

Mainstreaming Gender and Energy in South Asia¹

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Despite much technical progress in the world, many rural women still use traditional biofuels, such as crop residues, dung and fuel wood. Reliance on these traditional fuels is widespread in rural areas of countries in South Asia with large populations and high poverty rates. This situation has serious consequences for women's health, due to the physical burdens involved in gathering and transporting these fuels, as well as the indoor air pollution resulting from fires. Traditional biofuels emit a large number of pollutants associated with adverse pregnancy outcomes such as stillbirths, premature births and low birth weights. Other health problems associated with biofuel pollutants include acute respiratory infections, chronic lung disease and heart disease, cancers, and eye problems. The primary sufferers are women and young children both of whom spend a large amount of time in the home (Parikh, J., et al., 2002).

Greater political will and cooperation among government ministries, development agencies and community organisations is needed to ensure that rural women can choose from a range of cleaner fuels and energy technologies, in order to reduce their workload and increase their social and economic opportunities. Unfortunately, the gender and energy issue is not specifically mentioned among the UN's Millennium Development Goals, even though many of the stated goals can only be achieved if the issue of sustainable energy supply is addressed, in consultation with women.

A transition to sustainable rural energy sources should to be an important goal of national development. Industrialised countries, and even urban households in developing countries, have long ago adopted cleaner and more convenient fuels. Yet, so far, no one is willing to set a target date for when this should happen in the rural areas of developing countries.

GENDER AND ENERGY ISSUES

Gender and energy issues have remained on the periphery of development policy, and require greater political attention and backing. Because women are particularly impacted by the continued use of traditional fuels, a special commitment is necessary to provide them with cleaner fuel choices (Parikh, J. et al., 2002). In addition, a similar commitment is needed in order to implement rural electrification, which increases opportunities for income generation through agriculture and small-scale industries. With regard to health effects, it is now time to shift from academic studies on how many deaths take place, to the prevention and treatment of diseases.

Past approaches to rural energy development have often relied on outside experts delivering technologies recently has increased attention been given to involving women in assessing and adapting fuel and technology choices, and only recently has attention been paid to the problems of technology diffusion among illiterate or

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semi-literate women. Newer projects emphasise community mobilisation, good governance, transparency and accountability, capacity building and gender sensitivity. New community-level institutional arrangements include fuel wood growing associations, joint forest management projects, and associations of entrepreneurs. These measures promote the replicability and propagation of programmes that previously isolated projects did not.

Subsidies do not reach the poor people. Current government energy policies, including subsidies, are insufficiently responsive to women's needs. The interest shown regarding the use of biofuels generally arises from concerns about deforestation rather than about inconveniences to women or adverse health effects experienced by women and their families.

- (a) Subsidies for kerosene are limited to amounts sufficient only for lighting homes, and are inadequate for meeting the cooking requirements of poorer women. Such low kerosene subsidies do little to improve health problems related to biofuel use. In addition, in India, some of the kerosene supported by more than US\$1 billion in subsidies is diverted to transport and other sectors. These subsidies could be given directly to consumers (rather than suppliers), empowering them to make their own energy decisions.
- (b) Universal subsidies for liquefied petroleum gas (LPG) amounted to US\$1 billion in the last fiscal year in India, but much of the subsidised fuel went to affluent urban households, or was diverted to service sectors, such as restaurants.
- (c) In addition, some of the subsidies for rural electrification and renewable energy technologies should go to female entrepreneurs. They should promote income-producing activities that would benefit women as well as men.

There is a clear need for developing new, more effective strategies to reach poor households.

ENERGY OPTIONS

There are two potential pathways for an energy transition: (a) the one adopted by industrialised countries, and urban or wealthier households in developing countries, that is based on the use of petroleum products; and (b) a way that uses cleaner energy technologies, including biogas, solar, wind and micro-hydro, as well as cooking equipment, such as solar cookers, pressure cookers, and improved stoves. It is important that women are given choices about possible energy solutions.

When the issue of providing rural women with access to petroleum products arises, three questions are generally raised:

- ◆ Why should they use fossil fuels when they can use renewables?
- ◆ Will there be increased foreign exchange burdens from imported petroleum products?
- ◆ What about increases in greenhouse gas emissions?

These questions need to be put in a proper context. It is important to realise that the demand for household cooking fuels is not large. It could be satisfied with approximately 15 to 20 litres of kerosene a month per household. Globally, about 200 million tonnes of petroleum-based fuels could completely replace current household use of traditional biofuels, compared to a total global energy use of 9 billion tonnes of oil equivalent in 1998 (UN Stat, 2001). (Of course, this transition would take place gradually, say over a period of 10 to 15 years.)

In the long run, a transition to non-polluting renewable energy technologies will benefit people in developing and industrialised countries alike. But in the meantime, why should millions of poor women suffer so much for want of so little? Those who are answerable for fossil fuel consumption and greenhouse gas emissions are mostly people in industrialised countries and elite groups in developing countries, not these poorer households whose requirements are minuscule. The problem of foreign exchange burdens is also

exaggerated. These household demands are very small compared to other demands on foreign exchange unrelated to satisfying basic needs. They are small even compared to the imports of other petroleum products such as diesel or gasoline.

HEALTH AND POLLUTION

Epidemiological studies have been undertaken to establish a connection between pollutants from burning bio-fuels and adverse health effects (Smith, 1987). However, there are other quite considerable ailments, injuries and disorders that occur in the process of collection and transport of fuels. These include neck and spinal stress, headaches from carrying heavy loads, and cuts, bruises and injuries from going to forests and chopping fuelwood. Unexpected accidents, snake and scorpion bites are further hazards (Wikramasinghe, 2002). These varied health problems also need to receive systematic attention. Moreover, it is now time to shift academic emphasis from how many deaths take place to how many living women suffer from these diseases and health problems, how they cope with them, and how best to offer treatment. Efforts are needed to train paramedics to spot problems and to administer treatment. Given that this problem may remain with us for several decades or longer, action on this is of utmost importance.

FRAMEWORK FOR GOVERNMENT COOPERATION ON MAINSTREAMING GENDER AND ENERGY

An overall institutional framework is needed with regard to gender and energy, because this issue does not belong to one single ministry and in most countries there is no one who has the specific responsibility to ensure and report progress. The cooperative framework outlined below can be adapted to each country's requirements and administrative structure. Currently, the efforts of individual ministries are fragmented and fail to deliver results. Strong political will is needed and representatives of several ministries must collaborate in a forum or commission to successfully coordinate and implement initiatives.

National energy policies and planning should include specific goals for rural and household energy, and politicians should recognise the importance of gender-sensitive participation processes when formulating energy programs at national, regional and local levels. A variety of stakeholders concerned with energy and development, including women's organisations, should be involved in policy formulation

Typically, *energy ministries* carry out large-scale projects involving supplies of coal, oil and gas, and electricity generation and distribution. Staffed with engineers and civil servants, they deal with major corporate sectors and have no social or gender-based expertise or personnel. Rural energy needs, and supplies of LPG and kerosene for household energy usage, should be specifically addressed within energy ministries, in coordination with other ministries, development agencies and local communities. In some countries there is a separate department for renewable energy. This department could be assigned the specific task of working with women to help them evaluate possible energy alternatives.

Issues relating to supplies of traditional biofuels are often within the purview of *agriculture or environment ministries, or forestry departments*. These ministries can address the needs of rural women with regard to supplies of traditional fuels through policies promoting fuel wood plantations and sustainable land management. This can be done in coordination with village-level organisations with incentives to use the land in a sustainable manner. Transparency and accountability are also vital, to ensure that the benefits are shared fairly throughout the community, including among local women.

Health and human resources ministries can work with energy and environment ministries, and local institutions on community-level rural energy programmes to protect women's health and increase their social and economic development opportunities.

Rural housing ministries could develop and design housing prototypes to reduce the negative health impact of biofuel use in the home. Measures such as adequate ventilation and appropriate location of

the stove and kitchen are essential. In addition, a partition that separates the kitchen area from the rest of the house helps to ensure the good health of family members in other areas of the home. It is also advisable that those in the kitchen take periodic breaks from the room. Appropriate building materials for the floor, walls and roof that collect less dust and soot would improve occupants' health and provide a cleaner living environment.

Finance ministries can be brought in as well, to establish micro-financing schemes that poorer women can use to acquire suitable energy systems of their choice. These systems enable women to take part in self-fulfilling and economically productive activities. Increasing opportunities for women to earn income may be the best way to reduce reliance on fuel wood collected using women's unpaid labour.

At the *village level*, there needs to be participation by all members, as well as transparency and accountability. Women should be involved in all aspects of the management and implementation of community-based energy programmes, including data collection, choice of solutions, operation and management of equipment, and repair and maintenance. The creation of self-help groups and income generating opportunities for women are proven approaches. Information and awareness programmes are needed for capacity building, and training programmes need to be designed so that women can monitor and evaluate the programmes that are meant to benefit them.

GENDER ANALYSIS

Gender analysis is a basic tool that can be used to understand gender differences related to energy issues. This analysis involves looking at differences between men and women in, for example, divisions of labour, intra-household distribution of subsistence resources, access to productive resources and assets, income-earning opportunities and participation in decision-making. Gender analysis, using gender disaggregated data, can be used to increase the effectiveness of energy interventions at the policy level, at the institutional level and at the level of implementation.

While proven methodologies for gender analysis are widely available and used in many development sectors, only a few energy programmes have used gender analysis. The barriers and constraints faced by men and women, due to various factors such as cultural habits and traditions, in adopting certain technologies have been largely ignored. More case studies and impact studies are needed to better understand the relationship between women's status, the value of women's unpaid labour and appropriate energy interventions. Further adaptation of gender analysis to the energy sector is also needed. While there is a perceived link between gender-sensitive participation and successful energy projects, this link and related impacts have not been well-documented, and it is sometimes difficult to give a clear and practical explanation of the conditions under which gender sensitivity makes a difference.

More systematic exchanges of information on the lessons and success stories of energy programs in various countries should also be undertaken.

Lessons from several energy activities in South Asia are presented in the following case studies.

CASE STUDIES

1. Community Participation in Biogas Dissemination in a Village in Karnataka, India²

This case study is a part of a project on integrated rural energy planning in Kolar Karnataka, India. The village of Andarhalli, in the Kolar District, has established a successful biogas programme. The village

contains about 200 households, 99 per cent of which are dependent on agriculture and related activities.

Background. Biogas has provided an economically viable and sustainable means of meeting energy needs in over 3 million households in India. Biogas, as an energy source, is of particular importance because the raw materials utilised (cattle dung, and other organic wastes and agriculture residues) are easily available in rural India. Biogas could potentially meet about 35 per cent of domestic energy needs in rural areas of the Kolar District, and about 20 per cent of domestic energy needs in the district as a whole. However, so far only 1 per cent of domestic energy needs in the whole district are met by biogas. This low proportion is because only 5 per cent of those who have the potential to install a biogas plant have done so (Dabrased and Ramchandra, 2000).

The community. Most people in Andarhalli are farmers with small landholdings or farm labourers. There is no alternative income source. Women in this region are overloaded with many household and agricultural tasks. Before the biogas programme was implemented, women and children spent as much as 20 hours per week per household collecting firewood for cooking. The main sources of fuel wood are nearby forest areas and other wild plantations. Due to continual fuelwood extraction, the forests in the vicinity of Andarhalli have become degraded (Dabrased and Ramchandra, 1999).

Now 40 households have successfully installed biogas plants. These installations were possible due to the collective engagement of men and women in the community as well as support from government.

How the change took place. Government departments, local institutions and NGOs supported collective community efforts. A series of steps led to the achievement of the goal:

Understanding the problem. The government, local institutions, and men and women in the community collectively considered the energy scarcity problem in the area. They determined what the real issues were and identified possible solutions. Then, the community acquired the skills needed to reach a practical solution.

Selecting a solution. Biogas was selected as an energy source due to the availability of the necessary raw materials.

Financing and support. The government initiated the process by financing and subsidising the installation of biogas plants, providing trained masonry workers and assuring that the construction of the plants complied with all required technical specifications. They even supported service back-up to assure long-term sustainability of the programme. The government also loaned land to poorer landless families, allowing them to purchase cattle so that they could participate in the programme.

Outcomes of the programme. The overall socio-economic and environmental situation in Andarhalli has improved due to the successful implementation of the biogas programme. The major outcomes of the programme are:

- ◆ Energy supply security and diversity
- ◆ Reduced fuel wood and kerosene consumption
- ◆ Better management of dung and organic wastes
- ◆ *Agriculture* has improved due to the extra labour available (which was earlier used collecting fuel wood and other energy sources) and due to the availability of organic manure.

² Pramad S. Dabrased, *India*: prepared as a part of Integrated regional energy planning programme, Kolar district, Karnataka, at the Centre for Ecological Studies, Indian Institute of Science, Bangalore, India, 1997-2000

- ◆ *Women and children's health* has improved due to reduced exposure to smoke and pollutants and because of more hygienic conditions in the village.
- ◆ *Improved economic opportunities* related to the improvements in agriculture have enhanced people's power to invest in other income-generating activities. Those who are financially better off have employed many poor people, who lacked employment opportunities, in biogas maintenance.
- ◆ *Education* has been improved as women have had more time and resources to nurture their children and send them to school.
- ◆ *Better environmental conditions* related to the use of biogas include reduced deforestation, preservation of pasture land, reduced indoor pollution, increased use of manure rather than chemical fertilisers, and reduced soil erosion and silt in lakes.

Lessons

Community participation is important when selecting a feasible village-level energy solution where local resources can satisfy most of the people's energy needs. Government economic incentives, including direct and indirect subsidies, combined with a demonstration programme, were influential in promoting the adoption of renewable energy systems. Both a technology-push and consumer-pull are essential in order to create viable energy markets.

2. Renewable Energy Technologies and Women In Nepal: Complexities of Gender-sensitive Interventions³

Background. Women in the mountainous areas of Nepal continue to face cultural and social constraints, in spite of their increasingly important roles in agricultural activities and as valuable contributors to household income. Development efforts have not yet been strong enough to remove these social and cultural barriers.

Renewable energy projects have been promoted as gender-friendly interventions, especially for hill and mountain women with limited access to energy. The three most widely used renewable energy technologies in Nepal are micro-hydro power, improved cook stoves, and biogas technologies. In many cases, these technologies have proved to be instrumental in providing benefits to women. However, there are challenges ahead in making the interventions truly gender-sensitive. Strategies need to be developed that make a difference in the adaptation and adoption of renewable energy technologies.

Renewable energy programmes. In Nepal, since the 1960s, NGOs and international donors have strongly pursued the development of renewable energy technologies. The government has been involved as well, especially through the Agriculture Development Bank of Nepal, which played a crucial role by channelling subsidies. Support has been provided through a range of subsidy and grant provisions, training and research, and quality control measures. Over the years, the renewable energy sector has involved many different participants and a government institution, the Alternative Energy Promotion Centre, is currently promoting it. By the year 2000, micro-hydro systems provided approximately 368,000 households with lighting and power for agro-processing (Pandy, 2000); another 70,000 households used biogas for cooking, and 5000 solar units provided lighting. In addition, since 1982, over 141,555 improved cook stoves have been disseminated (AEPC, 2000).

Agro-processing using micro-hydro systems has reduced or replaced traditionally labour-intensive manual techniques, while improved cook stoves, biogas plants and cleaner lighting technologies have reduced exposure to noxious smoke and fumes.

³ Kavita Rai, Centre for Development Research, Germany.

Gender gaps in renewable energy intervention processes. Despite the success and usefulness of renewable energy technologies in providing benefits to women, there is still no strategic gender intervention policy. Further analysis is needed to understand the constraints women face within a wider socio-economic, cultural and environmental framework. Programmes such as the Annapurna Conservation Area project and the UNDP-supported Rural Energy Development Programme have been instrumental in initiating gender-sensitive interventions, but these lessons have not been translated into an overall national strategy. At present, there is only a poorly developed paper prepared by the Water and Energy Commission Secretariat: Guidelines for incorporation of gender issues in the water and energy sectors (1995).

Field experiences have shown that the limitations associated with women's roles in Nepali society can have a negative impact on the adoption of renewable energy technologies. For example, a recent study in Nayaguan showed that lower caste women felt that the installation of biogas plants created additional burdens, in part because they did not have adequate knowledge about the systems, but also because the installation was decided on by the ward chairperson without sufficient consultation with the women. In the installation of micro-hydro systems, some women have increased their knowledge and involvement through compulsory participation programmes, but for poorer, female-headed households there have actually been temporary adverse effects on their livelihoods because they were not able to be equally involved.

Closing the gaps.

- ◆ ***Create participatory feasibility assessments:*** It is essential that the level of understanding and ability of men and women to use and access technology should be adequately assessed. Effective feasibility assessments require a combination of methods, including general participatory meetings, separate group meetings of men and women, and individual assessments.
- ◆ ***Enhance and seek qualitative and quantitative results:*** Project results are often assessed in general terms such as project reduces drudgery of women or all women participated. However, qualitative and quantitative results need to be sought regarding the changing roles of women and their participation in decision-making processes.
- ◆ ***Take into account differential status among groups of women:*** Women's differential status due to their ethnicity and family structure needs careful attention, so that female-headed households and other vulnerable groups such as the landless and tribes get proper financial support.
- ◆ ***Involve women with technology:*** Some women need to be encouraged to obtain electrical and mechanical training, in order to contribute to development schemes and increase their earning potential. Integrate renewable energy interventions with other development programmes: Community forestry, conservation projects and other development initiatives should be coordinated with projects for renewable energy and improved cooking stoves. Such coordination would allow programmes to support one another and give a greater input to women.
- ◆ ***Engage women in decision-making:*** Regulations requiring women's participation, as in the REDP programme, have been shown to be effective strategies for involving women in the technology decisions that will largely affect them.

Crucial questions that need to be answered. How can renewable energy technologies be used to promote the socio-economic empowerment of women? What are the cultural barriers under which women live? Do women have the chance to make their voices heard and make their own choices? If not, how can this be overcome?

Are women able to bear the costs and burdens of new technologies? Do women have the capacity, time and knowledge to integrate the new technology? If not, what is the solution?

3. Good Practices and No cost - Low cost Solutions: Lessons from a Survey on Rural Pollution and Health Impacts in Rural India ⁴

A recent survey of 10,265 households in North India (Parikh, J., et al., 2000), conducted in three major states (Uttar Pradesh, Rajasthan and Himachal Pradesh) gives new insights into rural energy planning. It shows that people are willing to pay for clean fuels (up to a few litres of kerosene). They are also willing to install ventilation and partitions and take other actions to reduce pollution. Seventeen per cent of people in these areas suffer from some respiratory symptoms. How do some people manage to avoid health impacts?

The survey shows that there are no cost - low cost solutions that can make a big difference by reducing energy requirements, pollution and adverse health impacts.

Energy management. Reduce fuel use through fuel management practices:

- ◆ **Stoves:** Using improved stoves which are designed for fuel efficiency and hence reduce smoke. Many designs are now available, and women are increasingly involved in the design process.
- ◆ **Fuels:** Processing fuel, for example by making briquettes, packing saw dust or other materials. Drying and finely chopping fuels converts raw materials into better burnable products.
- ◆ **Cooking systems:** Choosing cooking systems that use good heat-conducting materials, pots that fit the stove and lids that fit the pots.
- ◆ **Good practices:** Adopting cooking practices such as soaking grains in advance, covering the pots to avoid heat loss, and putting heavy stones on the lids.

Pollution management. Reduce pollution by:

- ◆ Introducing chimneys, ventilation and partitions
- ◆ Minimizing contact with smoke by moving around
- ◆ Locating kitchens properly to reduce smoke exposure for family members
- ◆ Choosing smooth surfaces for walls, roofs and kitchens so that lingering soot and dust can be cleaned.

Health management. Reduce health impacts by:

- ◆ Avoiding being within the plume of smoke
- ◆ Keeping children and seniors away from smoke

The above methods need to be explained and disseminated so that people become aware of them. Rural people can be informed through extension workers, brochures and web sites that illustrate the above practices with drawings and sketches.

The best practice list can be extended, if recommendations are presented in interactive formats through which women in different parts of the South Asia region can add observations about their successes, failures, solutions and experiences. Thus, good practices and no cost - low cost solutions have the potential to minimize energy requirements, reduce adverse health impacts from pollution and provide economic gains.

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