from the Value Added Tax. Companies should also lobby the government to formulate a clear criteria for tax evaluation of solar panels and parts.

The project should provide technical support to organizations and companies that can establish or provide energy service facilities that deal with leasing solar systems to potential users. The companies and organizations should promote small solar systems that are affordable to average or low income users, and charge a monthly fee for the service.

**Indicators.** The project should formulate strategies to use indicators that can show changes in living standards, income, and health, as well as gender elements, on order to track the progress and impact of the project. A monitoring mechanism is also needed to track the activities undertaken by the private sector, the performance of systems, and compliance with accepted standards.

*Through public awareness seminars, the project undertook community assessments of needs that could be met through solar power equipment.*

*In rural areas, most of the needs were related to household lighting, especially for working extended hours and reading by school children.*

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