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Household energy and gender: the global context

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1.0 Introduction

This is the second paper developed as part of the SPARKNET project. While the first paper looked at gender and household energy issues at the level of the household, the second paper looks at these issues in a global context.

The substantive issue of development is addressing poverty. Therefore, this paper examines what are the linkages between gender, household energy and moving people out poverty. The first section looks at the gender-energy-poverty nexus in general and then how household energy can contribute to reducing vulnerability and empowering women. Women are the specific focus since they generally have the responsibility for providing household energy. The section finishes with a review of how international development agencies address gender and household energy issues. The second section discusses in more detail the subject that is emerging high on development agencies agenda related to household: gender and health. Two issues within the energy sector that are driven at the international level are the privatisation of the energy sector and the impacts of fossil fuel combustion. Both of these issues are examined in relation to gender and household energy.

The paper is aimed at researchers and practioners in the energy sector, as well as those involved in social development.

2.0 Gender, Energy and Poverty

2.1 The energy-poverty nexus

Poverty is one of the world's most fundamental issues, and urgently needs to be addressed. Moving people out of poverty forms a cornerstone of much international development policy. The way poverty is conceptualised has changed in recent years. Initially it was defined very much in economic terms; people with an income of less than $1 a day are considered to be living in extreme poverty. However, as research into poverty has shown that there are more dimensions of poverty than low cash incomes. When people we regard as "poor" describe their own situation, they consider that their well-being is inadequate, for example, they feel a lack of access to sufficient levels of food, water, clothing, shelter, sanitation, healthcare, and education. The change in conceptualisation of poverty has lead to new ways of addressing moving people out of poverty. Although, there is still an emphasis on income generation through increasing the opportunities for the poor to participate in markets, there has been a broadening of strategies to enable the empowerment of poor people. Empowerment aims to address the inequalities, including gender inequalities, which prevent people from influencing policies and interventions which affect their lives. Increasing the security of poor people by addressing the factors which create their vulnerability has become a part of international development thinking.

How is energy seen in the new approaches to poverty alleviation? Energy is recognised one of the most essential inputs for sustaining people's livelihoods. At the most basic level, energy provides cooked food, boiled water and warmth. However, energy has never been widely accepted within development circles as a basic need, as have water and food.

It has long been established that poor people mostly use biomass as their energy carrier and that in many areas there is an increasing shortage in supply, which adds to the burden of the women whose responsibility it is to collect. However, despite the fact that around two billion people still use biomass fuels (World Bank, 1996), and the fact that these are also the two million poorest people on earth, there has been little attempt until recently to analyse the energy-*poverty* nexus in depth.

Towards the end of the 1990s, there had been some discussion about providing energy services for the poor, for example, the World Bank's *Rural Energy and Development: Improving Energy Supplies for Two Billion People*. However, it is during the preparations leading up to the World Summit on Sustainable Development in 2002, that a shift towards a more explicit recognition of the role of energy in the fight against poverty began to emerge. For example, UNDP began to advocate the adoption of a new global target for energy as a prerequisite to fulfilling other international development targets of the Millennium Goals adopted by the UN General Assembly in 2001. The target aimed to halve the proportion of people without access to clean and affordable fuels and electricity by 2015. The UK's Department for International Cooperation (DFID) released "Energy for the Poor" which set out its vision for the role of energy services for helping the poor move out of poverty and how access to energy for the people can be facilitated. The World Bank's Asia Alternative Energy Programme (ASTAE) recently undertook a study to identify and quantify as far as possible the potential benefits of energy in general, and of electricity in particular, to the poor (Heijndermans, 2002).

While modern forms of energy are a necessary input for economic development and the elimination of poverty, improved access to energy alone is not an input for development.

2.2 Manifestations of energy poverty

The use of biomass and poor people seem inexorably linked. It is likely that biomass will remain the fuel of necessity for the poor for many years to come (Barnett, 2000). What are the repercussions of this? The fuel quality is low, and when burnt gives off quantities of smoke and particulates that are recognised as having negative effects on health. Several hours a day spent in collecting fuel means that this time cannot be used for other livelihood activities. Although nearly every household in rural areas will use some biomass as an energy carrier, poor households will spend more time searching than those in higher income groups (Reddy, 2000). Wealthier households will also purchase other higher quality fuels, which will be used for a greater variety of end-uses than in poor households. In urban areas, poor people have to purchase cooking fuels, and they spend a larger proportion of their income than higher income households on fuels (ESMAP, 1999). Typically, a poor urban family may spend 20% of its income on fuels (Barnes, 1995). In rural areas, poor households will generally restrict fuel purchases to lighting uses (candles and kerosene).

Energy has an equity dimension: poor households use less energy than wealthier ones in absolute terms. Less water is boiled for drinking and other hygiene purposes, increasing the likelihood of water-borne diseases. Illness reduces the ability of poor people to improve their livelihoods and increases their vulnerability, not only preventing adults from working effectively but also negatively effecting children's learning by keeping them from school.

Wealthier people are able to exercise some choice in their energy carrier and many opt for the cleaner and more efficient "modern" energy carriers of electricity or gas including LPG or biogas, although the use of energy carriers is complex. Many better off households use mixtures of modern and traditional fuels, each matched to a specific end purpose, often for reasons not linked to price (for example, taste). Modern energy carriers do not have the negative health and time effects associated with biomass. Wealthier people are also able to afford the appliances that make use of these modern energy carriers. In situations where wealthier households are reliant on biomass fuels, they are able to purchase more fuel-efficient stoves. In doing so they may be saving a great deal of money per unit of energy consumed. Unfortunately, poor people are often unable to make such investments, opting for lower first cost options, rather than lower life cycle costs,

because of lack of capital[1] (Reddy and Reddy, 1994). The consequences for the poor are that precious cash resources are used on low quality fuels, which are then used at low efficiency, reducing their ability to accumulate the financial resources they need to invest in strategies for improving their livelihoods.

As understanding has grown about how different income groups use energy and the types of energy they use, it has been possible to identify an energy dimension to poverty: *energy poverty*. Energy poverty has been defined as the absence of sufficient choice in accessing adequate, affordable, reliable, high quality, safe and environmentally benign energy services to support economic and human development (Reddy, 2000). Energy poverty interacts with other manifestations of poverty. In order to develop sustainable interventions it is important to explore the issues that surround energy poverty, including the gender aspects. The need to incorporate a poverty dimension into their work would be challenging for many in the energy sector since the new "buzz words" of poverty reductions strategies, empowerment, security and opportunity are not the normal vocabulary of the energy professional or bureaucrat.

2.3 The gender dimension of the energy-poverty nexus

The energy-poverty nexus has distinct gender characteristics. Within households, where there are adult men and women, the gendered division of labour generally allocates to women the responsibility for household energy provision related to their spheres of influence in the household, in particular activities centred around the kitchen. They are often supported in this work by girls and sometimes boys, who can be kept out of school thereby damaging their own future livelihood choices. Men become involved in places where large quantities and pieces of wood need to transported over long distances.

Women's access to decision-making within the household and community is restricted, limiting their ability to influence processes and resource allocation on many issues including energy. Women and men have different perceptions about the benefits of energy, for example, a research study on the gender related impact of micro-hydro in Sri Lanka, found that men in the area under study saw the benefits of electricity in terms of leisure, quality of life, and education for their children; while women saw electricity as providing the means for reducing their workload, improving health, and reducing expenditure (Dhanapala (1995) quoted in Barnet, 2000). The impact on poverty of improved energy services is determined by the choice of end-use to which energy is put. Therefore, key questions around household energy become: who chooses which energy carrier?; how is it used?; and who benefits from this use?

Of the approximately 1.3 billion people living in poverty, it is estimated that 70% are women, many of whom live in female-headed households in rural areas. Since women generally have less access to resources and decision-making than men, many poor female-headed households can be expected to be living in extreme energy poverty. It is not only the supply of energy which will be constrained, but also the important services for the household which will be affected, such as clean water provision. Their lack of resources makes them vulnerable to changes outside of their control e.g. drought.

Poor men and women do not necessarily become poor in the same ways, for example, a man might loose his job, and a woman, who has always depended on her husband for financial support, may become a widow, forcing her to start looking for a paying job later in her life, which she might be ill equipped to do so. Men and women have different ways of adopting strategies for addressing their poverty, men are more easily able to migrate while women stay put managing the household and creating informal sector business they can run from home. Therefore, the energy strategies that are intended to assist people to move out of poverty must take these gender aspects into account.

[1] Energy services which have lower costs per unit of received energy on a life cycle costs basis may have higher investment costs.

The first brief for SPARKNET on gender and energy explored in more detail some of the gender-poverty-energy issues as they manifest themselves on a daily basis at the household level (Clancy, 2002). Therefore, the next section will explore the nexus in relation to the broader aims of poverty reduction.

2.4 Household Energy: reducing vulnerability and increasing empowerment

Households and individuals adopt livelihood strategies to enable them to live and enjoy the kind of life they value. The strategies poor households and individuals adopt are ones to improve their present situation and to reach a position where they can accumulate assets. These assets can be material, (land, money, jewellery) or non-material (good health, skills, membership of farmers cooperative). Having a stock of assets means that people are able to survive difficult periods, such as drought or loss of a job, and they are less vulnerable to significant ecological, economic, social or political changes which are largely outside of their control. Using this type of analysis identifies poor households as those with a low stock of assets and consequently they are vulnerable to events over which they have little influence. Helping people move out of poverty includes helping them build their assets as well as reducing their vulnerability through enabling poor people to have more control over their own lives, in other words, empowering them[2].

How can household energy contribute to reducing poor people's vulnerability and increasing their empowerment? Since household energy is primarily women's responsibility, they will be the direct beneficiaries in any improvements in availability or diversification in choice of energy carrier. Although discussions on household energy tend to focus on women, men can be indirect beneficiaries of access to modern energy forms (for example, faster prepared meals). Men can also play an important role because they are very influential in determining the outcomes of any interventions and where and by whom the benefits to the household will be felt.

What benefits to women will arise out of addressing household energy issues? Table 1 illustrates how different forms of energy can be seen as contributing to women's practical, productive and strategic needs. Energy carriers are material assets. Therefore having access to sufficient amounts of good quality energy will contribute to reducing a household's vulnerability. There is no doubt that energy plays a major role in meeting women's practical and reproductive needs (such as cooking, food processing, water hauling). In households that buy cooking fuels, the introduction of more efficient stoves can make a significant saving to household energy bills and thereby contribute to poverty alleviation. A programme promoting fuel efficient stoves in Madagascar is reported as bringing annual fuel savings equivalent to the minimum monthly salary (approximately US$ 24) to households which adopt the stoves (Bazile, 2002). This level of savings should have a significant impact in low-income households and may be of the order that households can begin to accumulate assets. However, there is no indication as to where the monetary benefits have accrued within the household. Information about who benefits and how is needed to determine whether or not there is equity in distribution of benefits.

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[2] The term "empowerment" is widely used in development. It has however a number of different interpretations and authors often leave their interpretation of the word implicit in their text. "Empowerment" has immediate connotations related to "power". However, as Oxaal and Baden (1997) demonstrate by using a different preposition with "power", it is possible to arrive at least four meanings, and hence by extension, different objectives: power *over*, power *to*, power *with* and power *within*. In part, which definition is applied depends on context and the particular discourse of the protagonist. Most development workers would probably not subscribe to the "power over" definition, where this implies dominance and subordination, particularly where violence and intimidation are involved. They are probably consciously or unconsciously using empowerment to mean "power to make decisions and solve problems" and/or "power to organise with a common purpose or common understanding to achieve collective goals". The feminist movement, when advocating women's empowerment, has used both the "power with" and the "power within" meanings. "Power within" is interpreted as the creation of self-confidence, self-awareness and assertiveness. By recognising through analysing their experiences, individuals come to see how power operates in their lives, and so gain the confidence to act to influence and change this. (Williams *et al*, (1994) quoted in Oxaal and Baden (1997)).

Table 1 Possibilities for improving the position of women through energy

Energy Form	Women's needs		
	Practical	Productive	Strategic
Electricity	- pumping water: reducing need to haul and carry - mills for grinding - lighting improves working conditions at home	- increase possibility of activities during evening hours - provide refrigeration for food production and sale - power for specialised enterprises such as hairdressing and internet cafes	- make streets safer: allowing participation in other activities (e.g. evening classes and women's group meetings) - open horizons through radio, TV and internet
Improved biomass (supply and conversion technology)	- improved health through better stoves - less time and effort in gathering and carrying firewood	- more time for productive activities - lower cost of process heat for income generating activities	- control of natural forests in community forestry management frameworks
Mechanical	- milling and grinding - transport and portering of water and crops	- increases variety of enterprises	- transport: allowing access to commercial and social/political opportunities

Increasing cash income within the household is seen as an important factor in reducing poor households' vulnerability. Energy can contributing to enabling women to improve their earnings in two ways: either by helping free up women's time or by powering their enterprises. Women's time devoted to household work and survival activities occupies a major part of the day (Cecelski (2000) cites 5 hours per day in Burkina Faso for firewood collection, water hauling, food processing and cooking, while another four hours is devoted to other essential activities, such as agriculture.) This lack of time is a major barrier to participation in other activities (not only income generation). Increasing access to energy or more energy efficient technologies can help free up women's time. This time can then be used for income generating activities or the development of skills to increase the range or profitability of women's enterprises. However, it cannot automatically be assumed that women will invest their newfound 'extra time' in production activities. A study in Sri Lanka found that when women reported on how they used the time saving electricity had brought to their lives, 29% said they used it for extra housework while less than 5% reported using the time for productive activities (Masse and Samaranayake, 2002). If improvement in wellbeing is an acceptable objective of development, then there should be no objection to "increase in free time" being used for rest – something women seem to be very short of.

Box 1: Energy in livelihood strategies: improving the position of women

Energy availability that creates opportunities (increased income/more sustainable use of natural resources)

- Community-level sustainable management of forests can provide income through organised firewood production and sale.
- Energy entrepreneurship as a secondary activity for community service and income generation.
- Improved technologies for charcoal production can boost sustainability and incomes.
- Availability of mechanical and process heat technologies can be a stimulus to the start up of various small-scale enterprises (sawing, food processing etc.).
- Electricity may enable the start up or expansion of small-scale service enterprises such as hairdressing, photocopying and internet cafes.

Energy scarcity as a constraint (which if removed, can bolster other activities, reduce vulnerability, improve food security, increase wellbeing)

- Lack of transport for moving harvest products to storage and to market may be a disincentive to produce (increases vulnerability, and reduces food security).
- Lack of electricity may hold back development of services in rural areas (both public and private).
- Poor cooking technology results in unnecessary ill health for women and children reducing their productivity (and threatening wellbeing).
- Lack of cheap, easily available, fuel forces women to spend large amounts of time gathering fuel, and restricts the boiling of water and in some cases the adequate cooking of food resulting in ill health (threatens wellbeing, increases vulnerability) as well as limiting time available for other enterprises.

Many of women's income generating activities are often run from the household. Therefore, addressing household energy issues should also take this into account. Box 1 gives some examples of how energy can act as an opportunity or a constraint on women's productive activities. However, the role of energy in the sustainability of women 's enterprises is not well understood. The types of activities women are involved in tend to be highly fuel intensive, such as food processing, hence, their viability and costs are affected by energy prices and availability. Alternatively, women's income generation can also involve significant inputs of their own energy, for example, oil seed processing. In food processing enterprises, it has been estimated that energy costs are 20 - 25% of the total inputs. Food processing was identified in a study of the informal urban sector in Dar es Salaam, Tanzania as the least efficient energy user in (Hosier, 1994). Running income generating activities from the household, enables women to combine productive tasks with reproductive tasks, such as childcare. This is one of the reasons women like to have electric light, it enables them to work from home. Rural women in Tunisia cited having electricity in their homes, meant not having to leave for work in towns as maids (Chaieb and Ounalli, 2001). This could be interpreted that working from home empowered them to be their own bosses, as well as removing the need to work outside of their own familiar environment and culture. However, a number of researchers have expressed reservations that if electric light extends working hours into the evening, this adds to women's already long working day (see for example, Clancy, 2000).

Addressing strategic needs contributes to women's empowerment. Household energy in the form of electricity seems to have been particularly significant in this respect, for example, lighting to enable evening study for mothers and daughters. Women have also been found to benefit from access to television. For example, in Tunisia, watching television enabled women to become more aware of political events and to have a greater knowledge of world events than their husbands. Through this knowledge, they have gained confidence to speak out and take up leadership roles (Chaieb and Ounalli, 2001).

Table 2 summarises the role household energy can play in livelihood outcomes and the particular significance for women. This table shows that with a narrow definition of household energy as synonymous with stoves and biomass energy, contributions to improved wellbeing are possible. If the broader definition of household energy, encompassing all end-uses within the household, is used then considerably more benefits can be gained from improved energy services. Women do stand to gain from such improvements, primarily in practical and productive terms but there are also opportunities for empowering women through meeting strategic needs. Often these latter benefits are gained indirectly through giving women more "free time" from drudgery related to practical and productive tasks to use for their personal benefit.

Table 2. Livelihood outcomes as consequence of improved energy services and their consequence for women.

Outcome		Key Issues for Women
1. More Income	• Income from the sale of energy services • *Income from energy related productivity gains* • Income from energy related expansion of supply options and quality (for example, doing things that are impossible without inanimate energy) • *Income from extending the working day through improved lighting.* • Improved income from better access to fuel based transport	• Improved status in household energy • Empowerment
2. Increased well-being	• *Improved household* and street *lighting* • *Reduction of indoor air pollution* (improved fuels or improved stoves) • *Reduced burden from fuel collection and processing* • *Reduced drudgery by replacing human animate energy with inanimate energy* • Increased education as a result of better lighting in schools • Better health from health services that have access to improved lighting, cold chain storage, and communication • *Improved access to information through radio, television and other Information Technology*. • Sense of inclusion in the 'modern' electrified world.	• Reduction of time consuming tasks (including fuel and water collection, milling, grinding, food preparation, and other reproductive tasks). • Access to the outside world through radio and other information and communication technology • Better light for reading and other night time tasks.
3. Reduced Vulnerability	• *More secure water supply from pumped irrigation* • *Better security lighting* • *More secure fuel supplies* • Production based on a wider range of raw materials	• Safer night time environment due to improved lighting • Reduced indoor air pollution • Less frequent pregnancy (high correlation of electric light with reduction in birth rates)
4. Improved Food Security	• Improved agricultural output from mechanisation, and pumped irrigation • *Improved post harvest processing and storage* • Improved fuel based transport	• Reduced stress (able to feed family) • Better health due to better and more food

Outcomes related directly to household energy are shown in italics

Adapted from Ramani (2003)

2.5 Responses to energy poverty by international development agencies[3]

This section gives an overview of the ways in which a number of international development agencies address household energy and gender issues. There has been a change of emphasis since the 1980s in the way household energy has been perceived by the international development agencies and hence projects they have funded. Initially household energy was considered to be synonymous with cooking and hence stoves. Since women were responsible for cooking, providing them with new stoves was considered as addressing household energy. However, based on experience of stove dissemination (and one has to say many failures), the view began to emerge that a technical focus of improving efficiency, while appreciated by women, was not enough. Women wanted multiple benefits in stoves, such as time saving. Once this was recognised the next step was then to involve women in the design, testing, building and dissemination of stoves. There were also attempts at wood fuel production, for example, through community forestry projects. In the 1990's, the view began to emerge that household energy is more than cooking and improving biomass supply, for example, the health impacts of biomass fuels are receiving increasing attention. At a global level, development agencies now are very much focused on addressing poverty. Therefore, for those working in the field of household energy, it has become a challenge to demonstrate the linkages between addressing household energy issues and moving people out of poverty.

Gender analysis has not been explicitly used in household energy. Clancy et al (2003) argue that this could in part be attributed to the lack of tools appropriate for the energy sector. The existing gender analytical tools have all been developed for other sectors and it can be questioned whether or not they are adequate to bring out the gender dimensions of energy. The consequence of the lack of gender sensitivity in household energy has been the implicit assumption that by addressing cooking energy issues one is addressing women's needs. However, this is short-sighted, since men also have views and preferences about cooking.

The United Nations agencies are engaged in approaches to move people out of poverty from the particular agency's own mandate and where energy is specifically considered, what role energy will play in helping the agency meet its particular objectives. Household energy, where it is specifically mentioned, tends to be equated with stoves although agencies have been addressing the other end-users of energy end-use in the household under other guises, for example, income generation. Women are seen as a special group whose specific needs have to be addressed, and since the 1995 Beijing Conference, all the UN agencies have been committed to gender mainstreaming. The United Nations Environment Programme (UNEP) recognises women's role as key decision-makers about the use of energy and, as such, women need to be able to make informed choices about energy and its conversion technologies. UNEP is keen to promote the use of renewable energy and have a programme to improve women's knowledge of the options, thereby enabling them to make the informed choices. Promoting sustainable biomass supply through community management of natural resources, and thereby improving household energy supply will directly benefit women. In this context, UNEP has supported such a project in the Lake Chad basin in West Africa.

The United Nations Fund for Women (UNIFEM) promotes economic security of women and empowering them to enjoy secure livelihoods. Household energy has featured in a number of ways in their work. For example, supporting improved stoves projects in Senegal and a biogas project in Yemen. To support economic empowerment they have produced a number of food cycle sources books, which include labour saving technologies in the household which can also be used for income generation, for example, crop dryers. A companion series of energy and environment sources books included "Electricity in the Household and Micro-Enterprises" (Clancy and Redeby, 2000).

The World Health Organisation's (WHO) interest in household energy has arisen from the threat to the health of the poor, particularly women and children, due to indoor pollution and smoke from biomass fuels (von Schirnding, 2001b). WHO is supporting a research programme which is collecting gender differentiated data on the health impacts of smoke (see section 2).

[3] This section draws heavily on Panjwani and Cecelski (2002).

The Food and Agricultural Organisation (FAO), as part of its remit, is involved in monitoring biomass fuel supplies and biomass energy conversion technologies. Households are identified as one of the key stakeholder groups in the biomass supply chain, both as producers and users. The Regional Wood Energy Development Programme in Asia (RWEDP), which finished in December 2001, recognised that gender issues are important in both the supply and demand sides of biomass energy. RWEDP has played an active part in raising awareness of gender issues linked to biomass energy, holding workshops, training courses and producing useful supporting literature. More recently, the FAO was involved in organising a workshop on the productive uses of renewable energy (Anon, 2002). The household was clearly identified as a location where productive activities took place and electricity for example could contribute to income generation through lighting and powering equipment. There is a need to move beyond the light bulb, which the high profile of solar panels seems to create a fixation on.

Energy and environment is one of the United Nations Development Programme (UNDP)'s six themes. Rural energy services and low emission technologies are seen as particularly important for meeting women's household and economic energy needs. At the project level, UNDP has been involved with supporting income generation activities for women through the increased availability of environmentally sustainable renewable energy systems (see for example, the multifunctional platform in Mali described in Burn and Coche (2001)). In 1999, a Women and Energy Project was started, with funding from SIDA, which focused on Southern Africa and aimed to prepare case study material on lessons learnt related to sustainable energy projects that had benefited women. In addition, support was to be given to initiate pilot projects which provided income generation activities to women. National consultations were held in 10 Southern African countries in preparation for a regional workshop which was held in June 1999.

The World Bank aims to mainstream gender into all its programmes. Two programmes which deal with energy that have specifically addressed gender issues are the Asia Alternative Energy Programme (ASTAE) and the Energy Sector Management Programme (ESMAP). The ASTAE Programme completed in 2002 the Energy, Poverty and Gender (EnPoGen) project which was to increase the impact of the Programme's alternative energy projects on poverty alleviation and gender equity in rural areas of Asia (Heijndermans, 2002). The project aimed to identify and quantify the linkages between access to electricity, poverty alleviation and gender equity. Part of the outcome has been the start of refining a methodology for measuring social benefits (the so-called intangible impacts) of projects and to translate them into monetary terms which are more familiar to the engineers and economists of the energy sector. The underlying idea is that this will make it easier for these professionals to adopt social benefits as outcomes in energy projects. At the same time, community needs identified through participatory approaches are to be translated into the language of planners and implementers.

ESMAP has a track record of household energy projects and had begun to support gender in energy in the 1980s. However, a major impetus to mainstreaming gender in the energy sector came in 1999 when a gender facility was set-up within ESMAP. Efficiency in project delivery to the poor and gender equity in benefits accruing from interventions funded by ESMAP are two primary goals. As of 2003, ESMAP's work on gender, household energy and poverty alleviation divides between income generation and reducing indoor air pollution. For example, a project in Bangladesh for women to become energy entrepreneurs making fluorescent lights has multiple benefits for women. It provides some women with income and so helps to address poverty issues in their households. In addition, the women entrepreneurs' status increases in the household and the community. All households have the opportunity to use the lights, replacing kerosene with electricity, saving money[4], enhanced safety, and bringing improvements in quality of life.

[4] This monetary saving from a fuel transition to electricity is not permanent since electricity demand grows as household acquire more equipment and hence household expenditure on energy rises.

While many of the bilateral agencies (eg DGIS and SIDA) support household energy projects through the multilateral agencies, DFID still funds directly some initiatives through its Knowledge and Research (KaR) Programme. Work supported in the past was the traditional approach of equating household energy with stoves. However, with the adoption of the livelihoods approach, the multidimensional aspects of household energy are now appearing and, while stoves are rightly not forgotten, other energy end-uses are now under consideration. DFID has also commissioned a paper on the gender-energy-poverty nexus (Clancy et al, 2003). The paper sees addressing household energy (when broadly defined) as a key issue in poverty alleviation and women's empowerment.

GTZ has a long tradition of working on household energy. The Household Energy Programme was set up in 1983 and began with a traditional stoves approach. However, building on field experience and realising the low priority biomass fuels received from policy makers, the Programme began to broaden out from technical solutions into a more integrated and participatory approach. Household energy is to be integrated into other sectors, such as health and food security, or where household energy is the starting point to integrate other sector components into the project (Anon, 1997). In 1998, GTZ began to implement a project (known as ProBEC) in six SADC countries to support local, national and regional initiatives aimed at improving the energy situation for poor urban and rural households and small businesses using biomass energy. A case study was carried out in Namibia in November 2001 to demonstrate how gender aspects can be successfully integrated into different levels in the biomass energy sector. As a consequence of taking a gender approach, household energy programmes can be more efficient and effective, as well as increasing gender equity in participation and benefit.

3.0 Gender, energy and health

Combustion of traditional biomass fuels and coal exposes low-income households to serious health hazards. WHO estimates that around three million deaths a year occur in the South related to indoor air pollution from biomass combustion for cooking and space heating. Since household energy provision and use for household survival needs is women's responsibility, it is not unreasonable to expect that biomass use affects women's health disproportionately to men's. For example, the longer hours of exposure to smoke and particulates in smoky kitchens experienced by women compared to men are considered to be a contributing factor in women having higher levels of lung and eye diseases than men. Pioneering research in Kenya (reported by von Schirnding, 2001a) has shown that women are twice as likely as men to be diagnosed with acute respiratory infections. This infection rate has been linked to the greater exposure to indoor air pollution by women compared to men. This finding is supported by similar research in South Africa conducted as part of the same study. However, research in India (also part of the same study) showed higher levels of respiratory infections in young boys and men than in girls and women. What these findings demonstrate is the importance of including gender as a factor of analysis and also that impacts can be context specific, they are related to a complex set of relationships between social, environmental and economic factors.

Biomass and health has tended to be analysed only in terms of biomass combustion impacts, whereas the combustion forms only one part of a fuel cycle of collection, transformation, transport and use and each stage has its own specific impacts. The collection and transportation of biomass is primarily the task of women and girls. While there is some excellent research being carried out, much with the support of WHO, into the effect of smoky kitchens on women's and children's health (see for example, Smith (1999)), other health linkages are not so well researched. For example, although the amount of time spent by women in collecting and carrying heavy loads of fuel is often noted, the damage these loads cause to women's spines is not well documented. Wickramasinghe (2001) has reported the negative impacts of fuel collection in rural Sri Lanka: women suffered from a range of injuries (cuts, broken bones etc), skin irritations, infections, snakebites and trauma (including sexual harassment and rape). Transporting biomass is by headloading, leading to women suffering from headaches, aches in the back and other joints. The accumulated effects of 30 or more years transporting fuel leads to many older women suffering from weakened backs and more open to infection. Men in Sri Lanka do assist in fuelwood collection but only when biomass sources are located close to the

household (this type of support is not the general pattern), however, they do not complain of the same symptoms as women.

Alternatives fuels are promoted to reduce the negative health impacts of biomass fuels, resulting in reduction in air pollution, enhanced health, saving of time and improved safety. Rural electrification has been promoted in a number of countries as bringing these benefits and other benefits. However, electricity is expensive for cooking many traditional types of food and for space heating. The health benefits electricity brings in practice do not appear to be linked to cooking but to other energy end-uses in the household. For example, in Tunisia, rural electrification is considered to have benefited women and girls' health, through access to improved health care facilities (expanding range of equipment in clinics) and information services (TV and video) (Chaieb and Ounalli, 2001). Eye problems were found to decrease through the substitution of electric light for candles and kerosene lamps. Women do see the benefits of electric stoves and would like to make them a priority purchase. However, studies in South Africa show that appliances for lighting, entertainment and refrigeration are usually the first purchases in newly electrified areas (Mathee and de Wet, 2001).

4.0 Gender, Household Energy and Privatisation of the Energy Sector

The energy sector in developing countries is however not immune from transformations that are taking place in the global economy, which are intended to bring about increased efficiency and lower costs, as well as increasing access. There are two particular changes taking place that are likely to have specific consequences for poor people: privatisation and commercialisation. Privatisation in the energy sector involves the sale of state energy companies, particularly the electricity utilities, to the private sector, as well as the opening up of the market for the private sector to provide other energy services. These trends bring with them wholly new concerns that need to be studied: particularly, how the private sector will respond to the demand from the rural poor for household energy services. Will the poor be seen as a mass market needing creative financing programmes to facilitate access to energy services, or will they be regarded as too high a risk, providing too low a profit margin? Private sector electricity suppliers might consider themselves under no obligation to implement schemes with a high social value (for example, lifeline tariffs sufficient to light one or two lamps) that many public utilities have addressed. Since a disproportionate number of poor households are headed by women, then women (at least in this group) might consider that the market also does not benefit them. It is, as yet, not clear whether privatisation will result in more, or less, access for the rural poor to modern energy forms, although emerging evidence from India is not positive (Sinha, forthcoming 2003). In some cases, the boundaries of existing services, originally provided with an element of social welfare, are being retracted, as can be seen, for example, in India where previously electrified areas are having services withdrawn based solely on financial criteria (Ministry of Power, 2001). Conversely, privatisation might contribute to sustainable livelihoods by providing new entrepreneurs with the opportunity to enter the market by providing local level energy services in rural areas. Although this is much to be hoped, the scanty evidence so far is not very encouraging. Barja and Uriquiola (2001) report that following the privatisation of the utilities in Bolivia, there have been no improvements in access to electricity for the poor in rural areas, whereas in urban areas there was access by more than 95% in the lowest income quintile compared with 86% prior to privatisation. Whether this trend is general is not known, although a body of knowledge is beginning to emerge (see for example, Doig (1998)).

In terms of addressing gender differences around energy choices certain modern marketing strategies might be more ready to take gender differences into account when analysing the potential clients and would disaggregate both between and within households. Targeting of advertising would sell products to men and women in different ways. A company could promote their new products (energy forms can also be seen in terms of a "product") through imaginative training programmes, which are client centred taking into account availability and skills. The company would arrange financing for its products.

Although market approaches would probably address gender issues, this would be from an efficiency basis. Enabling equity or empowerment is not a market objective. However, these objectives might be reached indirectly. For example, women who participate in the market as entrepreneurs would certainly be empowered and may be move towards greater equality, through increased status accrued from increased contribution to family income.

Commercialisation is a process of reducing public expenditure that also aims to reduce the market inefficiencies induced by subsidies. For the energy sector, it has meant the removal of direct subsidies on fuels and appliances, and a shift towards market-based solutions in the provision of energy services. This has increased the cost of household energy, particularly for lighting. Kerosene is the preferred option in non-electrified households. Petroleum supply is in both public and private ownership, although generally governments still control kerosene prices. Women are able to buy this lighting fuel in small quantities, to match their cash flows, at reasonable prices. Although many households would like to have access to electricity for lighting and LPG for cooking, the method of payment does not always match the cash flow in low-income households.

5.0 Gender, energy and climate change

The international debate on energy and climate change has given scant attention to gender issues. Denton (2000) commented that the climate change debate had essentially been science driven and had lacked a social dimension. (Albert (2002) described the negotiations around climate change as “a playground for economics addicts and number crunchers".) Denton argued that if one analysed the social dimension of the effects of climate change then gender issues clearly emerged. Climate change is likely to affect food production and floods will threaten houses. Both endanger human security and it is the poor and vulnerable groups who will be most at risk since they have the least access to resources to respond to the threats posed by unstable and shifting weather patterns. Women feature strongly in the groups most at risk since they form the majority amongst low-income earners and they play a key role in food security for the family. It is estimated that 59% of the world’s food production (80% in some parts of Africa) is by women (Denton, 2000). At present, we are in a period of uncertainty since no one knows with any degree of certainty what the effects of climate change are likely to be on food production. However, if the negative scenarios of increased crop failures become real, then the fear is that women’s low incomes and role as food provider could become negatively re-enforcing and increase their vulnerability and stress. Women will not be able to afford to buy nutritious food to replace failed crops. In addition, their own calorie intake will be reduced even further (in many cultures women eat last and eat least) reducing their own energy levels on which so much of household survival tasks depend on. In addition, the sorts of crops that will grow under new weather patterns may require longer cooking; hence, food preparation could be more energy expensive. Agricultural residues output could also fall, affecting both animal feed and household energy supplies (including reduced dung production through lower food intake levels for animals). Any reduction in biomass availability can threaten a household’s capacity to boil water which in turn increases the transmission of water borne diseases.

Southern Africa is heavily dependent on rain-fed agriculture. Any increase in flooding or droughts will contribute to reducing agricultural output and hence increase social vulnerability. The role of women in food production in Southern Africa is crucial. Most economically active women are employed in agriculture, which can in part be attributed to male urban migration, wars and changes in socio-cultural structures. In Mozambique, for example, in 1998 for every 100 men working in agriculture, there were 153 women similarly employed (quoted in Wamukonya and Rukato, 2001). In Southern Africa, women will be expected to respond to the changes brought by changes in weather patterns. However, they tend to be less educated than their male counterparts, generally have less land to work, and less capital and access to extra farm labour. This reduces their capacity to respond to outside threats and hence their vulnerability increases.

It was only after the so-called COP-6 meeting held in The Hague in November 2000, that the need for mainstreaming gender into climate change debates and responses became more clearly heard. A first step by

governments towards addressing women's issues came during COP-7 in Marrakech in autumn 2001. A proposal put forward by the Samoan delegation to improve the participation of women in the representation of Parties in the international climate process was approved. The following COP-8 included a side event dedicated to gender aspects. Despite the increasing presence of gender advocates, the specific dimension of women's rights has not been as well incorporated as have, for example, indigenous peoples' rights (Alber, 2002).

In part, this can be attributed to a lack of vigorous gender analysis in the field, with only a small number of researchers contributing to the debate. Wamukonya and Skutsch (2001) took Denton's discussion of the vulnerability aspects of the effects of climate change further and identified a number of additional areas where gender issues could play a role: responsibility for the emissions; mitigation of emissions; and adaptability to climate change. In terms of responsibility for emissions, ecofeminists would argue that industrial economies and their production processes stem from a male dominated culture and that if female norms dominated the economy, industry would look very different and probably be more environmental friendly. However, one has to consider if it is either feasible or useful to determine whether or not women or men are responsible for specific Green House Gas (GHG) Emissions linked to climate change. This type of analysis might lead to arguments which would distract from solving the problems arising out of the environmental crisis facing us. There are a number of international instruments which have been negotiated to mitigate the production of GHGs, for example, the Clean Development Mechanism (CDM) which allows for technology transfer of energy efficient technologies from the North to the South. Currently, the approach under the CDM is gender neutral, it assumes that energy is gender neutral and so does not deliberately set out to specifically target men or women and as a result misses out the gender differences in energy technology needs and capabilities. Women generally have a lower confidence level to spontaneously take up technologies, but with the right sort of training and support can do so most enthusiastically and successfully (see for example, the Multifunctional Platform – a decentralised mechanical and energy supply operated by women in Mali (Burn and Coche, 2001). This would suggest the need for technology transfer projects which specifically target women both to meet their specific needs and to bridge their technical knowledge gaps. However, not everyone supports this approach, fearing male resentment and backlash (Wamukonya and Skutsch. 2001). An alternative might be to adapt strategies to local circumstances, and where appropriate a family or partnership approach could be employed or to use poverty alleviation as a point of entry.

Voices from the South have called for assistance in adaptation to the effects of climate change, such as adjusting agricultural systems, flood control and health services. However, unlike with mitigation, there is no agreed programme for this approach. If any programmes should materialise, it would be important that at least a gender dimension should be recognised and appropriate strategies developed. Again, it would need to be debated whether or not a woman-focused approach would be strategic for achieving goals.

Wamukonya and Rukato (2001) have attributed the lack of attention to gender in climate change fora to a number of factors:

- gender is only just beginning to be mainstreamed into energy policy making;
- the gender and energy debate has not kept pace with international developments in climate change;
- the links between gender and energy, climate change and its adverse impacts have not been well articulated at international, regional and local levels; and
- the climate change agenda is set at the international level and therefore fails to address what is in effect experienced at the local level.

Alber (2002) attributes the gender and energy debate not keeping pace with international developments in climate change to the complex language used during the negotiations which can be a barrier to "outsiders" wishing to break into the debate. She sees capacity building as an important part of getting gender onto the climate agenda.

6.0 Conclusions

This paper has looked at gender and household energy issues in a global context, relating to the areas of specific interest of the international development agencies and dominant issues in the energy sector. The paper has shown that it is possible to establish links between gender, household energy and moving people out poverty. It has also demonstrated that by addressing household energy issues and poverty, it is also possible to contribute to women's empowerment. However, the development agencies are not specifically focused on household energy, possibly because they are not aware of the linkages and it is the challenge for those practitioners working in household energy to create this awareness.

Where gender and household energy issues are addressed, there are signs that some agencies have moved on from seeing household energy as only stoves. However, the approaches remain one-dimensional as it was in the past with household energy. For example, health issues related to the use of biomass fuels have emerged as a major concern. However, without in anyway diminishing the very serious nature of this problem, these problems are formulated and addressed solely from the perspective of the impacts of indoor air pollution. There are other dimensions to the health issues related to the biomass fuel chain. This lack of attention to other aspects arises from not seeing energy as part of a chain from provision through to use, each stage with its own specific health impacts.

The energy sector is not immune to the forces of globalisation and there is considerable pressure from external agencies for countries in the South to privatise and to commercialise energy services. The argument for privatisation and commercialisation is that inefficiencies in supply will be removed by the use of market-based instruments and households will have access to a broader range of energy forms. However, it is too early to draw general conclusions about the process worldwide although early signs from India have not been encouraging for low-income households.

The international efforts to address the global consequences of fossil fuel use have only just begun to be subject to gender analysis. Many women fear that through lack of technical knowledge and advocacy skills they will be marginalised from contributing to solutions to address these problems. There is clearly gender imbalance in the climate change debate.

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