



ENERGY AND GENDER

in rural sustainable development



ENERGY AND GENDER ISSUES IN RURAL SUSTAINABLE DEVELOPMENT

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INTRODUCTION

FAO is looking at ways in which increased attention to energy and gender linkages can help countries promote sustainable agricultural production and rural development, as well as work towards meeting the targets set out in the Millennium Development Goals.

It is FAO's view that increased access to energy sources in rural areas and the development of new bioenergy¹ sources can contribute to achievement of the Millennium Development Goals relating to the eradication of extreme poverty and hunger, improvements in health, education, and environmental sustainability, as well as gender equality and the empowerment of women. FAO's Committee on Agriculture has identified the great potential of bioenergy for supporting new rural infrastructure and employment opportunities, and has also recognized that an integrated multidisciplinary approach is needed for its new Bioenergy Programme to address the social and economic objectives set out in the MDGs. A focus on gender issues is particularly important in this context since many of the world's poorest people are women living in rural areas in developing countries who are currently dependent on subsistence agriculture to feed their families, and who are disproportionately affected by the lack of modern fuels and power sources for farming, household maintenance and productive enterprises.

This paper discusses some gender issues and energy linkages within the international sustainable development context and presents recommendations on ways of incorporating gender sensitivity into energy and development policies and planning processes. It is FAO's

¹ FAO defines 'bioenergy' as all energy derived from biofuels. These include traditional fuels such as wood, charcoal and agricultural wastes, plus biofuels (including biogas, biohydrogen, and bioalcohol) that are produced from those materials or from energy crops or livestock manure.

hope that this will promote a wider understanding of the importance of recognising gender differences in decision-making on energy and rural development, and stimulate new attention to the challenges identified here.

THE ENERGY-POVERTY NEXUS

There are more than two billion people who are unable to obtain clean, safe fuels and must rely on burning traditional biomass fuels such as wood, dung and crop residues (UNDP, *et. al.*, 2000) Without access to efficient and affordable energy sources, they have very limited opportunities for economic and social advancement. Expanded energy sources are needed in rural areas to provide: mechanical power for agriculture, food processing, water pumping and irrigation; modern fuels for cooking and heating; and electricity for lighting, refrigeration, communications, commercial enterprises and community services. The regions most affected by the energy-poverty nexus are in Africa and Asia, especially areas in the Least Developed Countries where there is no access to grid-based electricity and where modern fuels are difficult to procure. Because they are very dependent on subsistence agriculture and environmental resources for their livelihoods, people in these regions are particularly vulnerable to the depletion of natural resources, and the impacts of climate change.

ENERGY, POVERTY AND GENDER

It is well-documented that there are more women than men living in poverty. That the gender bias in poverty does not reach the very high levels sometimes attributed to it (“of the approximately 1.3 billion people living in poverty, 70 percent are women- UNDP 1995”), does not mean that the bias is not real or is not growing (Marcoux, 1997). Poor women in rural areas of developing countries generally have a more difficult time compared to men, due to their traditional socio-cultural roles. They often spend long hours collecting fuel wood and carrying it back home over long distances. The time and labour expended in this way exhausts them and limits their ability to engage in other productive and income-generating activities. Their health suffers from hauling heavy loads of fuel and water, and from cooking over smoky fires. Their opportunities for education and income generation are limited by lack of modern energy services, and as a result their families and communities are likely to remain trapped in poverty (UNDP, 2001).

LINKAGES WITH THE MILLENNIUM DEVELOPMENT GOALS

Because of the concentration of poverty in rural areas of developing countries, and the disproportionate effect it has on women because of their low social and economic status,

improving the situation of women farmers through better energy services will promote both MDG 1 (reducing poverty and hunger) and MDG 3 (promoting gender equality and empowering women). It is also relevant to MDG 2, (achieving universal primary education) because girls are often kept home from school to help their overburdened mothers with fuel collection and food processing. With respect to MDGs 4 and 5, which call for improvements in children's health and maternal mortality rates, cleaner fuels would reduce the hazards associated with smoky indoor fires and carrying heavy loads of wood. Moreover, women, especially those in rural areas, can also be primary actors and beneficiaries with regard to MDG 7 (ensuring sustainability) given their traditional roles as managers of wood and biomass fuel supplies and other critical environmental resources.

FAO'S APPROACH

Fostering gender equality has long been an important component of FAO's approach to energy. (FAO, 1996 and 1999). Consideration of the energy/women nexus extends back to the 80s, when Marilyn Hoskins and others published a number of papers on rural women and forestry projects. (See Hoskins, 1983).

In a joint statement in January 2005, the heads of FAO, the World Food Programme and the International Fund for Agricultural Development pointed out the fact that in many countries insufficient attention is paid to the needs of farmers with small land holdings, the majority of whom are women; programmes aim to support the poorest and hungriest, yet women are often denied access to resources such as land, water, credit and markets (FAO, WFP, and IFAD, 2005).

FAO focuses on mainstreaming an understanding of gender issues into all aspects of development activities – including energy planning and decision-making. FAO's Gender and Population Division has been working on promoting gender-sensitive monitoring of the MDGs by advancing knowledge about gender issues related to agriculture, nutrition and rural development. The Division's work on gender is now being expanded to include energy and rural development issues, and will provide important contributions to FAO's new Bioenergy Programme, which will be guided by an interdepartmental working group (FAO, 2005a). The Bioenergy Programme focuses on potential economic and social development activities related to wood energy² and agro-energy³, and is part of a wider agency strategy promoting renewable energy systems in rural areas to support productive uses.

² Wood energy resources include fuelwood, charcoal, forestry residues and any other energy derived from trees.

³ Agro-energy resources include agricultural and livestock by-products, and energy crops, which are plants purposely grown as energy resources.

1 ENERGY, GENDER AND THE SUSTAINABLE DEVELOPMENT AGENDA

1.1 ENERGY IN INTERNATIONAL SUSTAINABLE DEVELOPMENT DISCUSSIONS

In people's daily lives, energy provides essential services for cooking and heating, lighting, food production and storage, education and health services, industrial production, and transportation. However, there is a real energy gap between industrialized areas and poorer, mainly rural and peri-urban, communities where obtaining energy for basic human needs is a daily challenge. In those areas, wood, biomass and agricultural wastes provide most of the energy that is available, and there is little access to electricity or modern fuels for cooking, heating, mechanized equipment or motor vehicles.

While energy is essential for development, decision-making about energy use has complex linkages with policies affecting poverty, food security, health, population, gender disparities, environmental quality, investments, foreign exchange, trade and national security. Given the role of energy in a wide range of development activities, a sustainable energy strategy is important for addressing integrated development goals. However, this point has not always been emphasized in international sustainable energy development discussions, perhaps because of the large economic and political issues and interests involved (Clancy and Skutsch, 2003).

At the 1972 **UN Conference on the Human Environment** in Stockholm, energy received little attention. It was dealt with primarily as a source of environmental stress. Twenty years later, at the **UN Conference on Environment and Development** in Rio de Janeiro (the 'Earth Summit') energy was a subject of intense debate, but was mostly addressed in the context of its contribution to climate change, in response to the growing awareness of greenhouse gas emissions caused by the combustion of fossil fuels. The fundamental linkages between socio-economic progress and energy were not analysed in an integrated way. Agenda 21, the plan

of action adopted at the Earth Summit, does not have an energy chapter, and no negotiations or discussions were initiated to address energy issues on an international level.

Energy production and consumption was considered under the **UN Framework Convention on Climate Change**, (UNFCCC) which was signed at the Earth Summit and entered into force in 1994, in the context of reducing greenhouse gas emissions. Industrialized countries were to take the lead on emission reductions due to their more intensive use of high-emission fossil fuels for electricity generation, industrial production and transportation.

In the years following the Earth Summit, the social aspects of energy issues began to be discussed in a series of UN Conferences that included: the 1994 Conference on Population and Development in Cairo; the 1994 Global Conference on the Sustainable Development of Small Island Developing States (SIDS) in Barbados; the 1995 World Summit for Social Development in Copenhagen; the Fourth World Conference on Women in Beijing 1996; the Conference on Human Settlements (HABITAT II) in Istanbul, and the 1996 World Summit on Food Security in Rome.

At the 1997 Special Session of the United Nations General Assembly addressing sustainable development (**Rio + 5 Review**), world leaders stressed the importance of energy for improving people's quality of life, and recommended greater international cooperation in promoting energy conservation and efficiency, the use of non-fossil energy sources, and the development of innovative energy-related technology. To promote this goal, the General Assembly decided that the **Ninth Session of the UN Commission on Sustainable Development (CSD 9)** in 2001 should focus on energy. The Decision adopted at CSD 9 emphasized in Point 1 that: "energy is central to achieving the goals of sustainable development". Moreover, the work carried out before and during this event showed the deep connection between energy services and the **2000 Millennium Development Goals**: "to implement the goal accepted by the international community to halve the proportion of people living on less than US\$1 per day by 2015, access to affordable energy services is a prerequisite" (Point 22). The CSD 9 decision also specifically recognized the need for special attention to women's distinct energy needs.

In 2002, the **World Summit on Sustainable Development (WSSD)** in Johannesburg further raised the international focus on energy as a critical factor for achieving the Millennium Development Goals. In its Declaration (Clause 18), the WSSD stated that energy must be considered as a human need on par with other basic human needs such as clean water, sanitation, shelter, health care, and food security. The Johannesburg Plan of Implementation, Article 8, links energy services directly to poverty alleviation, recommending that governments "work together at all levels to improve access to reliable and affordable energy services for sustainable development sufficient to facilitate the achievement of the Millennium Development Goals, including the goal of halving the proportion of people in poverty by 2015, and as a means to generate other important services that mitigate poverty, bearing in mind that access to energy facilitates the eradication of poverty".

The WSSD also adopted a new programme of work for the Commission on Sustainable Development, determining that for the years 2006 and 2007, **CSD 14 and 15** will focus on energy issues (together with climate change, air pollution and industrial development). This will provide a critical opportunity for the international community to discuss international cooperation on energy and sustainable development initiatives. FAO is actively participating in this process, both as a member of the Commission and through its assistance activities involving member countries. FAO is also Vice-Chair of 'UN Energy', a new UN mechanism established as a follow-up to the WSSD to promote a system-wide approach on energy matters. (see <http://esa.un.org/un-energy>)

1.2 GENDER AND ENERGY IN INTERNATIONAL MEETINGS

Although a special focus on women's energy needs in development policies can help promote other goals relating to poverty eradication, health, employment and education, the importance of bringing a gender perspective to energy planning, analysis and project design is still not widely understood or accepted. Gender equality is often viewed predominantly as a political issue, unrelated to technical concerns about energy production and supply. Energy planners and policy-makers still tend not to consider women at all. As a non-existent entity, women's concerns are treated as 'added on' factors or as not directly relevant to energy issues.

Some international agreements, however, have established a more favourable environment for a gender-sensitive approach to energy planning.

The 1992 **Earth Summit** focused on the need for sustainable development, balancing economic growth with issues related to social equity and environment protection. Agenda 21's emphasis on extending the benefits of development to all people, both men and women, brought a new focus on social issues, including gender equity objectives, into development policies. The advancement of women was recognised as an essential element of sustainable development, and women were identified as a major stakeholder group for providing input into the work of the Commission on Sustainable Development.

In preparation for the 1995 **Fourth World Conference on Women**, a number of women working in the energy sector came together to establish ENERGIA, an international network designed to help create linkages between energy professionals and gender experts and to promote consideration of gender-related energy issues. The Beijing Conference drew attention to the key role of women in sustainable development, while pointing out that women throughout the world continue to have fewer opportunities than men. Chapter 4 of the Beijing Platform highlighted women's roles in the management and use of natural resources, as providers of sustenance for their families and communities. Specifically with regard to energy, the Beijing Platform called on governments to support equal access for women to sustainable and affordable energy technologies, using participatory need assessments in their design of energy plans.

The Beijing Platform also promoted gender mainstreaming in all sustainable development activities. Objective K, paragraph 252, of the Beijing Platform for Action states that: “In addressing the lack of adequate recognition and support for women’s contribution to conservation and management of natural resources and safeguarding the environment, Governments and other actors should promote an active and visible policy of mainstreaming a gender perspective in all policies and programmes, including, as appropriate, an analysis of the effects on women and men, respectively, before decisions are taken.”

In 2001, lobbying efforts by ENERGIA and other organizations concerning the need for gender sensitivity in energy policies and planning influenced the discussions at the **Ninth Session of the UN Commission on Sustainable Development (CSD 9)**. As a result, the Decision produced at CSD 9 urged governments to address the health and safety concerns of women and children in rural areas, including the impacts of carrying loads of fuel wood over long distances and being exposed much more than men to the smoke from open fires used for food preparation. In addition, the Decision recommended international cooperation to promote equal access and opportunities for women in relation to energy and greater involvement of women in energy policy decision-making processes.

At the 2002 **World Summit on Sustainable Development (WSSD)**, the language of the Johannesburg Plan of Implementation was less specific on the need for gender sensitivity in

Women, gender, and development approaches

Women In Development (WID)

In the 1970s, the WID approach focused on women’s secondary socio-economic status and aimed at reducing discrimination against women, mainly through income generating projects. After some years WID was severely criticized because, for the most part, women were regarded passive recipients of these initiatives. Little attention was paid to their actual needs, and little income was actually generated.

Woman and Development (WAD)

The second half of the 1970s saw the emergence of the Women and Development (WAD) approach, which looked at women as essential actors in the economic systems and analysed the condition of women in the wider context of international and class inequalities. However, like WID, WAD projects and initiatives focused mainly on income generating activities, and women’s responsibilities within the household were not taken into account. As a consequence, development projects sometimes impacted negatively on women’s actual condition, by adding work and community responsibilities on top their household burdens.

Gender and Development (GAD)

This framework looks at the complex interconnections between women and men, rather than focusing on women in isolation. It uses ‘gender analysis’ to understand the distinct, socially-defined roles and tasks that women and men assume within households and communities under the influence of different cultures and traditions. Through ‘gender mainstreaming’ GAD programmes attempt to promote gender equality and integrate gender awareness at all levels of society and in each phase of development processes.

energy planning, because the Plan called in general for actions to “promote women’s equal access to and full participation in, on the basis of equality with men, decision-making at all levels, mainstreaming gender perspectives in all policies and strategies, eliminating all forms of violence and discrimination and violence against women, and improving the status, health and economic welfare of women and girls through full access to economic opportunity, land, credit, education and health-care services” (Section II, Poverty eradication, paragraph 7(d)). Women’s participation was also emphasized in several of the energy partnerships formed at the WSSD, including the Global Village Energy Partnership.

1.3 INCORPORATING GENDER CONCERNS INTO ENERGY AND RURAL DEVELOPMENT PLANS

Many energy analysts express surprise when women are mentioned with regards to energy, saying “Energy is there for all to use. What difference does it make who uses it?” (Parikh, 1995). This response fails to take into account the fact that men and women may experience energy, poverty, and development activities quite differently.

Gender-sensitive energy programmes can ease the double burden of lack of sufficient energy and poverty that women endure as they perform traditional household and community roles. They can also provide opportunities for education and income generation that will allow women to improve their social and economic status and raise the living standards of their families and communities. However, if energy policies are to become more gender sensitive, not only will women themselves have to become more empowered to make choices about energy, but the energy sector will also have to become more responsive to women’s energy needs (Dutta, 2003).

The following section briefly outlines some of the major elements that should be considered in addressing gender and energy linkages. The key challenge is to ensure that gender sensitivity is incorporated into overall planning and decision-making procedures so that gender concerns are fully mainstreamed.

1.3.1 Gender mainstreaming

Gender mainstreaming requires positive action (a) at the policy level, to ensure that the challenge of gender equality becomes a visible and key concern; (b) at the programme level, to ensure that all energy interventions create opportunities for women’s empowerment and gender equality; and (c) at the organizational level, to ensure that space and opportunities are available to women as well as men.

Although there are gender disparities in almost every context that need to be examined, they should be considered within the particular social, economic and political context. Since women throughout the world are not a homogeneous group, factors relating to

culture, income, social class, religion, family status and geographical location also need to be incorporated into a more integrated view of energy as a factor in promoting social and economic development.

1.3.2 Analytic tools

There are a number of ways of considering how gender issues can be taken into consideration in project planning processes. In her ‘Gender in energy training pack’, Skutsch (1997) identified three types of commonly used gender analysis methods:

Using gender analysis as a filter through which all project plans should go before approval. In this way, even if projects are not deliberately designed with gender as a primary concern, an acceptable degree of equity is assured because all projects have to pass a ‘gender test’.

Building gender into the project cycle so that gender issues are considered at each stage. This is a more thorough approach, with different planning tools or analytic frameworks used at different stages. The result will be that gender considerations are taken into account from the very beginning of the process, starting with problem identification and project formulation, and not merely used to filter out “poor” plans.

Incorporating gender into planning procedures such as the Logical Framework, or computer-based energy models that, for example, predict supply and demand. In theory, there is no reason why gender issues should not be incorporated in these frameworks, whether they are used at the beginning of the planning process to identify potential interventions or at the end to evaluate them.

The challenge of incorporating gender issues into energy policy and project design is complex, however, and so far few energy programmes have used the tools that have been developed for gender analysis. This may be because the tools and methodologies used in other development sectors are not readily adaptable to energy planning. Empowerment of women may not always be a realistic goal, for example, in energy projects and programmes focused on extending the electricity grid, though in fact women may benefit from the result. (See Skutsch, 2005).

1.3.3 Disaggregated data

Mainstreaming a gender perspective requires as a first step the collection of relevant data about how men and women consider their energy needs and what actions they perceive as most beneficial.

FAO applies a ‘household resource management’ approach as a way of analysing patterns of access, decision making and power relations in rural families in order to understand their impacts on food security, livelihoods and rural development challenges (FAO, 2004a). Using the household as a basic unit for analysis, gender disaggregated data can be collected

concerning: (a) the per capita energy consumption for men and women respectively; (b) the share of non-commercial energy used by men and women; (c) the purposes for which energy is used; (d) the amount of time spent and the effort made by men and women in providing energy for their activities; and (e) the amount that each pays for energy (Parikh, 1995) and (f) as well as the relative risks, such as exposure to fumes from open fires, that men and women face. Since information on these differences is often not readily available or is difficult to obtain, greater efforts are needed at the planning stage to ensure that the data will be collected.

1.3.4 Participatory needs assessments

Recent studies find that for the effective delivery of energy services, the beneficiaries –both women and men– must actively define the end uses that are most important for them, decide what they are willing to pay for different levels of service and, based on a wide range of choices, plan for future needs (Dutta, 2003). Communities should also enjoy the opportunity of choosing whether to invest in energy at all or whether they would rather put their efforts into some other income-generating infrastructure. In some cultures, women have difficulty participating directly in community decision-making, and special efforts will be required to ensure that they have an opportunity to be heard.

1.3.5 Gender indicators and impact assessments

Energy programmes should evaluate the impacts of their initiatives on women and men. For this purpose, they should use indicators that are gender-disaggregated and be able to record improvements in women's position and negative impacts in women's condition, in terms of convenience, quality of life and access to and control over resources. However, these indicators are generally more qualitative than quantitative. Furthermore, they are also harder to measure.

To avoid these difficulties, recent studies suggest some possible eligible indicators, including:

- ☉ increased acceptance by women and men of women as community decision-makers;
- ☉ increased enhancement of women's access to and control of resources
- ☉ increased women's involvement in personal, family or community development;
- ☉ new, more visible, and more effective women's organizations;
- ☉ more women in education and training programmes;
- ☉ support for women to enter non-traditional spaces and gain legitimacy in new roles
- ☉ improved health of women and children

(Dutta, 2003).

For over a decade, FAO's Gender and Population Division has worked with the Statistics Division and member nations to stimulate the production and use of gender-disaggregated data (GDD) and gender-sensitive indicators in agriculture and Natural Resources.

To date, FAO has developed an inventory of NRM-related gender-sensitive indicators (GSIs) (See FAO 2005 b). These were developed through the identification of a baseline and

gender sensitive factors that may put differential pressure on the management and use of natural resources. The core inventory of GSIs, based on field verification of agro-biodiversity management initiatives, were tested in on *in-situ* conservation of genetic resources projects in Nepal and FAO land reclamation projects in Egypt. They combined both qualitative and quantitative indicators.

FAO promotes and recommends the further development of gender sensitive indicators pertaining to energy access to be sponsored by the international community by agencies such as CIDA, IFAD, and Energia, for example.

2 THE ENERGY POVERTY TRAP THROUGH A GENDER LENS

2.1 THE ENERGY DIMENSIONS OF RURAL POVERTY

In the framework of traditional energy policies, only a few countries have devoted continued attention to planning a rural energy agenda. Most initiatives have been designed to meet the needs of growing populations in urban communities which are better organized and can more easily exert pressure on energy authorities. National energy strategies generally focus on progressive extension of energy infrastructure to expand the availability of electricity. But because of the dispersed nature of rural communities and their low commercial energy consumption, a grid-based approach is not economically viable in many places.

In rural areas, farmers, fishers and foresters often still rely on traditional fuels like wood, charcoal and dung, for cooking, heat and light. They generally burn these fuels using simple technologies characterised by low energy efficiency and harmful emissions. Human energy is used for household work (fetching water, washing clothes, gathering and preparing biomass for fuel), and human and animal power for agriculture, transportation and small-scale productive activities. When incomes rise and more convenient technologies become available, farmers tend to shift to modern energy carriers or more convenient energy-efficient equipment higher up on the 'energy ladder'. In this context, wood, dung and other biomass fuel are the lowest rungs on the energy ladder. Charcoal, coal and kerosene represent higher steps, and electricity and LPG (Liquefied petroleum gas: commercial butane and propane) are at the top, while modern biofuels in liquid and solid form and other renewable energies such as solar and wind are expected to make a much larger contribution in the next decade.

Rural people spend a high proportion of their income on energy, and generally are unable to accumulate the investments needed to use less costly or higher quality energy sources. Yet, it should be noted that the satisfaction of basic and vital human needs through modern

energy options requires relatively small amounts of energy in absolute terms. For instance, the cooking needs of the 2 billion people not served by modern fuels correspond to about 120 million tonnes of oil equivalent of LPG a year. This equals 1 percent of global commercial energy consumption or 3 percent of global oil consumption.

The commercial energy requirements for satisfying basic needs in rural areas are modest. But these modest amounts of energy would offer great increases in amenities and promote sustainable development. To reach this goal more efforts are required, both nationally and internationally, to provide suitable institutional and economic enabling environments, innovative approaches and new financial mechanisms. FAO, UNDP, the World Bank and other international and regional bodies are actively assisting countries in these efforts, which include initiatives that specifically deal with energy, as well as schemes where energy, rural and agricultural development and social equity are treated in an integrated manner, thereby promoting inter-sectoral synergies.

2.2 GENDER ASPECTS OF RURAL ENERGY POVERTY

A disproportionate number of the people living in hunger and extreme poverty are women. Their distinct needs and concerns, however, have generally not been taken into account in energy plans and policies.

In the Least Developed Countries, wood, dung and crop residues serve as the primary fuel sources, and it is principally women and children who carry out the task of collecting these fuels. Increasing degradation of these natural resources causes them to spend more time and physical effort finding and bringing home the fuel they need. There are also serious health impacts associated with burning traditional biomass fuels. Open fires in the home produce unventilated smoke, and women and children, who are most often in the house, are exposed to high concentrations of particulate matter, carbon monoxide and other pollutants. "Use of biomass fuels and coal burning indoors leads to levels of indoor air pollution many times higher than international ambient air quality standards allow for, exposing poor women and children on a daily basis to a major public health hazard. This exposure increases the risk of important diseases, and is estimated to account for a substantial proportion of the global burden of disease in developing countries. Other important direct health impacts from household energy use among the poor include burns to children and injuries to women from carrying wood. Furthermore, a range of inter-related quality of life, economic and environmental consequences of household energy use impact on health through such factors as the time women spend collecting scarce fuel, and restrictions on educational and economic activity" (Schirnding, 2000).

Due to their disadvantaged social status, women have little decision-making power in their families, communities and countries, and have limited access to productive assets. Investments to improve stoves, kitchens and cooking fuels tend to be considered as marginal items when

men make the decisions about household purchases. Women interested in acquiring new energy equipment may lack the capital to buy it or be unable to obtain the money from their husbands.

Another factor is the lack of value assigned to women's labour (Cecelski, 2000). Women living in developing countries spend long hours on household survival activities, but despite this large expenditure of time and physical energy, their efforts are often unacknowledged.

Rural households affected by HIV/AIDS tend to experience severe labour shortages not only because the sick person is less able to work, but also because the other household members (often women and girls) spend increasingly more time on caring for the sick as the disease progresses. A field-study from Western Kenya (IFAD/FAO 2003) showed that women often spend two to five hours each day on collecting firewood, and that women in female-headed households in several villages listed water and firewood collection among their most time-consuming tasks. It is obvious that initiatives and support that can free labour may greatly assist households to cope with the impacts of HIV/AIDS as well as to provide rural women and men with more options to improve their livelihoods.

In addition to women's reproductive and household work, they also participate to a large extent in the informal sector of the economy. Rural women have become experts at multitasking, very efficient in managing their time. However this ability is not valued in the broader context of the labour market and women themselves often do not consider what they do as a real work. The following table depicts the role of women as energy managers, with descriptions of their coping strategies:

Table 1 **Coping strategies to deal with energy poverty**

| ENERGY USE | CONSTRAINTS | TRADITIONAL COPING MECHANISMS | IMPLICATIONS |
|-----------------------------|---|---|---|
| Cooking fuel | Fuel wood becoming scarce. Reduced availability of crop wastes as fuel and fodder. | Increased time and effort spent in fuel wood collection. Change in cooking practices and food habits. | Less time available for other household activities. Children, especially girls, enlisted to assist in fuel collection. Adverse impact on family health. |
| Fetching water | Environmental degradation leading to depletion of water sources like springs and wells. | Increased time and energy spent in water collection. | Conflicts and social disharmony, adverse health impacts of using poor quality water. Complete neglect of women's knowledge relating to water quality and needs in policies. |
| Fodder management | Decreased availability of fodder because of loss of common lands. | Increased time and energy spent in fodder collection. | Less time available for other household activities. |
| Home bound micro enterprise | Biomass based fuel becoming scarce. | Increased time and effort spent in fuel collection. Switch to inferior fuels. | Increased indoor air pollution impacting family health. |

Source: Dutta, 2003.

In 1996, the World Food Summit acknowledged rural women's contributions to food security and recognised the need to ensure that women and men have equal access to the resources needed for agricultural productivity and rural development. In 2001, the follow-up "Declaration of the World Food Summit: five years later" reaffirmed the need to ensure women's access to and control over resources, credit, services and benefits.

In the early 1990s, FAO's Socio-Economic and Gender Analysis Programme (SEAGA) began providing training and capacity building on how to conduct gender analysis in order to support gender mainstreaming in a variety of development activities. The SEAGA programme has developed handbooks for development professionals on mainstreaming gender in field-level projects, in macro-level policy and decision-making processes, and within relevant planning institutions. In addition, SEAGA has also produced guides on gender issues related to micro-finance and on how to collect gender-disaggregated data on agriculture and rural development.

A recent SEAGA guide for agricultural extension workers (FAO, 2004b) uses questions about household resource management as an entry point for understanding rural challenges and gender-based constraints affecting the achievement of development goals. Extension workers are encouraged to ask about the division of labour within households, sources of income and allocation of benefits, decision-making about resources, and differing priorities of men and women. While much of the discussion relates to agricultural activities, the questions and issues can be adapted for use in many related initiatives, including energy projects, since "rural livelihoods are not separate – rather they are complex, inter-linked systems of activities" (FAO, 2004b).

FAO's work on gender, rural development, wood fuel and forestry provides a strong technical and political basis for a new, innovative and ambitious programme on energy and gender, including through FAO's new Interdepartmental Working Group on Bioenergy.

2.3 SOME REGIONAL PORTRAITS

Africa

World Bank data related to income poverty since the late 1980s clearly show that Africa's share of people living on less than one dollar a day has risen (World Bank, 2001). The majority (nearly 70 percent) of Africa's people live in rural areas, and the most negative consequences are in sub-Saharan Africa where rural poverty is "great and increasing" and is accompanied by chronic hunger, malnutrition, and disease (IFAD, 2002b).

"In rural sub-Saharan Africa, many women carry 20 kilograms of fuelwood an average of five kilometres every day. The effort uses up a large share of the calories from their daily meal, which is cooked over an open fire with the collected wood" (<http://www.allafrica.com> in IEA, 2002). Environmental impacts associated with deforestation and desertification also

make it more difficult for women to find fuelwood. In the Sahel in recent years, women have had to travel distances over 15 to 20 kilometres in order to gather fuel and resources for household needs. Furthermore, biomass for cooking, used in inefficient ways, is a source of indoor and outdoor pollution.

In addition, the negative consequences of the spread of HIV/AIDS, and the failure of actions to contain it, are already being felt and will continue for several decades to come, as the disease strikes the economically active members of communities. In energy terms, this means that there will be less income for energy purchases, and the responsibility for gathering wood and fuel for daily activities will be increasingly placed on older people and young children (Makhabane, 2002). FAO has carried out several studies on measuring the impact of HIV/AIDS on food security and loss of livelihood (See for example, Stokes, 2003; www.fao.org/hiv aids)

Male migration from rural to urban areas has caused an increase of the number of rural household headed by women. Studies show that in eastern and southern Africa 25-30 percent of rural households are headed by women, either widows, single, divorced or separated women, or wives of male migrants (IFAD, 2002b). In general, women-headed households face more difficulties in obtaining energy supplies, and worse living conditions.

Improved energy services could play an important role in enhancing the life of the poor, particularly for women and children: “Electric light extends the day, providing extra hours for reading and work. Modern cook-stoves save women and children from daily exposure to noxious cooking fumes. Refrigeration allows local clinics to keep needed medicines on hand” (IEA, 2002). In 2002, FAO and the Global Environment Facility organized a Workshop on Productive Uses of Renewable Energy which emphasized the importance of ‘going beyond the light bulb’ to provide energy for income generation as the single most important way of moving poor rural societies out of the vicious poverty circle, and in that way also address many energy/gender/poverty issues.

Asia

“More than two thirds of the world’s poor are in Asia, with South Asia alone accounting for nearly half of them” (IFAD, 2002a). Poverty is disproportionately concentrated in the rural areas of the region, and despite progress recorded during last three decades in economic growth and poverty eradication, the rate of poverty reduction has slowed down in many countries. Poverty is concentrated geographically in remote mountain areas, drylands, and marginal coastal areas, and socially among women, indigenous people, pastoralists, internally displaced people, and the landless, as well as small and marginal farmers.

Poverty tends to threaten more women than men because of gender biases within their societies that limit opportunities for education, employment and land ownership. Gender disparities are evident also in the intra-household allocation of food and resources. Even the more egalitarian societies of the indigenous people show the tendency to attribute the final and ultimate control over land and any other property to men (IFAD, 2002a).

From an energy point of view, many parts of rural Asia share the energy profile of African rural areas. The largest portion of the energy supply is provided through individual or private effort at very low or even zero commercial cost. Fuelwood represents the most important source of primary energy to meet household requirements, and even many non-household activities rely on fuel wood for energy. For example, in Thailand and Vietnam, fuelwood and other biofuels are largely used in agro-based industries, including crop drying, tobacco curing, and preparation of animal feeds, and in small commercial businesses like bakeries and food shops (Polestico, 2002).

As in Africa, Asian rural areas have experienced a progressive reduction in the availability of fuel resources. This scarcity has serious consequences for women and children, since longer distances have to be covered and greater portions of time each day devoted to the energy supply. Children, girls in particular, are taken out of school to help their mothers. Missing out on education perpetuates the cycle of female illiteracy and poverty (Polestico, 2002)

Governments in a number of countries have initiated efforts to meet the energy demands of rural poor households and to improve their conditions, mostly through improved cook stove programmes. However, many of these initiatives have not obtained concrete results. Due to factors such as poor targeting and inappropriate technologies, as well as the exclusion of women and lack of attention to their real needs, these initiatives failed to reach the targeted beneficiaries. Moreover, the projects were not well accepted because they did not fit people's habits. Finally, the scale of the initiatives and relative dissemination rates has usually been very low. Where there have been positive outcomes, their success has been closely correlated with the involvement of local women in the design and dissemination of the stoves.

Rural electrification programmes can provide benefits for women in terms of saving labour and time, and improving health, security and income. A recent World Bank initiative, ASTAE (Asia Alternative Energy Programme) undertook Energy-Poverty-Gender (EnPoGen) studies to test the poverty and gender impacts of World Bank electrification projects in China, Indonesia and Sri Lanka. In Indonesia, women tended to appreciate increased security in the street at night thanks to lighting, and freedom from fear of fire from kerosene lamps (Madon, Gardener, 2002). The EnPoGen study in Sri Lanka, showed that the major benefit for women was represented by the time they saved (Maase, Samaranayake, 2002)

Sustainable energy strategies could make a considerable contribution to promoting poverty eradication in the rural areas of the Asian continent, if they were tailored to the needs and aspirations of the people, with a special focus devoted to women and the various indigenous populations.

Latin America

Global socio-economic indicators, such as MDG indicators, show that Latin America on the average performs better than Asia and Africa. However, these figures are based on aggregated data that hides the enormous inequalities that exist between and within countries. "Latin

America and the Caribbean is one of the regions of the world with the greatest inequality. Latin America is highly unequal with respect to incomes, and also exhibits unequal access to education, health, water and electricity, as well as huge disparities in voice, assets and opportunities. This inequality slows the pace of poverty reduction, and undermines the development process itself.

The richest one-tenth of the population of Latin America and the Caribbean earns 48 percent of total income, while the poorest tenth earns only 1.6 percent. In industrialized countries, by contrast, the top tenth receives 29.1 percent, while the bottom tenth earns 2.5 percent. Using the 'Gini Index' of inequality in the distribution of income and consumption, it was found that Latin America and the Caribbean, from the 1970s through the 1990s, measured nearly 10 points more unequal than Asia, 17.5 points more unequal than the 30 countries in the Organization for Economic Cooperation and Development, and 20.4 points more unequal than Eastern Europe". (World Bank, 2003)

Electricity is widely accessible in the region, especially in urban areas. Even so, many poor people depend heavily on firewood as their main household energy source used in cooking and heating. Only 2 percent of the total urban population does not have access to electricity while the corresponding figure for the total rural population is 48.5 percent (IEA, 2002). In total 56 million people in the region are without electricity and 96 millions rely on biomass as their main energy source. For these people biomass is likely to remain the main energy source in the near future.

Household energy is used comparatively more for heating purposes in Latin America than in Africa, due to the large percent of the Latin American rural population's settlements in high altitudes (Rath, 2005). There are also many similarities between the regions: much time is spent on firewood collection by women and children in particular and their health is severely affected by their daily exposure to smoke from cooking and heating. A study in Guatemala (Melo Branco, 2002) showed that women spend in average 8-11 hours per day on energy related activities such as fetching water, firewood, cleaning and cooking. Men spent in average 1-2 hours per day, and this was mainly providing firewood.

Brazil stands out as a country that has invested considerably in bioenergy production. Brazil is the largest producer of ethanol from sugar cane plantations cultivated for energy purposes (ESMAP, 2005). The country's success is mainly due to large scale production advantages and low labour cost nationally. The energy crop sector in Brazil has created employment opportunities, especially for unskilled labour in agriculture (ESMAP, 2005). However, little is known about the gender-related impacts or benefits of the bioenergy sector in Brazil, or elsewhere for that matter.

The energy crops produced in Brazil are mainly used as fuel for transportation. Many rural areas still rely on traditional biomass products in order to cover their energy needs, thus modern renewable energy sources are still not available for the rural population.

2.4 CLIMATE CHANGE – A CRUCIAL VARIABLE

Energy use plays a key role in the climate change context, as the combustion of fuels (oil, gas, and coal) contributes to most of the production of greenhouse gas emissions. Some of the poorest countries, with least access to modern energy technologies (hydrogen, geothermal or nuclear), are projected to be the hardest hit by climate change. Many of these countries are located in regions that are already subject to heat waves, drought, desertification, flooding tropical diseases and natural disasters, as well as poverty and lack of infrastructure. Climate variability is expected to cause additional negative effects on food security, crop yields, plant and animal diversity and ecosystem functioning. The Least Developed Countries, particularly those in sub-Saharan Africa, are also the ones that can least afford to adapt to expected changes in climate conditions.

In order to address climate change, there will need to be a transformation of the world's energy systems to promote energy efficiency, increased use of renewable energy technologies and cleaner conventional energy use. Efforts to control greenhouse gas emissions must be coordinated amongst combustion fuel users, however, with measures to address the needs of developing countries for increased energy services to support poverty reduction, improved human health and better local and regional environmental conditions.

There has been little reference to gender in the international climate change discussions. Proposed approaches and policy responses have emphasized scientific and technological measures to tackle the adverse effects of climate change. These measures generally have not been adequately evaluated in terms of their social implications, the vulnerability of poor men and women, and their ability to cope with these challenges (Masika, 2002). Nor has there been any consideration of the differential impacts that climate change could have on men and women. Women have been largely absent in the decision-making processes, and their roles in environmental management are often overlooked.

FAO has been considering how to make the Climate Change Convention (UNFCCC), as well as the Conventions on Biodiversity and Desertification, more sensitive to the needs of both men and women. One of FAO's roles is to help countries reduce their vulnerability to climate change and improve their capacity to measure, and reduce greenhouse gas emissions. Recommendations for increasing gender responsiveness include using gender budgeting to ensure equity in government activities, and collecting gender-specific data on environmental management and the impacts of higher levels of environmental insecurity related to climate change (Lambrou and Laub, 2004; Lambrou and Piana, 2005).

Climate change could add to water insecurity, and increase the work levels of women engaged in subsistence farming in the rural areas of Africa and Asia (Parikh and Denton, 2002). Women, and men, in these regions are highly dependent on biomass and forest resources for energy, and climate change could reduce their ability to obtain necessary environmental resources. Although they may be able to develop adaptive strategies to protect the sustainability of their livelihoods, the magnitude and scale of predicted environmental

stress is such that it can overwhelm their ability to react to the new threats. For instance, in areas threatened with drought and desertification, women's increased domestic care responsibilities could significantly reduce their opportunities to engage in income-generating activities (Masika, 2002).

However, given women's knowledge about management of natural resources, they could also play a crucial role in climate change mitigation and adaptation strategies. For example, in the implementation of the Clean Development Mechanism (CDM) one of the Kyoto Protocol's flexible mitigation mechanisms, women in rural areas might be targeted for a range of low emission technologies related to household energy, agricultural and food processing, forest management, and water pumping. Equal access by women to the CDM and other carbon funds and initiatives could promote the marketing of new efficient and renewable technologies to women on a large scale, for household energy usage as well as for charcoal production, brick making and agro-processing (Parikh and Denton, 2002). In fact, the additional value of emission reduction credits may make such investment projects more attractive (Wamukonya and Skutsch, 2001) (See also, Lambrou and Piana, 2005.)

FAO is concerned, however, that the CDM and other emission reduction credit schemes do not provide incentives for more sustainable fuelwood and charcoal production and use, despite the fact that improved biomass energy use technologies can provide significant benefits in terms of protecting health and preventing deforestation and land degradation. "Poor countries relying largely on woodfuels unsustainably produced, harvested and used are excluded from carbon payments, which could be so useful in moving towards biomass energy systems characterized by natural resource rehabilitation, cleaner indoor air and enhanced livelihoods" (FAO Press release, July 8, 2005).

3 TOWARDS GENDER SENSITIVE ENERGY POLICIES AND PLANNING

3.1 ATTENTION TO SOCIAL ISSUES RELATED TO ENERGY

From a development standpoint, expanded access to energy services is needed especially for the poor, the majority of whom are women. Conventional energy policies have focused on energy supply, with little attention to social issues related to energy. Alleviation of poverty in accordance with the targets set out in the Millennium Development Goals will require greatly expanded access to energy services that are affordable, reliable and of good quality. Energy programmes should be managed so as not to aggravate existing social problems and in fact, sustainable energy strategies can contribute to the solution of many of these problems, including gender disparities, if they are part of an integrated approach focused on meeting human needs (Piana, 2002).

Energy programmes have traditionally tended to concentrate on supplies of electricity and petroleum, or on dissemination of energy technologies, such as solar equipment or improved stoves. But the energy services needed for households, small business enterprises and community services are varied and a variety of energy options are needed, including electrical power, thermal energy, and liquid and gaseous fuels. The preferences and priorities of different groups and communities will be important factors in providing appropriate energy choices. Applying gender analysis to energy plans and programmes can help ensure the full inclusion of the “social dimension” of energy initiatives and lower the risk of project failure by identifying gender sensitive factors that can affect the success of an activity or technology in a specific context.

Gender analysis can be used to help incorporate gender-specific needs assessments into the design and evaluation of energy and development programmes. For example, village women could be asked to identify key problem areas where they would welcome external intervention, and then consider whether any energy inputs could bring about improvements in those areas.

In villages income generation is one of the priorities of women, and extension of work hours in the evening (possibly through solar lanterns) could improve the efficiency of home based cottage industries (FAO and GEF, 2002; Dutta, 2003). This approach gives much more attention to the nature of the problem at the user level, and involves a comprehensive analysis of the totality of user needs, unlike a piecemeal, supply-driven, energy technology approach.

FAO recognises the importance of looking at energy issues within a socio-economic context. For example, with regard to its wood energy programme, FAO has recognised that since wood energy is critical to the livelihoods of large numbers of rural people, policies and actions to move towards more modern and upgraded biomass energy systems must take into consideration the social and cultural implications of these changes (FAO, 2003).

Within FAO's field activities, the Regional Wood Energy Development Programme (RWEDP) in Asia particularly focused on the potential of energy projects to assist women in meeting their day to day needs, while also seeking greater social rights and economic benefits. Looking at women's involvement in wood energy supplies, not separately but in relation to men's and children's roles as well, the RWEDP stimulated greater awareness of gender issues among energy planners: "The crucial factors to consider here are who does what, and why; who has access to and control over the sources of wood energy. This type of analysis needs to be applied both to the existing situation and to the implications of any planned wood energy interventions. Such types of gender analysis will provide the basis for the planning of ameliorative measures where necessary" (FAO, 1996).

The RWEDP programme clearly recognised that women need improved energy services that go beyond better cooking and heating options: "...women increasingly have energy needs in their productive, bread-winning tasks. Many women today depend on wood or other biomass energy for independent commercial activities such as food preparation for sale, or are employed in establishments which operate on a wood fuel base. The need to understand

Table 2 **Energy-related options to address social issues**

| SOCIAL GOALS | ENERGY ROLES |
|--|---|
| Poverty eradication in developing countries | Improve health and increase productivity by providing universal access to adequate energy services, particularly for cooking, lighting and transport-through affordable, high quality, safe and environmentally friendly energy carriers and end use devices; Make commercial energy available to increase income-generating opportunities. |
| Assuring more opportunities for women | Encourage the use of improved stoves and liquid or gaseous fuels to reduce indoor air pollution and improve women's health; Support the use of affordable commercial energy to minimise arduous and time-consuming physical labour at home and at work; Use women's managerial and entrepreneurial skills to develop, run and profit from decentralised energy systems. |
| Supporting the demographic transition to longer lives and informed decisions about family size | Provide information about available choices regarding health, reproductive rights, and opportunities for women through communications methods that use modern energy carriers. |

Source: Adapted from Rukato, 2001.

and relate to women's needs in regard to these matters is thus of central importance in wood energy planning at all levels" (FAO, 1996).

3.2 AN INTEGRATED MULTI-SECTORAL APPROACH

The starting point in rural energy programmes should be to ask 'What do men and women need energy for? What are their different energy needs?', followed by looking at the overall context of community life, and addressing household needs as well as productive and entrepreneurial activities. Energy projects should be integrated in a holistic way with other improvements relating to health, education, agriculture and job creation. In reality, what people want is not energy *per se* but the services that it provides, such as heating, lighting, cooking, and storage of food, space conditioning and the provision of clean water and sanitation. Men and women also need energy for transportation, motive power for industry and agriculture, heat for material processing, for education, health, commerce, communication and other economic and social activities. The challenge is to "energise" rural economic and social development, and at the same time assure the sustainability of this process in environmental terms.

"Energy planners must realize that not everything will be directly under their control, and that they need to understand the decision-making frameworks of other sectors and work closely with them" (Wamukonya, 2002). This is an important message for the design and implementation of successful energy programmes and associated initiatives in the context of sustainable and equitable development. If appropriately designed to meet women's practical, productive and strategic needs, energy initiatives can have positive effects on the general well-being and welfare of rural livelihoods and communities. The following table helps to depict these findings:

Table 3 Energy initiatives

| ENERGY FORM | WOMEN'S NEEDS | | |
|-------------------|---|--|---|
| | Practical | Productive | Strategic |
| Modern Biomass[4] | <ul style="list-style-type: none"> - Improved health through better stoves; - Less time and efforts devoted to gather and carry firewood. | <ul style="list-style-type: none"> - More time for productive activities; - Lower cost to process heat for income generating activities. | <ul style="list-style-type: none"> - Can allow for improved monitoring and control of natural forests in the wider context of community forestry management. |
| Mechanical | <ul style="list-style-type: none"> - Milling and grinding reduces drudgery; - Easier to transport water and crops. | <ul style="list-style-type: none"> - Increases variety of enterprises. | <ul style="list-style-type: none"> - Transport allowing access to commercial, political and social opportunities. |
| Electricity | <ul style="list-style-type: none"> - Water pumping reduces need to haul and carry water; - Lighting improves the working conditions at home; - Mills for grinding reduce drudgery. | <ul style="list-style-type: none"> - Increased opportunities for activities during evening hours; - Provide refrigeration for food production and sale - Power available for specialised enterprises such as hairdressers and internet cafes. | <ul style="list-style-type: none"> - Safer street allow participation in a wider range of activities (meetings, courses, etc); - Improved access to information through radio, TV and internet. |

Source: Adapted from Skutsch, Clancy and Leeuw, 2005.

Although biomass fuels still represent the primary energy source for rural poor people, the adverse health and environmental impacts of burning these fuels can be reduced by improved stoves and new technologies that convert solid biomass into cleaner, more convenient energy forms, including gases, liquids and electricity. Besides bio-energy crops, agricultural wastes such as biogases from sugarcane processing, sawdust and off-cuts from the timber industry, fruit pits and pruning from orchards, coffee and rice husks and coconut shells can be used to produce considerable amounts of energy (Kammen, Bailis and Merzoga, 2002).

Energy initiatives should be part of a framework where technology and social programmes have the same objective: promoting people's welfare. Focusing on people, who must be empowered with know-how and access to resources, makes the issue of energy and development much more open to considering gender differences. The challenge is to develop sustainable multi-dimensional energy strategies that integrate gender variables, with women treated alongside men as strategic partners rather than passive beneficiaries.

3.3 PARTICIPATORY NEEDS ASSESSMENTS AND EQUITABLE DECISION-MAKING PROCESSES

Since the needs of different groups and communities vary widely, the expertise of local people represents an essential input for the success of any energy initiative. They can use their experience to contribute to finding appropriate solutions. A people-centred approach to energy planning should be based on an assessment of people's needs rather than a technology driven approach. Undertaking a needs assessment prior to considering project design will ensure that the approach is grounded in the specific reality of the people involved, not driven by pre-conceived intentions (Dutta, 2003). However, effective participation requires the involvement of all people, both men and women, in needs assessments for energy planning.

For the most part, women have had limited opportunities for participation in rural energy development. But they are the experts most familiar with the household fuel supply strategies, cooking needs and habits, appliances and utensils, and environmental conditions. They may have contributed to the design of their own stoves(if someone has asked them!), or become familiar with tree species and their different uses in order to manage their fuel supply, or made complex decisions about optimising time and costs in situations where fuel is scarce (WEC/FAO, 1999).

These "data" represent relevant information for the formulation of effective energy strategies. Suitable arrangements are therefore needed to facilitate women's active involvement in energy sector planning. But participation in energy decision-making within households, communities, and different levels of government will require greater levels of social and political empowerment for women. Currently, when energy technologies must be purchased, men tend to play a central role in the decision-making because these are important financial decisions, even when they involve the kitchen, which is generally viewed as a women's domain.

Table 4 Decision-making process in cooking energy system in rural households

| COMPONENT/SUB-SYSTEM | TYPICAL DECISION MADE | PARAMETERS AND VARIABLES INFLUENCING THE DECISION-MAKING |
|----------------------|--|---|
| Kitchen | Location of kitchen (M) Construction material of kitchen (M) Layout of kitchen (W) | Economic status Climate Availability of construction material Secondary use of kitchen |
| Fuel | Which fuel to use (M/W) | Availability in terms of costs and distance Burning characteristics Taste Convenience |
| Device | Which device to use (M/W) What size (W) How many (W) | Economic status Task suitability Fuel type Awareness level Cooking cycle Time availability Culture, inhibitions, etc. |
| Vessel | Material (W) Size (W) Shape (W) | Economic status Tradition Food habits |
| Food | Type (W) Quantity (W) | Habits |

W: decision taken by women; M: decision taken by men.
Source: Dutta, 2003.

Such factors as the above should be analysed in the planning of household energy initiatives, because men and women may have quite different perceptions about energy and its associated benefits. For instance, while men measure the benefits of electricity in terms of leisure, quality of life and education for their children, women consider electricity and modern energy options as ways of lightening their workload, reducing expenditures, improving health conditions and cleanliness, and boosting their own self-esteem. However, for women to gain these benefits, they may need access to and control over their own income, or a sympathetic husband (Clancy, 2003). Expansion of energy services to reduce women's burdens is thus linked to their empowerment within their families and communities.

3.4 ENERGY FOR HOUSEHOLD AND ENTREPRENEURIAL ACTIVITIES

Household energy can be an entry point for supporting rural development by offering opportunities in terms of time and labour saving, income generation, health improvements and social empowerment (Clancy, 2003). In the household context, cooking accounts for the largest single energy use in low-income communities (Cecelski, 1998).

However, a broader definition of household energy needs to take into account energy needs for informal sector enterprises, which are generally managed by women and located in the

Table 5 **Small-scale energy-intensive enterprises operated by women**

| ACTIVITY | OBSERVATIONS |
|--|---|
| Bakeries | In Kenya wood represents 25% of bread production costs |
| Hotels, restaurants, tea shops, guest houses | In Nepal 816,865 tones wood annually |
| Rice parboiling | In some districts of Bangladesh 15-20% of firewood |
| Food processing and preparation | In Nepal 13% of total household income; 48% of mothers in Dangbe district in Ghana engaged; 49% of women in one village in Burkina Faso |

Source: Adapted from FAO 1988; and Gordon, 1986 in UNDP, 2000.

home. These enterprises, which are largely unreported in national economic statistics, include activities such as: knitting, beer brewing, dress making, crocheting, palm oil processing, soap making, hairdressing, metal working, pottery making, basket weaving, cane work, spinning and textile production and retail trading. Despite their very low rates of return, these ‘cottage industries’ provide an important source of income for women – while they also carry out their domestic chores. Since some of the informal enterprises carried out by women, such as food processing, are energy intensive and require large quantities of biomass fuels, access to cleaner fuels and improved energy efficiency would provide considerable benefits for these women.

Because of the official invisibility of women’s micro-enterprises, government policies to support entrepreneurship generally do not consider economic constraints that apply to women’s work. Agencies and donors also often overlook these activities because of their ‘informality’, and fail to address women’s special needs with regard to credit, financing and equipment acquisition.

The design of energy initiatives dealing with household systems should integrate and support these economic activities specific to women. Affordable and reliable renewable energy options can support the creation of additional home-based entrepreneurial activities in rural areas and provide a dynamic engine for rural economic development.

Regarding productive uses, FAO has published various reports highlighting how small scale renewable energy systems can promote household, cottage and other income generating activities. (See Table 4 in van Campen, Guidi and Best, 2000.)

Micro-enterprises have sometimes taken advantage of residential electrical connections, using them for income-generating opportunities. Where there is no electrical grid, micro-finance programmes have sometimes helped provide energy-related loans for informal enterprises, thereby stimulating expansion of rural energy services. Thus, the micro-enterprise development and rural renewable energy supply sectors seem to be highly complementary. The enterprises use electricity to increase their productivity, enhance the local economy, and improve the quality of life.

Women operating business enterprises also need transportation systems that allow them to obtain materials and reach markets and modern communications equipment. Without these energy-related services, they will not be able to pursue the kinds of economic activities that could revitalise their lives and transform poor, rural communities.

3.5 DECENTRALIZED AND RENEWABLE ENERGY OPTIONS

In rural areas, decentralized renewable energy technologies offer a variety of possibilities for exploiting locally-available energy resources. Mini-hydro generators, wind turbines, village-scale bio-fuel systems, and solar photovoltaic panels represent promising solutions for electrification, in some cases through hybrid systems that combine some of these systems, and/or use back-up diesel generators. Innovative energy planning and supportive political and economic enabling frameworks could contribute to a considerable increase in the availability and use of renewable energy systems.

A number of other innovative low-cost energy technologies suitable for the rural poor have been developed and are beginning to demonstrate positive levels of success. These include: improved bio-fuel cook stoves; low-cost solar pasteurising units; ram pumps for irrigation; pico and micro-hydro technologies suitable for agro-processing, and efficient manually-operated water pumping and agro-processing technologies. Approaches focusing on small-scale decentralized renewable energy systems, integrated with measures for improving access to credit, information, technical training and markets, can offer improved economic opportunities for rural men and women while helping to prevent environmental damage.

Through its Bioenergy Programme, FAO is currently focusing on ways in which modern 'biofuels' produced from crops, wood, agricultural wastes and livestock manure can reduce poverty and hardships in rural areas, increase food security, and support sustainable development. Locally available biomass can be used to produce cleaner-burning, more efficient solid fuels, as well as biogas, liquid bioethanol, biodiesel fuels or bioelectricity. Besides providing cleaner cooking and heating options, these fuels can also be used as alternatives to expensive, imported fossil fuels for process heat and for providing power for machinery and motor vehicles.

Production of biofuels in rural areas could lead to a number of new social, economic and environmental benefits: increased availability and affordability of energy for household and commercial uses; new markets and income for rural farmers as suppliers of raw materials for bioenergy industries; and mitigation of climate change impacts by substituting renewable, carbon-neutral biofuels for the fossil fuels associated with the build-up of greenhouse gas emissions (Jurgens, Best and Lipper, 2004).

In order to make it possible, however, for both men and women in rural areas to see gains from biofuel initiatives, it will be necessary to address the social constraints and cultural

biases that limit women's access to education, training and decision-making processes, and restrict their rights to own land, borrow money, engage in business, and benefit from government programmes such as agricultural extension services.

3.6 ENABLING FRAMEWORKS FOR SUSTAINABLE ENERGY ALTERNATIVES

Government actions are needed at both the national and the local level to remove the barriers that impede the spread of sustainable energy initiatives. These include actions to remove inappropriate subsidies; take into policy consideration any environmental damage; adapt regulations to support the introduction of advanced energy technologies; liberalise energy markets; reform fiscal rules in the energy field; and support capacity building (Piana, 2002).

It is important to coordinate energy-related policies with actions taken by other government ministries, since energy decisions affect other sectors, such as agriculture, environmental protection, social welfare and economic development. Traditional approaches in which central governments were responsible for all the essential phases of the planning, formulation and specification of the energy policy need to be reoriented towards more decentralized schemes. This can open up possibilities for more local decision making, and greater likelihood of participation by women in rural areas.

Most people are not aware of the opportunities associated with alternative energy options. In this case, governments can launch promotional campaigns based on good and objective information, with a view to making people well aware of sustainable energy alternatives and their economic advantages. Governments themselves have difficulties receiving adequate information and (gender-sensitive) data that allows them to have clear knowledge on energy issues necessary for decision-making activities. A logical step beyond information is involvement. Rural energy projects have more opportunities for success when participatory appraisal methods are included as components of the energy programmes and women are directly involved in the whole decision-making process.

In terms of gender mainstreaming, there need to be initiatives at all levels of government to ensure that the challenge of gender equality becomes a visible and key concern in policy and planning. At the programme level, all energy interventions should be designed to create opportunities for women's empowerment, thus facilitating progress towards the goal of gender equality.

3.7 INNOVATIVE FINANCING SCHEMES

Financing limitations present considerable challenges for rural energy expansion. The up-front capital costs of renewable and energy efficient technologies can represent barriers for

the rural poor, who have difficulty getting credit from conventional banks due to their lack of assets for collateral. Banks and financing agencies are generally not equipped to manage a myriad of micro-projects. Women often face additional cultural and legal barriers in applying for bank loans. Overall, there is a shortage of capital available for funding small scale decentralized energy systems. Possible solutions involve the organization of ad hoc (specialised) financing institutions, and mechanisms for aggregating demand. Governments as well as international agencies, recognizing the difficulties faced by poor farmers and rural dwellers in obtaining credit for investment in their productive activities, have begun to design programmes tailored to meet their specific needs (FAO, 2000).

One of the most interesting innovations in this framework is represented by micro-credit loans directed to the rural poor. Micro-finance programme overcome some of the problems of delivering rural credit to the poor by offering collateral-free loans at near-market interest rates, through community based programmes operated by financing institutions or NGOs (FAO, 2000). Micro-credit programmes have been particularly targeted to women, providing small amounts of funding for short-term working capital, flexible and longer repayment schemes structured in small and frequent intervals.



4 THE WAY FORWARD

4.1 TOWARDS ACHIEVEMENT OF THE MILLENNIUM DEVELOPMENT GOALS

Between now and 2015, national and international development efforts are expected to focus on the implementation of the Millennium Development Goals. Although there is no specific MDG on energy, it is widely understood that increased access to energy is an essential factor in fulfilling most of the MDGs, including combating extreme poverty and hunger and empowering women. The critical role of energy in sustainable development was the subject of the first paper produced by the new UN Energy group – “The Energy Challenge for Achieving the MDGs” which discusses the links between the MDGs and energy access, conversion and utilization for enhanced livelihoods and poverty alleviation. (See: <http://esa.un.org/un-energy/>, 7/22/2005.)

It is less clearly understood, however, that ‘gender-blind’ approaches to energy planning fail to take into account critical information about people’s real energy needs and priorities, especially in poor rural communities.

Over the past few years, a number of organisations have called attention to the linkages between energy, poverty and gender roles. (UNDP and ENERGIA, 2004.) The purpose of this work is not only to improve the effectiveness of energy programmes, but also to support the achievement of the Millennium Development Goals relating to gender equality and the empowerment of women, improved health and education, and environmental sustainability (Havet, 2003).

It is difficult for many traditional energy planners to understand how ‘gender mainstreaming’ and the ‘empowerment of women’ relate to their work, as these appear to be political or social welfare concerns far removed from decisions about fuel supplies and technology choices. Gender sensitivity may be viewed as an ‘add-on’ to energy programmes, one that is easy to

drop off. On the other hand, gender policy specialists rarely pay attention to energy issues, and therefore do not generally play an active role in energy planning or policy-making.

Integrating energy projects into other types of development programmes can help to shift the focus from technology-driven energy interventions to more integrated initiatives that take into account a community's social and economic development needs. In that context, it is likely that concerns about women's needs will seem more understandable. Promoting increased participation of women in energy decision-making – at the national, local and household level – is another way to help ensure that women's concerns are taken into account.

4.2 ADVOCACY IN INTERNATIONAL MEETINGS

Between May 2005 and May 2007, the focus of the work of the UN Commission on Sustainable Development (CSD) will be on energy, climate change and industrial production. Gender mainstreaming is viewed as a cross-cutting issue within the CSD's work plan, to be considered in relation to each sectoral issue.

Within the UN system, CSD processes are especially open to participation by a wide variety of stakeholders, which provides important avenues for advocacy, information sharing and the formation of partnerships for sustainable development initiatives. Women are represented at the CSD as a 'Major Group', along with NGO's, business, trade unions and indigenous people, among others. Given the emphasis on women's energy concerns in the CSD 9 decision, and the current increased interest in gender and energy linkages, the CSD's 2005-2007 work cycle will provide additional opportunities for integrating gender sensitivity into national and international energy programmes (Karlsson, Oparaocha, 2003).

In addition, the entry into force of the Kyoto Protocol, and implementation of its Clean Development Mechanism, will also provide a new context for introducing gender and energy concerns into climate change mitigation and adaptation strategies. Programmes designed to expand the use of low-emission technologies for rural development could involve large-scale marketing of cleaner energy alternatives to women for household and productive uses (Masika, 2002).

In advocacy and awareness-raising efforts, it is important to point out the virtues of fundamental fairness, and to show that differences in the social roles of men and women do not necessarily need to result in discriminatory policies. Most people can see that there will be positive social and economic improvements for families and communities when women, as well as men, have better health and education, more time and higher incomes. In addition, even though women are more often the ones who suffer from inequities, gender analysis should look at men's roles too, not just the constraints imposed on women. For example, there may be instances where policies or projects unintentionally discriminate against men or boys, and those should also be considered parallel to those of women.

4.3 INVESTMENTS IN RESEARCH AND TRAINING MATERIALS

Specific gender and energy analysis tools

Gathering gender-specific data about conditions in rural areas can show otherwise hidden biases in policies on land ownership, access to credit, education, legal rights, and participation in farmer's organisations or extension services. FAO has actively promoted the development of reliable, gender-responsive statistical databases, and FAO's SEAGA programme has played a leading role in providing tools, training and materials for mainstreaming gender in natural resources management, forestry and other related sectors. These tools can be expanded and applied to new programmes to make them responsive to the needs of rural women as well as men.

SEAGA has already produced gender mainstreaming questionnaires that could be adapted for use in the energy area. A suggested framework for mainstreaming gender questions into energy project planning is presented in the article 'Gender analysis for energy projects and programmes' by Skutsch (2005). Additional suggestions for developing questionnaires and other gender-analytic tools related to the energy sector can be found in "Gender and Energy for Sustainable Development: a Toolkit and Resource Guide" (UNDP and ENERGIA, 2004).

The World Bank's Asia Alternative Energy Program has provided a model methodology for monitoring and evaluating the impacts of rural electrification projects on poverty alleviation and gender equity (Winrock, World Bank and Mallika, 2003), and several efforts have been made to incorporate a gender-sensitive energy perspective into project planning cycles (Dutta, 2003; UNDP, ENERGIA, 2004; Skutsch, 2005). More research is needed, however, to develop better analytic, data-gathering and monitoring tools, and to examine ways of incorporating gender concerns into energy and rural development policies and programmes.

Case studies illustrating gender-sensitive project approaches can provide practical examples of participatory needs assessments, gender disaggregated data collection, application of gender analysis tools and the development of targeted indicators and evaluation methodologies. UNDP's Energy and Women project produced a book of case studies focusing primarily on women's use of energy for income-generating activities (UNDP, 2001) and ENERGIA News publishes illustrative case studies on a regular basis, but more of this type of materials need to be presented in journals and training courses targeted towards the majority of energy and development planners, rather than just those already interested in gender issues (Skutsch, 2005).

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