The energy supply and use system has many implications for health through its links with the household economy, the indoor environment (e.g. indoor air pollution), women’s activities, education, child safety, and other aspects including the local and global environment. Until now, the principal health issue that has been addressed in the energy sector in developing countries is indoor air pollution due to smoke from cooking using traditional biomass fuels.

WHO estimates that around three million deaths occur each year in developing countries related to indoor air pollution from domestic fuels used for cooking and heating. Combustion of traditional biomass fuels (wood, charcoal, animal dung, crop wastes) and coal exposes the rural and urban poor in developing countries to serious health hazards. Typically burned on open fires or in low efficiency stoves with inadequate ventilation, large numbers of people are exposed on a daily basis to...
harmful emissions and other health risks. Indoor use of these fuels leads to levels of indoor air pollution many times higher than acceptable international ambient air quality standards.

Research suggests that this may result in a two- to five-fold increase in acute lower respiratory infections during childhood. Increased risks have also been demonstrated for chronic respiratory diseases and lung cancer, mainly in China, and particularly in women. This issue of ENERGIA News highlights work which is underway to address these problems, both at the international level (see for example the article on the WHO programme, as well as the information on World Bank activities, and recent initiatives by the Shell Foundation for Sustainable Development, reported in the Internet Resources and the Bulletin Board sections), and at the country level.

It has largely been taken for granted that the work on the health impacts of biomass, especially in relation to the incidence of acute respiratory infections, automatically addresses women's needs since they are the principal cooks and users of traditional fuels. However it is becoming increasingly apparent that there are gender differences in exposures and gender issues in measurement, as well as other potential gender issues in relation to indoor air pollution that may make a significant difference both in diagnosis and interventions.

Here we highlight findings, some preliminary, of work being conducted in South Africa, Kenya and India regarding the health impacts of biomass combustion. Gender differentials highlighted in these articles reveal that in parts of India there may be a greater effect on the health of boys and men, than on women and girls. This difference may be artefactual however, and several hypotheses are suggested to explain this surprising result. In rural Kenya on the other hand, recently published work in The Lancet reveals that women are more likely to be diagnosed with acute respiratory infections, and are also significantly more exposed to high levels of indoor air pollution, than men. This work represents one of the most comprehensive indoor air pollution and health studies done to date anywhere in the world. In general, however, the work on gender differentials is only beginning and clearly requires further exploration.

Indoor air pollution is not the only health issue for poor women using traditional fuels. The entire biomass fuel cycle of supply, transport, and use has serious health implications for women, as is well documented in the articles by Anoja Wickramasinghe discussing Sri Lanka, and by Dara Moeung concerning Cambodia.

The Sri Lanka study, for example, found serious occupational health impacts for women associated with the woodfuel system, such as repetitive strain injuries, respiratory problems, nausea, headaches, itching eyes, and also skin irritations.

As emphasised in recent deliberations by the Commission on Sustainable Development (CSD), as well as in discussions of the ad-hoc Intergovernmental Group of Experts on Energy, the Inter-agency Task Force on Energy, and publications such as the recent World Energy Report, it is crucial to develop interventionist strategies that address this global threat to the health and well-being of the world's poor, the majority of whom are women. In this regard, the interview with India's Minister of Petroleum and Energy gives an insight into the importance attached to the issue of household energy in India and to the issues and strategies being developed to address the problem.

A wide range of intervention strategies can reduce the negative health impacts. These vary from improved stoves and cleaner fuels, to better ventilation and improved housing measures, to various user behaviour measures. Initial cost benefit analyses indicate that interventions to reduce indoor air pollution may result in benefits, such as reduced mortality, which significantly outweigh the associated costs.

Any energy intervention is likely to have consequences, either negative or positive, for women's health and wellbeing. Two articles in this issue illustrate the potential benefits for women of rural electrification. In South Africa, where electrification programmes in the rural areas are underway, studies show that gender plays a strong role in fuel use patterns at the household level. Despite preferences amongst women to purchase electric stoves at a priority, in practice it is more likely that lighting, entertainment and refrigeration appliances will be among the first appliances purchased following electrification. Hence, electrification has yet to dramatically reduce overall indoor air pollution levels in rural South Africa.

In Tunisia, where rural electrification is rooted in a strong national commitment to a broader programme of rural development, gender equity and the reduction of social inequities, women and girls appear to have benefited in particular from improved access to education, health services (especially concerning reproductive health), information from TV, and economic opportunities. The first benefit of rural electrification cited by households with children is that of improving homework and school performance, while at the same time reducing eye problems from the use of candles and kerosene lamps. Rural electrification has also resulted in benefits for

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health services and clinics, which have been able to expand their range of equipment and services, notably health education.

A choice in energy options is critical in meeting the needs of poor people, necessitating a variety of strategies and trade-offs. In addition to the direct health benefits which result from a reduction in fuelwood use, hundreds of millions of women and children miss out on opportunities for education and other productive activities due to the long hours spent collecting fuel for cooking and heating which again impacts on their health.

Gender, energy and health concerns are not limited to the energy sector, or indeed to “energy” technologies such as improved stoves and photovoltaics. Environmental, communications, and health-sector professionals have recently been promoting a very simple solar technology, which can potentially provide the huge benefit of safe drinking water, where women have a particular role and benefits. The article by the SODIS Foundation in Latin America focuses on the introduction of solar disinfection of water in Latin America, working through community development organisations.

New approaches such as this emphasise an explicit poverty focus, decentralisation and the participation of women in particular, and the integration of energy efforts with health and other development sectors. Local, community-based, approaches are critical for ensuring the sustainability of intervention measures. In particular, we need to encourage interdisciplinary work, with health, gender and energy professionals working together.

To conclude, while the indoor air pollution issue is increasingly recognised, the gender aspects are less so; and there are still a number of other health linkages, both in the traditional and modern energy sectors, that need to be better understood and addressed. A concerted, global effort is needed to address the health-energy-gender nexus in the future.

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Letters to ENERGIA

Women and Stoves: Some Thoughts

A recent issue of the leading scientific journal, Science, featured a summary article based on studies in rural areas of poor countries, which highlighted that, at every age, women in general work more than men, do much more household work than men, and do essentially all cooking-related work, including fuel gathering. Those working in the field of rural energy accept that the majority of fuel used by most of humanity is probably still in the form of locally gathered biomass and that the associated fuel cycle is largely operated by women. Fuel gathering is shared to some extent with men and children in many areas, but women are nearly universally responsible for essentially all cooking. We have also come to understand that the operation of the biomass fuel cycle is an important, but not the sole, reason for the “double burden,” i.e., the rural women end up with significant responsibilities in the field as well as major responsibility for the home and children. We are also cognizant of the fact that the worst human impacts of these fuel cycles, particularly the health burdens of gathering and cooking, are borne directly by women, and indirectly by their youngest children.

There remains the question, however, whether just because women play the most critical role in these fuel cycles means that there needs to be a special role for women in their improvement. It is a fact, for example, that the half of the world’s population that, over time, has shifted to more efficient, clean, and expensive fuels and stoves from biomass (which used to be the fuel of all households everywhere), has done so without special programmes aimed towards and run by women. Although the private-sector marketing of stoves and fuels that has been part of this shift up the household energy ladder does target women as appropriate consumers, it does so in a way no different from the way it matches products of all kinds to the appropriate population segments (market niches). In addition, by far the largest and most successful non-market dissemination effort of cooking improvements has been the Chinese Improved Biomass Stove Program, instituted in the early 1980s. By 2000, according to official statistics, it had disseminated more than 180 million improved stoves throughout the country, undoubtedly making it one of the largest household-level development projects in history. This monumental effort, was accomplished without any special focus on women or preferential participation by women.

These are powerful bits of evidence indeed, but there are arguments why they may not provide an accurate story about what is being faced today. It could be argued that both the historical changes and the Chinese programme accompanied or followed changes that were occurring in the status of women within the societies involved, along with changes in income, fuel availability, and infrastructure. Thus, there was no need to focus on women because they were already becoming enfranchised. Today, however, if we were to wait until the status of women improved sufficiently in the parts of the world where unprocessed solid fuels dominate, the process of kitchen improvement would remain slow. Hundreds of millions of women and children would be stuck with dirty inefficient fuels for many decades longer than is technically and economically necessary, or acceptable from a health standpoint.

This argument implies that, in order to accelerate the natural, but slow, movement up the household energy ladder, we need to improve the status of women quicker than would otherwise happen. This, of course, is a tall order although it is attractive since it also brings other potential benefits. Indeed, there are so many other benefits from improving the status of women that, from the perspective of someone outside the rural energy scene, it might seem like an extreme case of the tail wagging the dog to argue for improving women’s status for the purpose of improving cooking practices.

Stoves as a Trojan Horse

The relationships being discussed are complex, and causality runs in more than one direction. For example, healthier women will more easily become enfranchised and vice versa. Further, while household energy programmes involving women may assist in the enfranchisement of women, the opposite is also the case. Indeed, there are examples of stove programmes that have engaged women as builders and trainers, whose major impact in the end was not in the form of more efficient and less smoky stoves, but in the increased empowerment of the women involved. According to Madhu Sarin in India, for example, it may be that stove programmes are uniquely suited to this outcome because they provide a route by which women can organise and be trained that does not directly threaten men. There may be advantages, therefore, to being below the threshold of interest.

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