ENERGY, WOMEN AND RURAL POVERTY:
A review focusing on Latin America

Final Draft.

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ABBREVIATIONS AND ACRONYMS

µg/m3 micrograms per cubic meter
ALRI acute lower respiratory infection
ARI acute respiratory infection
CIDA Canadian International Development Agency
CO carbon monoxide
COPD chronic obstructive pulmonary disease
DALYS disability adjusted life years
EnPoGEN Energy, Poverty and Gender
ENSIGN Energy Services and Income-Generating Opportunities for the Poor
ESMAP Energy Sector Management Assistance Programme
FAO Food and Agricultural Organization
GAD Gender and Development
GDP gross domestic product
GENES Mesoamerican Gender in Sustainable Energy
GNI gross national income
GTZ Deutsche Gesellschaft für Technische Zusammenarbeit
GVEP Global Village Energy Partnership
HEDON Household Energy Network
IAP indoor air pollution
ICS improved cookstoves
IDB Inter-American Development Bank
IDRC International Development Research Centre
IEA International Energy Agency
IFAD International Fund for Agricultural Development
ITDG Intermediate Technology Development Group
LAC Latin American and Caribbean countries
LPG liquefied petroleum gas
LSMS Living Standards Measurement Survey
MDG Millennium Development Goal
NGO nongovernmental organization
OAS Organization of American States
OLADE Organización Latinoamericana de Energía
PJ Petajoule
PM particulate matter
PV Photovoltaic
SPV Solar Photovoltaic
TSP total suspended particles
UNDP United Nations Development Programme
USAID United States Agency for International Development
WEC World Energy Council
WHO World Health Organization

WID Women in Development

PREFACE AND ACKNOWLEDGEMENTS

This report, *Energy, Women and Rural Poverty: A review focusing on Latin America,* has its origins in the needs of a longer-term project in the region. The larger project is supported by the Canadian International Development Agency (CIDA) and is executed by the University of Calgary and the Latin American Energy Organization (OLADE). The larger project has a number of goals and objectives itself and one of them is to develop energy policy guidelines and strategies for rural energy development, incorporating social and gender issues. The gender and rural poverty component is managed by the Pembina Institute of Calgary (see http://www.pembina.org/international_eco2.asp for more information on the project). The recognition of gender issues, the need to undertake gender analysis of rural energy policies and projects, and mainstream gender in rural energy planning, led to the request to review the pertinent issues in the region.

This initial objective was to highlight some key issues and experiences in the region that would enable the project sponsors to organize a regional policy workshop. Initially the work was structured to organize an electronic discussion with key stakeholders in the region and with potential workshop participants; and to develop one or two country case studies. Unfortunately, the short time line, resource and logistical constraints, prevented participatory work both in the field and electronically. Thus the report is based on reviews of published materials and a small number of consultations.

The method proved less than ideal because neither energy and gender, nor energy and rural poverty issues, have been an area of focus among donors, researchers and policy makers in the region. This result in itself is surprising and merits discussion. Hence the report first raises the question whether this apparent lack of attention in the region is appropriate because these issues are not important for the region. It suggests that the answer is negative. The reasons for the lack of experiences in the region may be found in the low priority to rural poverty and to the intersection of gender, poverty and energy. This is partly due to the many other priority problems in the region on gender issues, such as violence against women and asset distribution, which makes the problems related to energy a low priority for women's groups. The absence of regional data required changes to the methodology and focus. The report is based on document reviews from global studies and from other regions, supplemented by a small number of reports from the region on the intersection of the issues of rural poverty, energy and gender, where available. The author's personal experiences and discussions with a few experts working on these issues in the region supplement the sparse literature.

The findings suggest that much work remain to be undertaken by the various stakeholders in the region. It is hoped that the report can contribute to increased policy attention in the region, leading to actions that can assist and enable rural women and men to meet their energy and developmental needs. I am confident that the project sponsors, especially OLADE, the pre-eminent regional organization for energy issues, will take up some of them on a priority basis. I hope they and local and external partners, will build on this short review to add and elaborate on the many issues that could not be covered here. Policy Research International's contribution to the project is limited to this review.

I gratefully acknowledge the support of several individuals and institutions in preparing this report. CIDA provided the funds, which allowed this review to be possible, and Paul Ragusa and Philip Schubert provided input and assistance in locating documents of some CIDA projects in the region. A number of other agencies that work in LAC on the problems of poverty, women and energy also provided access to their work and experiences. Especially notable are Gabriela Vega and Mark Wenner at IDB; Rita Bowry, Esther Matharu, Cristina Echavarria and Federico Burone at IDRC; Alice Abreu, OAS; Abeeku Brew-Hammond, manager GVEP; and the ESMAP, the joint World Bank/UNDP program on energy; for their help in directing me to some of their experiences, reports and the work of their institutions. I am grateful to Elizabeth Cecelski for providing me with key comments, critical advice, access to her extensive work and experience, and to the ENERGIA network; K V Ramani for personal communications on the ENPOGEN and ENSIGN projects, Tony Tillett in Santiago for materials from CEPAL; and Andrew Barnett for linkages to recent DfID work on energy, poverty and gender and to Eva Rathgeber for sharing her work in progress on gender. I also acknowledge the help provided by Byron Chiliquinga, OLADE, and Anya Knechtel, Carol Brunt and Ellen Francis, from the Pembina Institute, for their inputs along the way and their forbearance, which have been important for the shape and the preparation of this report. Dan Markel greatly contributed in the preparation of this report by providing assistance with data collection and analysis, reviews of the literature, the creation of tables and charts, and some of the writing. A number of readers have also sent valuable suggestions to earlier drafts. I thank all of them for their assistance and support.

Of course none of the institutions or individuals named is responsible for any errors or omissions that remain and those are entirely my own. Similarly, the views and recommendations made in the document do not necessarily represent the views of any of the institutions named here.

Amitav Rath
31 May 2005

EXECUTIVE SUMMARY

This report on rural poverty, energy and gender with a focus on Latin America is intended as a background report highlighting some key issues, and providing references to significant documents. The objective is to enable the project sponsors, University of Calgary and the Latin American Energy Organization (OLADE) to organize a follow up regional policy workshop on the issues to develop policy and strategies for the region. The report is based largely on reviews of published materials and a small number of consultations. It summarizes the issues that have been identified globally, while orienting these to the Latin American countries, and develops a relatively robust set of conclusions and policy directions, that can be taken forward by different stakeholders as well as the primary partners.

The report focuses on the issues that are at the intersection of the three sets above: rural poverty, energy and gender. Beyond the wide scope of the topics, another challenge is to cover the diverse countries and populations of the region, with 33 countries and 13 other political units. This proved even more difficult because the literature on the intersection of rural poverty, energy and gender is overwhelmingly on the issues, problems and experiences in Africa and Asia. This lack of attention in Latin America is likely due to the low priority given to the problems of rural poverty in the region; the fact that gender concerns in the region appear to be dominated by non-energy issues; and energy studies focus on concerns other than gender and poverty.

The report starts with a subset of issues on poverty and links the issues to the MDGs, the current global consensus on minimum development goals. It determines that rural poverty is a much larger problem for the region than commonly assumed; poverty and lack of access to energy are significant problems for rural communities, and for higher percentages of women and Indigenous people. Aggregate figures often hide problems of poverty, gender and energy and it is therefore important for better data disaggregated by location and gender. The problems suggest that one high priority for action should be for policy advocacy to increase the attention paid to this group of issues nationally and to remedy the lack of attention to energy in the MDGs. An important opportunity is available for policy advocacy through the review of the MDG+5 in the Fall of 2005 and useful proposals have been made in the Millenium Report to incorporate household energy use, indoor air pollution and health as a goal which should be supported.

The second section explores the links between energy and poverty, both direct and indirect. Energy analysts often deal with national and global policies related to energy supplies, financing, supply structures and environmental costs. The poverty focus, on the other hand, leads to the problems of two billion people in the world, a majority of whom are women, who depend on traditional fuels for cooking, a similar number without electricity, and most of them without access to energy services for productive purposes to enhance incomes. It points out that providing them with the minimum energy required for household use is insignificantly small in terms of the total investments required, or the impacts on global warming, even if all poor households were provided with fossil fuel based energy services. It finds that meeting the cooking energy needs of all poor rural households in Latin America is a very small amount in the order of two hundred million dollars. This is a goal that could be easily met within the MDG framework if only policy attention can be focused on this problem. At a micro level the section deals with the different energy needs of men and women and how meeting these needs helps meet the MDGs.

The third section reviews the evolution of gender frameworks, the process of mainstreaming gender in development, and the gender perspectives on energy and poverty. In the development field the systematic incorporation of women was a late realisation and was only legitimized in 1970. The first phase is termed the “women in development” or the WID perspective. WID served to integrate women and their concerns into development projects and thus served to make projects more efficient and effective in terms of their goals. However it was criticised in that it did not provide for the tools or a framework to examine and correct the root causes of inequality of women, it ignored the reproductive burdens on women, and, considered women in isolation from their social context. The Gender and development approach added these elements to the framework, integrated work inside and outside the household, both paid and non-paid, and emphasized women were not simply passive recipients or victims but are key change agents who need to be empowered to solve their problems. Empowering stresses the need for women to organize and to acquire greater political voice. The report then provides one short exposition of the gender framework and discusses the mainstreaming of gender. In the discussions of mainstreaming the document reports progress as well as a number of difficulties in applying these concepts in general and those that are specific to infrastructure and energy, and to the low demand in the region for mainstreaming. One of the reasons for poor integration of gender in energy policy and projects has been due to the earlier lack of appropriate tools. The document provides links to a number of the most recent gender frameworks and tools that have been developed to incorporate energy. It ends with the caution that there are limits to the “explanatory power” of both “gender” and “energy” to development.

The fourth section summarizes some of the main lessons from energy interventions and suggests that the major change in thinking about energy needs of poor, men and women, in LAC as elsewhere are to disaggregate energy services required for household, community and for productive needs. Ideally all three need to be provided for but where a choice has to be made there are different trade offs. It discusses recent findings on household energy use and indoor air pollution and finds that the health impact is much worse on women and children than assumed earlier. This is one reason for a focus on this issue. Household energy issues provide an entry point for rural development (again together with related efforts) and for women’s empowerment. Dealing with it and with lighting for the household offers opportunities for time and labour saving, income generation, health improvements and social empowerment. Other entry points are provided through access to energy for production and income generation, and, for community uses. They each have different facets and their unique characteristics need to be considered in the plans. It looks at lighting needs and why electricity is important for both lighting and for some productive uses. The section discusses the potentials of biomass based energy supplies as a highly desirable alternative and adds that in the design of any interventions, attention needs to be paid to public and private partnerships, financing and credit, and finally participatory processes for problem identification, determination of solutions and for empowerment.

The final section concludes that policy advocacy to increase the priority of these issues is important. It advocates improved data collection at the household level on energy use for domestic cooking, lighting and productive needs separately, together with dis-aggregation by gender. It reiterates that lack of data leads to invisibility, invisibility means no interest, no policy change and no resources and that this is true for poverty, gender and energy. The report strongly recommends that all development oriented projects place their data on the Web so that networks of groups and individuals can access the data and not have to constantly rediscover the same problem using the meager resources allocated in the process before any new and effective

actions can be promoted. All solutions require partnerships and these must include the international with the national, local institutions and local people, and be intersectoral. This leads to the third recommendation that international projects must ensure that they link with and help build the small and incipient networks in the region such as GENES that have been struggling to provide advocacy and knowledge sharing of tools and experiences in the region. It then concludes with a set of ten key lessons that emerge from the experiences on addressing poverty, and improving energy and gender equity in projects around the world.

INTRODUCTION

The development issues that deal with women and gender, the influence of gender differences on the needs and solutions most relevant for women and men; second, the issues of rural poverty, the conditions and the needs of the rural poor; and third, the issues related to energy, are each important in their own right and cover a large terrain. Within each there is also a range of literature ranging from highly technical issues of theory and design, to findings related to the actual situation on the ground, and, the social and economic policies that promote access, reduce costs and increase benefits for poor rural women. This requires the establishment of some boundaries for this review. This report will focus on the issues that are at the intersection of the three sets above, poverty, energy and women (see Figure 1 below)[1].

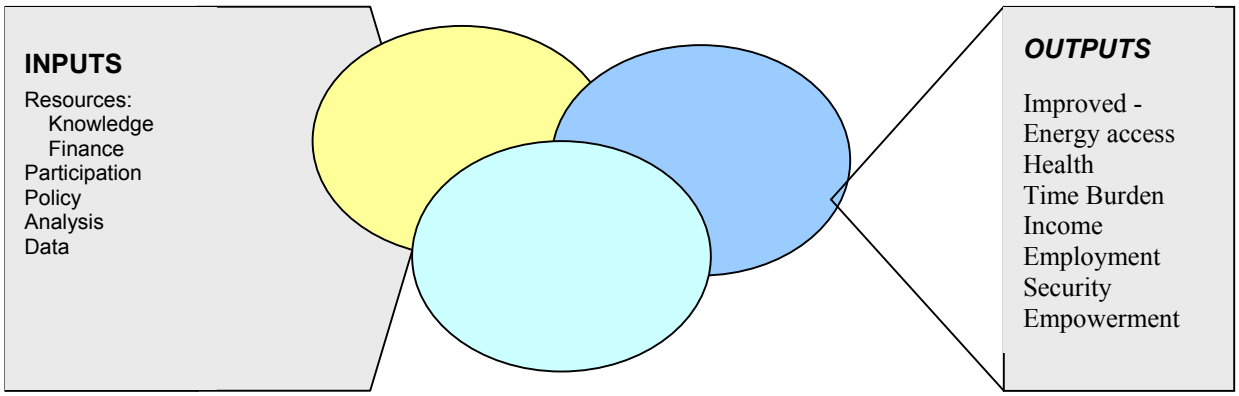


Figure 1: A diagram of the issues relevant to this report.

There have also been many recent and quality reports on the topic of energy, women, and rural poverty[2]. Thus shedding new light and providing useful information presents a major challenge. Providing a succinct summary of the key issues due to the importance and inter-relations of each is also challenging as is offering an overview that adequately covers the diverse countries and populations of the Latin American and Caribbean region, with 33 independent countries (and 13 other political units).

The task of reviewing these issues and experiences focused in and about Latin America, and on energy as it relates to issues of rural women and gender was found to be even more difficult as the literature on energy and women is predominantly on the issues, problems and experiences in Africa and Asia. Since women constitute almost half the population in each continent, and, all of them require energy for productive and reproductive needs, gender issues related to energy in

[1] Among important issues that we will not touch will include urban though it and the inter-relations between urban and rural areas is important in LAC.
[2] A list of recent reports issued by global agencies, specialized networks, and key experts that cover issues relating to rural poverty, women and energy can found in the bibliography.

Latin America should be of greater interest to researchers and policy makers than the evidence suggests. This lack of attention is likely due to the low priority given to the problems of rural poverty in the region, possibly reinforced by bias on the part of policy makers to gender issues and to the needs of ethnic minorities who are predominantly the rural poor in Latin America. This is discussed further in the report.

By summarizing key issues that have been identified globally, while examining Latin American countries, within the limitations of available data, an overview of the key problems are provided. From this we attempt to develop a relatively robust set of conclusions, and policy directions, that can be applied by many different stakeholders working on these issues as well as the partners in the CIDA, OLADE and University of Calgary project, while not engaging in wider debates on gender, poverty or energy.

The report starts with subset of issues on poverty. It starts with the Millennium Development Goals (MDGs), as this is the main driver of development efforts currently. It examines the goals and indicators outlined in the MDGs that deal with our three themes and their intersection. After several decades and many billions of dollars, the MDGs have been based on the conclusion that development efforts in the past have often not been coherent and that resources have been grossly inadequate and poorly spent to achieve desired goals. Efforts at greater coherence and effectiveness led to the Millennium Development Goals (MDG), the most comprehensive articulation of goals and commitments regarding international development[3]. Any development policy work seeking donor support must link itself to the international context as laid out by the MDGs. It is important to note, however, that none of the 8 MDGs deal with energy, and only 1 indicator out of 48 does concern energy[4]. Additionally, although several goals recognize inequalities suffered by women, none focus specifically on the rural poor[5]. This omission is unfortunate as the provision of improved energy services for all household reproductive needs can have immediate, significant, and direct development and poverty impacts on rural and poor women.

The second dimension is the availability and accessibility of appropriate energy services for productive uses. This is often a longer-term need and can be a critical enabling factor for achieving poverty reduction and sustainable development. But it must be emphasized that energy services alone are usually insufficient, and in many cases, cannot directly lead to large development or poverty impacts, without complementary inputs and policy. Further the energy services must truly address the real needs of women (and men) and not some global construct of the problem.

[3] The MDGs have been endorsed by all 191-member nations of the United Nations, poor and rich alike. Thus MDGs are also accepted as the key goals for CIDA and other development agencies and it can be presumed that achieving the MDGs are part of every country's national and international policies.

[4] This is the numbers of people using biomass for cooking and is not yet available to be tracked. There are recent efforts to rectify this in the Millennium Project Report to the Secretary General (2005) and to recognize explicitly the energy needs of women at the MDG+5 meetings. This is discussed subsequently

[5] The lack of attention to the rural sector is a special issue for Latin America. This is because the region is the most urbanised among the developing regions. Many experts have said that rural poverty is not an important issue for the region and that is why there is little data on this. We provide a number of reasons to show that rural poverty is a special problem for the region also. The issues at the intersection of poverty, women and energy are most relevant in rural areas. Without data there will be no policy change and both national and international policy must recognize this as a problem area before significant change is possible.

We also emphasize that the MDGs are only minimum level agreements to be attained and in many countries of the LAC region, the need exists to strive beyond the global specification of these goals.

Millennium Development Goals

There are eight goals (see text box) and each of these goals is further broken down to arrive at 48 indicators concerning development achievements; each indicator is being used to monitor and measure progress and document any shortcomings[6]. Effort is also being made to remedy any slippages that occur[7].

The overarching theme of the MDGs is poverty reduction and within that, education and health are a principal focus. Also recognized by virtue of several goals and targets designed to address their special needs, are the special problems and inequalities suffered by women. These goals and targets have many positive values and have led to considerable work at the conceptual, policy and strategic levels, and have led to increased co-ordination of development efforts.

The Millennium Development Goals

1.Eradicate poverty and hunger;
2. Achieve universal primary education;
3. Promote gender equality;
4. Reduce child mortality;
5. Improve maternal health;
6. Combat HIV/AIDS, tuberculosis, malaria and other major diseases;
7. Protect the environment; and
8. Establish a global partnership for development.

See: www.un.org/milleniumgoals and www.undp.org/mdg for more details. See Annex 2 for the full list of indicators.

But, not unexpectedly, several issues remain unresolved in terms of translating goals and targets to specific actions in specific locations. Among some of the problems with the MDGs, most relevant to this review (discussed below) is that access to and availability of energy is not in itself a goal[8]. So if energy is not in itself considered important to the MDGs, all development interventions have to be examined if and how, access to energy assists in the achievement of the primary MDGs, in particular poverty reduction, improved health and gender equality.

Poverty

The removal, or significant reduction, of poverty with improved equity is the overriding objective of the MDGs. The MDG declaration often refers to the 1.2 billion people[9] who are mired in "extreme

[6] See http://millenniumindicators.un.org/unsd/mi/mi_goals.asp
[7] For a summary of progress on each goal see table on page 15, Millenium Project Report to the Secretary General, 2005.
[8] Energy issues find direct mention only under Goal 7 to ensure environmental sustainability and within that under target 9 which states that principles of sustainable development must be integrated into country policies and programmes and the loss of environmental resources must be reversed. This target has four associated indicators but no goals are presumably attached, as there is no agreement yet on the desired levels but a tracking indicator is provided. Only one indicator, however, is relevant to our concerns here – number 29 - proportion of the population using solid fuels. The use of solid fuels, most often biomass, is to be monitored by the WHO as it has now been recognized as a major source of indoor air pollution and consequential ill health. This information on the use of solid fuels is as yet not available; the WHO states that this data remains to be collected.
[9] People is used in this document throughout to refer to groups of men, women and children, where comon group characteristics are being discussed or there is no gender disaggregated data available. Even then some gender specialists prefer that the words men and women should be used but that is more cumbersome.

poverty" living on less than one dollar a day[10] as being totally unacceptable. Most of the Millenium Development Goals and targets, regarding poverty as well as others, will be achieved if the poorest and most disadvantaged people gain increased incomes, and increased access to a number of enabling services. Increased incomes allow people to acquire most of their needs from the market, including many energy services. It is important to note here an additional difficulty with accessing insfrastructural needs like transport, energy, health and similar services that often have scale requirements, for instance a road cannot be acquired individually and these services often need community or public investments and management. This is especially relevant for poor women in rural areas[11].

Poverty can be defined as a lack of a socially acceptable minimum amount of money or material possessions. This can be in terms of an absolute level of material possessions or a relative level. There are further issues of its constituents and components over time (that we touch upon later). The most basic measure of poverty is the absence of income necessary to obtain the minimum calorific inputs required to sustain life[12]. Most poverty lines today, including those in Latin America, use a similar approach of first defining a basket of goods considered to be the minimum necessary to sustain life[13].

The positive news is that the Latin American region has the highest gross national income (GNI) per capita (US$3,280) of all developing country regions[14]. The population living on less than $1 a day in the region is believed to amount to only around 10% of its total population of 550 million in 2004 or only 55 million persons[15]. Put differently, of the 1.2 billion “extremely poor” in the world, less than 5% of them live in the LAC region. Among developing country regions, the LAC region is the region with the highest life expectancy at birth (71 years). The World Bank states that the region is generally on track to meet the human development indicators of the MDGs, related to child mortality, access to safe water, education, and gender equity in education goals.[16] It states that it is in fact the only developing region where girls have a higher literacy rate than boys. Similarly, reporting on the progress of the regions towards the MDGs the UN Millenium Project reports that the region is doing relatively well with regards to the goals for hunger, education, child health and gender equality, having met one of the gender goals of achieving parity in literacy levels, is on track for two others on school enrollment and is only lagging in the representation of women in parliaments[17]. It is the above positive picture that supports the lack of attention on

[10] IFAD- Rural Poverty Report 2001 – The Challenge of Ending Rural Poverty.
[11] It is useful to emphasize here a major distinction between urban and rural poverty in the LAC region. Many deprivations, including energy in urban areas, are simply due to a lack of income, which prevents the poor from purchasing the goods and services which are available. In richer economies and in urban areas of poor countries, lack of access to energy services are almost wholly due to the lack of adequate income. In rural areas on the other hand, individual income alone does not necessarily solve the lack of access as the generation, distribution and service infrastructure is also required and absent.
[12] Rowntree (1910)
[13] The MDGs refer to $1/day per person poverty line, which has virtues of simplicity and convenience. This concept, more specifically of per capita expenditures below US$1 per day (expressed in 1985 PPP dollars) was introduced by the World Bank in its 1990 World Development Report.
[14] http://www.worldbank.org/data/quickreference/quickref.html
[15] Source: World Development Indicators database, April 2004, http://devdata.worldbank.org/idg/IDGProfile.asp?CCODE=LAC&CNAME=Latin+America+%26+Caribbean&SelectedCountry=LAC
[16] See http://www.developmentgoals.org/Latin_America_&_the_Caribbean.htm
[17] Millennium Project Report to the Secretary General (2005) Investing in Development: A Practical Plan to Achieve the Millenium Development Goals; page 15 and 21. This report is especially noteworthy in its attention to energy issues of women and takes a first step in attempting to redress the current imbalance in the MDGs in their lack of attention to energy infrastructure and services. This is discussed later.

important problems, such as energy for the rural poor in the region. If only the above picture represented the full reality of the region perhaps the relative in-attention could be justified.

Poverty in the LAC region

Unfortunately, the simplicity of the global indicators, and their lack of specificity helps to create a more positive narrative, and, obscure many untidy issues, especially relevant for the LAC region. The most relevant for this report are the facts that: the number of poor are much larger than commonly accepted; second, the poor are disproportionately rural as opposed to the more fashionable view that only urban poverty matters for the region; and third, poverty in the region is more concentrated in specific rural areas with minority and indigenous ethnic communities.

The table on the next page shows poverty levels in Latin America using global and national measures and further disaggregated to show the extent of rural poverty. It is quite striking that while the $1/per day cut off shows many countries to have negligible levels of poverty, often in the single digits, the national data shows that the situation is possibly two to twelve times worse in comparison to the $1/per day figure. Even using the World Bank data and indicator, Bhalla[18] suggests that an additional 20% of the population is below the $1/day poverty line or a total of almost 65 million people. In another paper[19] prepared by World Bank staff they estimate that at the beginning of the millennium 36% of the population in the region was poor and 18% was extremely poor. This study states that 179 million people were poor in Latin America and of these 89 million were extremely poor, casting considerable doubt on the figure of 55 million cited earlier from the MDG statistics.

The same table shows that in almost all countries the percentage below the poverty line in rural areas is much worse than in urban areas[20]. Thirty to eighty percent of rural populations in 12 out of 21 countries (that we could find data for) are below the poverty line and four countries do not have sufficient data. Though almost half the world's population (around 3 billion people) live in rural areas and nearly 90% in the rural areas of developing countries, the rural population in Latin America is only around 130 million, or about 24% of the total population. Some argue that rural poverty issues (and hence energy for the rural poor) are not relevant in Latin America as the majority of population growth, and hence of poor people, will take place in urban areas. The trends supporting this line of thought suggest that by 2030 the percentage total population living in rural areas will drop to 14 percent. This calculation of declining percentages obscures the fact that the total number of people in rural areas in the LAC region will remain almost constant at a little over 130 million people. In almost the entire region, the large majority of these people are poor and also have fared poorly over the past two decades, with little improvement in rural poverty.

In fact, the region is the most unequal region in the world, with high inequalities both within and across countries. Income inequalities are the highest in the world, both among the countries that

[18]. Bhalla, Surjit S (2004) Poor Results and Poorer Policy: A Comparative Analysis of Estimates of Global Inequality and Poverty, CESifo Economic Studies, Vol. 50, 1/2004, 85–132. See Table 8.
[19] Wodon, Q., R. Castro-Fernandez, et al. Poverty in Latin America: Trends (1986-1998) and Determinants. Cuad. econ., ago. 2001, vol.38, no.114, p.127-153
[20] ibid. in Table 1, estimate of rural poverty in the region was over 55% and extreme poverty in the rural areas afflicted over one third of the population.

are absolutely poor, as well as the countries with relatively high average incomes. The ratio between the incomes of the poorest and richest 1% in the region is over 400 times and has in fact worsened over the past twenty years[21]. Thus, it is not surprising that the World Bank reports that there has been limited progress in poverty reduction in the region and that the region is lagging behind on achieving the goal of poverty reduction.

The conclusion from this that is most relevant for the stakeholders involved in issues of rural poverty, gender and energy is that the regional aggregates in the region often provide misleading evidence of the problems and needs. Another conclusion that follows is that, given the poor data on rural poverty, the most important target of the MDGs, the available information on rural energy is likely to be considerably worse, which is not even one of the 48 indicators. This is borne out from our search of the literature, donor and international efforts and country policies. We will discuss later that given the above when we search more narrowly for gender disaggregated data for energy in rural areas and for gender sensitive energy efforts in the region, a subset of already poorly defined and low priority set of issues, the evidence and the efforts are not apparent.

But, there are at least 12 countries in the region which have the majority of their rural population living in poverty with some of the poorest countries of the region such as Bolivia, Guatemala, Haiti, Honduras and Nicaragua having very similar levels of lack of access to cleaner and modern energy services as many poor countries in Asia and Africa. There are another half dozen countries with smaller percentages but yet sufficiently large populations that deserve international and of course national attention and assistance. In many of these countries the percentage of women in rural areas, and, the percentage of women who are poor, are also worse than the aggregate figures.

The poverty data available from CEPAL and IDB, for instance, show that in the majority of LAC countries the absolute number of rural poor has remained almost constant over two decades. The distribution of economic gains in all societies tends to be dominated by persistent cultural, historical, social and institutional factors, which are highly resistant to change. Multiple barriers require multi-pronged solutions that can reinforce each other, as we shall see later.

[21] Chronic Poverty Research Centre, (2004) Chronic Poverty Report 2004-05, The Centre is an international partnership of universities, research institutes and NGOs and is at http://www.chronicpoverty.org/

The issues above are important for several reasons. First the view that poverty levels in Latin America are low, based on the $1 per day indicator, has reduces the attention of the global community to poverty in Latin America[22][23]. Second, the aggregate figures, more readily available, hide the problems of particular peoples such as the rural communities, with higher percentages of women and Indigenous people[24]. Due to political and economic reasons, higher percentages of women in comparison to men[25] (it is estimated that women consist of 55 to 65% of the rural population and of the poor[26]) are often found among the rural poor as men more often migrate to urban areas in search of employment as means of sustaining their families. It is important for poverty needs to be disaggregated into these groups, by location and by gender before operationally useful conclusions can be drawn.

Country	% Below $1 per day	% Population below National Poverty Line	% Rural population below National Poverty Line
Chile	0.8	17	-
Brazil	9.9	17.4	32.6
Jamaica	1.7	18.7	25.1
Trinidad and Tobago	4	21	20
Paraguay	15.9	21.8	28.5
Costa Rica	6.9	22	25.5
Dominican Republic		26.6	42.1
Ecuador	15	35	47
Guyana	3	35	-
Panama	7.6	37.3	64.9
Nicaragua	58.7	47.9	68.5
El Salvador	21.4	48.3	55.7
Peru	18.1	49	64.7
Honduras	23.8	53	51
Guatemala	7.9	56.2	74.5
Bolivia	14.4	62.7	81.7
Colombia	14.5	64	74.5
Argentina	7.7	-	
Haiti	-	-	79
Saint Lucia	25.4	-	-
Venezuela	14.3	-	66

NB. Countries sorted from lowest to highest National Poverty Levels. Source: Based on World Bank data.

Any policies to reduce energy poverty in the region requires a more in-depth review of the conditions of poverty for the specially disadvantaged, which in Latin America consists of those living in the poorest countries, those living in rural areas of most countries, Indigenous

[22] Vandemoortele, J. (2002) Are we really reducing global poverty? UNDP, New York states that $1/per day norm presents two severe problems – one is the technical issue of PPP values and the other is its validity for different countries as it violates the standard definition of income-poverty.

[23] This underestimation in turn has led to fewer projects, activities and examples in the literature of projects focused on energy poverty in the region as opposed to experiences in Africa and Asia.

[24] In many countries reliable time series data the incidence of poverty is lacking but from the evidence available we find little change in rural poverty for most countries for over two decades. For a more in depth look at poor rural women see Annex 1 in this report, which describes two regions in Guatemala.

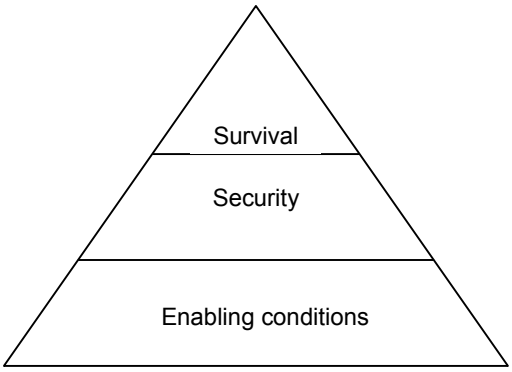
[25] UNDP, 1995 Human Development Report estimated that 70% of the people living on less than a dollar a day are women.

[26] This commonly cited figure is disputed for Latin America where a CEPAL study on sources of high inequality in the region found little difference by gender of the head of households but it did confirm significant, persistent and high poverty levels in rural areas and that because of the isolation and neglect of rural populations. The isolation means that wider economic growth alone cannot contribute significantly to raising their incomes. Similarly a World Bank report "Challenges and Opportunities for Gender Equality in Latin America and the Caribbean states "no clear association exists between poverty and female headed households in LAC" (page 8), but single headed households tend to be poorer and 80% of single headed households are female headed. Then the Chronic Poverty Report 2004-05 (page 81) states that the picture of poverty among female headed households varies considerably among countries in the region with larger problems in some and none in others. See also Chant 2003, who comments on the feminization of poverty, the orthodoxy that 60-70% of poor are women without any data that backs up the assertion,p.28.

communities, Afro-descendants and women[27]. The differences and wide disparities in social conditions by income, ethnicity, gender and geographic location, make the averages in the region more susceptible to errors in interpretation than any other region in the world. For example Bolivia has one of the largest indegenous populations in the region and has the highest rural poverty in the region at 82% and among them 58% are severely poor. In terms of access to energy in Bolivia in 1996 the percentage of people with access to electricity in rural areas was 30% in the valleys, 10% in the highlands (altiplano) and less than 1% in lowlands. In Mexico electrical coverage reaches 99% in urban areas, 85% in rural areas, and only 64% for rural Indigenous communities[28]. This is specially important for readers of this review to keep in mind for both this and other over views, in that while we have attempted greater specificity to the region, any regional review has to draw general conclusions and observations, not all of which will be relevant to particular countries or sub-regions. Lack of data on the poor, on rural populations and by gender is a perennial problem that reduces attention to these people, and their problems, and when programmes are designed and implemented they suffer too often from poor policies and actions. This is an important priority that has been recognized again and again but little improvement is seen. Individual projects can contribute to the solution if they collected data appropriately and made them available on web sites.

Poverty beyond Income

A way to capture the multiple dimensions of poverty is through a hierarchical matrix, which starts with the premise that the most basic need is for survival. Survival requires a basic minimum of food/nutrition, health, water/sanitation and clothing. The second level is security. Here the needs are defined as shelter, absence of violence, security of income and employment. The third level includes 'enabling' conditions and these include education, skills, participation, family network and psychosocial needs[29].



Finally, we must also remember that many argue that poverty is not only the presence or absence of some *absolute* minimums but also must include the distribution within groups and individuals. Poverty is also a dynamic in that the concept can vary over time and between societies. What is "socially acceptable" in Haiti is likely quite different from that in Chile. As the economic conditions in a society improve the views about the "minimum necessities" evolve[30]. We must mention here the work of Amartya Sen[31] as it is seminal to poverty issues. Sen states that poverty is an absence of certain 'capabilities' required to function

[27] UN Millennium Project. 2005. Page 169. See also Wodon, Q., R. Castro-Fernandez, et al. Determinants of poverty by ethnicity.
[28] OLADE .No date. Baseline Study - OLADE Sustainable Energy Project, University of Calgary - Latin American Energy Organization (OLADE), draft mimeo.
[29] For these three hierarchical levels, a total of 33 indicators of poverty have been developed by the ADB.
[30] Kanbur and Squire, 1999
[31] Sen 1981.

effectively as a human being including better education, health care and so on. In his formulation 'capability' improvements lead to higher incomes but higher incomes do not necessarily lead to higher capability. Similarly, in accordance with Sen's thinking, there are a number of poverty dimensions, which underpin the MDGs, such as access to health services, to education and decision-making, as well as levels of income, consumption and exposure to risk.[32]. Keeping a multi-dimensional perspective is important for gender work as when poor people, including women, describe their own situation, they often define their well-being as being inadequate because they lack access to sufficient food, water, clothing, shelter, sanitation, healthcare, and education, as well as incomes. Women and men place these needs in different orders of importance to themselves and that is another reason to have gender disaggregated data and we discuss some of the special concerns of women later.

Strategies and Approaches toward Poverty Reduction

If we focus on the definition of poverty as being the lack of income and capacity to acquire a minimum basket of goods and services (as defined by the MDGs for current practical purposes), then clearly economic growth, and the redistribution of income toward increased equality, become the two principal mechanisms for the redress of poverty. Economic growth has a positive effect on poverty reduction through increased employment and income earning opportunities[33].

Considerable debate remains on the value of various growth strategies and redistributive measures. At this time, the consensus of economists, policy makers, and the international development community is that economic growth is necessary and the most important requirement for poverty reduction. Yet, simultaneously other mechanisms focused more directly on the poor are also required. The new paradigm of "sustainable development" is encapsulated in Agenda 21[34] . Here, while growth is given the highest priority for poor countries, a distinction is made that growth strategies must be sustainable over the long term. This requires simultaneous consideration of environmental and equity dimensions. The earlier concern of tradeoffs between growth and equity has given way to a general agreement that "paths that promote growth together with equity and a concern for environmental assets and constraints are available and provide the best course for long-term development" (Munnasinghe, 1999). Thus, investments and policies that complement each other and promote all dimensions simultaneously, or at least do not worsen one dimension while promoting another, are to be favoured. Many of these recommended policies, however, are broad in their application and do not specifically target the poor. For example, such policies may promote macro-economic stability, increases in overall productivity, infrastructure such as energy services, roads and communications, good governance and expansion of education. Nonetheless, all of the policy-related issues have large impacts on all dimensions of poverty. It is, therefore, very difficult, often impossible, to isolate the cause and effect relationship between these broader actions or a single intervention and the

[32] For example see World Bank.
[33] But what causes economic growth? Hogendorn (1992) summarises in very general terms five different factors which influence economic growth: (1) increasing saving, investment and technology adoption; (2) agricultural improvement; (3) increasing international trade with a focus on comparative advantage; (4) improving economic efficiency of the system; and, (5) human capital formation. Of course economic development and growth are not the result of any single one of the above factors, but rather a complex amalgam of economic and social determinants. These include, among others, initial endowment, availability of capital (physical, natural and human), technical improvements, cultural and institutional differences, and so on.
[34] See http://www.un.org/esa/sustdev/documents/agenda21/index.htm for details.

direct impact on poverty (we shall see later that this is often true of energy as well). These broader policies and actions must ultimately rest on a theoretical understanding of development processes and desired social goals.

Most government policies and donor programs attempt to support the broader actions, while at the same time directing some of their efforts at targeted programs poverty reduction. Such pro-poor[35] programs aim to: provide income generating opportunities for the poor through public works and rural enterprises; furnish assets such as finance and livestock; promote micro and small enterprises; strengthen organisations of the poor; protect against risks, increase access to education and health care, and so on. In the next section, we will see how increased energy access and use are important in both promoting growth and poverty reduction, and how shortages have significantly constrained both growth and poverty reduction.

Almost all poor people, and, poor women, suffer from an interlocking set of disadvantages including inadequate incomes, assets, education and health, lack of security, violence and lack of voice. The rural poor often suffer even more from these disadvantages than others. For instance, the rural poor often live in more remote areas for which it is more difficult to provide infrastructure and services, and access to market opportunities is severely limited. Additionally, the are often less involved with the more productive formal sectors of the economy. In the region, the rural poor women tend to be comprised of high percentages of ethnic minorities suffering simultaneously from poorer education, income, few assets, shortages of all services, violence[36] and lack of security, and lack of voice, with all the disadvantages acting together, thereby making solutions that attempt to focus on one variable, including energy, relatively ineffective.

What this means is that income and employment, two intertwined aspects are both highly precarious, unstable, provide few non-monetary benefits (i.e., minimal health packages that might be offered through formal sector employment), is primarily survival oriented and may often have the whole family, including children involved. Therefore, just as poverty has many dimensions, efforts to reduce it must be equally multi-faceted and synergistic.

In general, food production, income from livestock, cash crops, non-farm activity, and other informal economic activity, which provides most of the income for the rural poor must be taken into account. The rural poor have special needs to improve access and to make better productive uses of local resources such as land and water and their local knowledge assets. Often higher shares of these resources[37], improved access and control of the assets, institutions, improved technologies and markets, and public infrastructure investments are needed in order to increase their shares of economic growth..

[35] The term “pro-poor” does not mean encouragement of poverty, but policies, programs, and actions that focus on, ultimately bettering the welfare of poor people in a sustainable manner.
[36] Violence against women is a central problem in the region. In a number of countries around 30% of the women have suffered from physical violence and it tends to decrease with income and education. See Challenges and Opportunities for Gender Equality in LAC.
[37] Fortunately rural women’s access to land has improved in the region through new legislation but asset inequality between genders remains very high in the region. See ibid, page 3.

Energy, Infrastructure and other needs

The (MDG) goals do a better job in providing direct improvements in poor people's lives and are ends in themselves. They are arguably also "capital inputs" for further human development and remain the best examples of "pro-poor" policies that we have today. But public infrastructure such as roads, energy services, can make a significant contribution, both to growth and to the extent to which growth impacts on poverty levels. This has recently been highlighted in the report by the UN Millennium Project. To date, the role of public infrastructure investment has remained limited, either by a lack of clarity on the more indirect mechanisms through these investments reduce poverty and by a lack of methods to assess poverty impacts[38]. The report urges the middle income developing countries such as Latin America to increase investments in infrastructure, focused in the poorer regions[39]:

Given the importance of the MDGs it is noteworthy and highly positive that the new report[40] goes a long ways to re-integrate energy services and infrastructure centrally into the plan of action to achieve the MDGs and re-introduces energy as a key input. It highlights that a key infrastructure for achieving the means to a more productive life includes essential infrastructure services and among them important is "energy, including electricity and safe cooking fuels"[41] and it acknowledges that "energy services are vital" to the goals.

Energy services and MDGs

Improved energy services—including modern cooking fuels, access to electricity, and motive power—are necessary for meeting almost all the Goals. They can reduce child mortality rates and improve maternal health by lowering indoor air pollution. They can reduce the time and transport burden of women and young girls by reducing the need to collect biomass. And they can lessen the pressure on fragile ecosystems. Electricity is critical for providing basic social services, including health and education, and for powering machines that support income-generating opportunities, such as food processing, apparel production, and light manufacturing..

Source: Millennium Project Report to the Secretary General (2005), page 30, Box 3.1

[38] The UNDP and ODI are currently working at reviewing existing evidence and generating policies to enhance the MDG framework, notes from Andrew Barnett.
[39] Millennium Project Report to the Secretary General (2005) Investing in Development: A Practical Plan to Achieve the Millenium Development Goals, page 43. The report is especially noteworthy in its consistent focus through the entire document on the energy needs of the poor, the special problems of women, and the need for increased attention to infrastructure.
[40], Ibid. page 8. This report also integrates direct and indirect mechanisms in figure 3.1.
[41] Ibid. page 8, Box 1.3. It also lists other core infrastructural services that are required for the MDGs and recommends that infrastructure investments must come early .in the cycle.

We shall look at energy issues in greater detail in the next section. We conclude here that appropriate energy services for the rural poor and women can increase their assets, productivity and health, can be designed in small packages, run by decentralised local institutions, increase participation, voice and security. When the actual energy needs and the local energy resources form the base for designing solutions for energy poverty keeping the above characteristics in mind, they can and have been shown to act synergistically to improve multiple dimensions of poverty as well as meeting immediate needs. The synergy unfolds with access to assets and technology reducing asset inequities, empowering the poor as well and increasing their incomes. Decentralised solutions help by being divisible into small low-cost units and increasing local control over their local natural resources, allows access financial services, and acquire and add to locally relevant knowledge and increase participation in local markets.

Participation allows the poor and women a voice. Voice adds to the power to discover and adopt means to improve their own lives. Bias against rural women of ethnic minorities has been persistent and policies must integrate rural women and girls in particular to remove cultural, economic, legal, infrastructural and knowledge-based obstacles. When women are empowered to make decisions concerning household and productive resources, resulting in higher incomes, there are many subsequent benefits that materialise for women, and for men, and, their children, in all survival dimensions and with respect to nutrition, health and education. Influence in and over institutions that serve them, often badly, is critical if public infrastructure investments are to be increased and made more effective.

ENERGY AND POVERTY

"Poverty means, among other things, limited access to energy sources[42]. Poverty influences and determines energy choices of poor households"[43]. The most important point about energy is that no one wants energy for itself, unlike food, shelter, or clean air; rather people want energy for what it allows them to do. People have two basic energy needs for survival in mild climates, energy for cooking food and energy for lighting at night. In colder regions people also need energy to provide heat. These three together are the most basic survival needs and many poor people do not have sufficient energy supplies to meet these basic needs.

Separately people need additional energy to increase their production, and mobility. Energy, especially electricity, allows for other benefits including refrigeration and cold storage, motors for pumps and machinery, and communications (telephones) and entertainment (televisions, radios) services and knowledge. Without access to basic energy services for lighting, cooking, heating, and for productive purposes such as grinding, husking, pumping, transportation, communication, people, and often women, are forced to spend the majority of their time and physical energy on subsistence activities. The poor invariably use traditional energy technologies that are inherently very inefficient, in that the final, useful energy service derived from them is a small fraction of the energy input. Lack of energy services is directly correlated with the major elements of poverty, including inadequate healthcare, low education levels and limited employment opportunities. Energy poverty[44] is the lack of adequate, affordable, reliable, high quality, safe and environmentally benign energy services to support economic and human development.

Energy for Survival

The linkages between energy and poverty are both direct and indirect. The direct linkages come from the fact that whether poor or non-poor, everyone needs a certain minimum energy for basic survival because of the energy required for cooking of food, lighting and in the colder and higher altitude areas for heating of the living space. The last is a need that is relevant to smaller numbers in the developing countries and hence is often not given much priority in development efforts. The need for energy for heating, however, is much more significant to a much larger percentage of the rural poor in Latin America than in the other developing regions, as many more of Latin America's rural poor live in high altitudes and in colder sub-regional climates. Hence the

[42] Energy is used in many different forms. The most basic are human and animal energy (animate) and these require food as the input that is converted to energy by the body. The most traditional and important non-animate energy for most poor people is bio-mass based energy. This is traditionally from trees, branches and crop residues. Other primary energy sources are fossil fuels such as coal, oil, natural gas and renewable sources such as the sun, wind, and hydro. Sometimes the primary sources are used directly as in thermal processes of cooking or heating; transportation or in wind pumps; most of the time these sources are used to generate electricity. Electricity is a secondary form of energy, it is the most modern, convenient, has zero pollution at the point of use, and is irreplaceable for many applications such as lighting, computers, communications and so on.

[43] Celeski, E. (2003) Enabling Equitable Access to Rural Electrification: Current Thinking on Energy, Poverty and Gender, World Bank.

[44] Reddy 2000.

need for energy for heating should be factored into account and in energy-related development plans for relevant regions[45].

Energy and other enabling conditions

Energy is often required to provide clean drinking water, health care, sanitation, education and communications. We will not repeat here the many strong arguments, made by Barnett (2000) and many others, to show the very strong association between energy use and availability in the economy with production, growth rates and a positive Human Development Index[46]. All of these tasks are important to the survival of the household, involving drudgery and time that could be reduced by the availability of modern energy services. Improvements in energy services, both on the supply side and for increased user efficiency will require higher skills from those involved. This requires training and in turn increases capacity with additional indirect benefits in terms of empowerment and transfers to other activities. Similarly micro-credit programs and institutions can help promote the shift to better energy services and also for increased saving, investments in other areas, and thereby promote multiple objectives. These are all too often neglected areas of energy planning.

Energy, Production and Income

Additional energy inputs remain a key supplement to human energy in order to increase outputs per person. Beyond these effects directly affecting individual welfare, energy is a especially important input for economic growth. A correlation between per capita energy consumption and per capita incomes in different countries and over time shows that low energy consumption is associated with poverty and that the demand for energy rises roughly in step with economic growth[47] The correlation between energy use and economic growth is further confirmed by the counterfactual in that the shortage of energy constrains economic growth[48]. Many activities and investments are simply not possible without complementary energy inputs. Historically, in all societies, increased agriculture and food production, and farm-related services provide the locus of most employment activities in rural areas and for the poor. Additional production and employment opportunities demand complementary energy services.

Macro Issues

The growth in energy demand confronts many countries with financial, operational and environmental constraints independent of any consideration of carbon emissions. For all countries, and especially for developing countries, energy and economic development are closely linked. Economic growth, the primary method for eliminating poverty and in tandem economic growth requires a growth in energy services. Energy policy work is generally preoccupied with the production and use of modem energy forms given that global warming, acid deposition, urban smog, and so forth are key environmental concerns, and, because of national financial,

[45] Many of the poorer regions of Latin America are in the central Americas and the Andean countries where the rural poor tend to be in higher elevations and need energy for space heating. Energy required for space heating can be much higher than for cooking, which in turn is much larger than for lighting. In the colder regions without providing solutions for more efficient and cleaner space heating the benefits from improved cook stoves are unlikely to be significant.
[46] Barnett, J. (2000)
[47] Lamech et al 2000 p.3.
[48] Ibid. page 6.

operational and institutional issues. More specifically, emissions from the burning of fossil fuels for industry, transportation and power generation are the largest sources of urban air pollution[49]. These issues are critically important and need to be dealt with at national and global levels, as all current forms of energy are highly polluting[50]. With the Kyoto Protocol becoming operational in February 2005, the issue of reducing CO_2 from fossil fuels is likely to gain in prominence in global and national policy discourse and could consequentially, divert attention from the energy needs of the poor and women.

Here, the issue of focus is on the fact that approximately 2 billion people in the world, predominantly women, depend on traditional fuels –(i.e., dung, crop residues, wood, and charcoal) for cooking, and a similar number use candles, and kerosene for lighting as they are without electricity. Both cooking and lighting are basic and primary needs and (for those without the need for space heating) account for 90-95% of their non-human and animal derived energy. These needs are met by the poor with significant negative effects on themselves and their families. It is important to make the point that solutions for the rural poor do NOT put stress on either the global commons or on the resources of middle income countries in LAC.

For making a simple argument, even if we expand from the poor, without access, to the entire group of the world's rural population, it is around 3 billion people. If we then take a rough estimate[51] of the minimum useful energy required per rural person, for cooking and lighting, as a basis for their requirements, and multiply it by the total number of people, the annual useful energy requirement is around 3000 PJ. The WEC states that "If we were to stretch our imaginations and suppose that these energy needs could all be met by electricity, assuming an 85% conversion efficiency of the electrical appliances used, this would translate into 3472 PJ, or 964 TWh, or only about seven percent of the world's total electricity production in 1996 and less than the residential energy consumed in the USA in 1993!" Given the additional contribution of fossil fuels used for transport even if we supplied the world's entire rural population's basic energy needs entirely through polluting fossil fuels this would not add more than 3 or 4 % to the global pollution and carbon emissions. Global emissions have grown by much larger amounts in almost all countries over the past decade without any benefits to poor women. This should put at rest the almost mindless debates and gross policy distortions where by the most expensive forms of renewable energy is reserved in donor funding for the poorest! The poor should be provided access to the cheapest energy services that improve their well being. In some cases the solutions will lie in improved biomass, small wind and hydro, but in a large number of cases that will involve fossil fuels such as LPG for cooking and diesel for transport and electricity.

Focusing down from the global to the immediate objectives, the LAC region, we have mentioned that there are around 130 million people and approximately 20 million households in rural areas in the region. Of these 20 million households, only 15% have access to piped water and electricity, and only about 7% have access to excreta disposal systems, while over 90% use solid biomass

[49] Industrial production processes add particulates such as sulphur dioxide (SO_2), nitrogen oxides (NO_x), carbon monoxide (CO) and other pollutants to our atmosphere.
[50] Rath (2002)
[51] Developed by the Indian Planning Commission for the cooking and lighting needs of the Indian population as being 1MJ/per capita per year of final useful energy. It must be noted that there is a wide range in per capita rural household energy use but the data suffers from so many inaccuracies, and of course, there is wide variance in practices, that we have not attempted a better global number here. See WEC1995, *Rural Energy in Developing Countries*,. for more details.

for cooking[52]. Let us imagine that all 20 million or the entire rural population in the region need to be provided with modern energy supplies for both cooking and lighting. Then using the previous estimate of household needs[53], we would need to provide for 100 million MJ or 100PJ or 96 TWh. This is only a small fraction of the total regional electricity production of 763 TWh[54] or 13% of the region's electricity production. For providing improved lighting, where electricity is the preferred source, the need is only about 2 to 5 TWh or less than 1% of current production in the region.

If every household was able to convert to modern cooking sources the capital costs may amount to 200 –300 million dollars for a region with a GNI of 1700 billion dollars[55]. If governments, donors, international agencies, NGOs, and women's group determined that this is one of the priority goal for the MDGs[56] to be achieved for the region by 2015, the cost would amount to approximately US$20 million per year within the range of affordability for any single national government, and/or any one of the donors working in the region. In other words, converting every household to modern cooking sources by the year 2015, is most definitely a doable target for the new and innovative partnership – GVEP working with several like minded institutions and individuals[57] and is highly recommended for follow up by CIDA as a part of its new strategy of becoming more "effective" and "making a difference".

Micro level issues

Moving from the macro to the micro – energy services allow for income generation through many small and informal sector enterprises. These include knitting, dress making, weaving, oil processing, soap making, hairdressing, metal working, pottery and others. They all need energy, some need low grade thermal energy and others need higher valued electricity.

Many are owned and operated by women, while others provide income and employment to women, and also to male family members. Women-headed enterprises are frequently located in the home and often include these production-oriented task such as food processing, knitting, dress making, crocheting, hairdressing, basket weaving, cane work, spinning and weaving, and retail stores are located at home and not counted or overlooked in planning energy services. Such enterprises provide important sources of household as well as independent income to women. Some of these like pottery for example is an energy intensive activity, need substantial process heat, and yet work with low efficiencies of energy conversion leading to low productivity rates. Weaving and dressmaking, on the other hand, require small supplies of modern energy

[52] These numbers are approximate and likely accurate within a broad range. They have been calculated and constructed from the CEPAL, 2004, Statistical Yearbook for Latin America and the Caribbean. The main reasons for using these statistics as a range is due to missing data for individual countries and aggregate and averaged data from different years.
[53] The above numbers are only a first and very rough estimate. This work needs to be expanded given the confusion in donor policy and environmental circles on the trade offs between environment and poverty.
[54] Source IEA, Electricity in Latin America 2001
http://www.iea.org/Textbase/stats/electricitydata.asp?country=Latin+America&SubmitA=Submit
The calculation here as a percentage of electricity production should be redone using regional production and use of natural gas and lpg as these are the best sources for cooking energy.
[55] GNI figures from World Development Indicators database, April 2004.
[56] The Millenium Project report has recommended that achieving a 50% reduction should be a global target. But as the numbers are much smaller in Latin America and the income levels are higher than in other regions we believe a higher target would be desirable and attainable for the region.
[57] Unfortunately providing electricity for the same population will possibly need ten times more in capital investments. Though a much higher sum at two billion dollars, over the MDG period it amounts to 200 million dollars per year and a sum that a single multilateral bank could add to its portfolio without difficulty.

together with machines that improve productivity and income by large amounts. When asked about their priorities, women generally rank being able to earn cash income high on their agenda.

Most poor families in rural areas, especially women, undertake several activities simultaneously, strongly linked, with household and agricultural tasks in order to supplement incomes. Income-earning activities often vary by group and season, and are sometimes seemingly an extension of household tasks, such as food preparation, garments, basket making, and so a broader definition of household energy can help to ensure the inclusion of these aspects. The special position of women as wage earners and entrepreneurs has often been overlooked.

In planning for and providing energy services and infrastructure, it is critical to conceptually distinguish between subsistence or "reproduction[58]" activities, such as family meal preparation, lighting, and space heating, from productive needs. Similarly, in planning for goals and outcomes, it is important to distinguish between direct health benefits, time and burden reductions, as these can be argued within a basic human rights framework; from enabling activities such as community lighting, piped water, and others that improve community conditions in general. The energy needs for income generating activities must be planned for separately. These distinctions are important because what initially may appear to be similar activities, for instance food preparation that could be improved through stove programmes, at a more detailed level might show that different technologies or stoves will be relevant for "reproductive" versus productive operations. Therefore, interventions that are required to meet all needs are truly more complex and the recognition of this fact could help improve project designs. To fully take income generation into account, programs must integrate women into training courses, examine restrictions in mobility, and ensure that they have access to investments for more efficient technologies. Markets for products and possibly transport (with an energy component) are also aspects that can be critical for improving incomes through better energy services.

Energy use in rural areas also differs significantly from that in urban areas. One fundamental difference often is that energy for cooking (and space heating) is normally not purchased but gathered. As a result, time and labour are involved while direct monetary costs are often not incurred. This is one reason for lack of good data and important to consider when solutions involving financial outlays are proposed in lieu of time and labour.

Penalties Imposed by Inadequate Energy Services

In many cases the poor pay excessively for the energy that they use in either time or cost or both; this cost is typically borne by women and children[59]. For example traditional biomass stoves have very low energy efficiency and this increases the time burden of those who collect the larger quantities of fuel required than with an efficient stove, a task overwhelmingly allocated to women and children. Beyond the fuel needs they also increase the time for cooking again typically undertaken by women. In many cases, poverty forces the poor to use energy with less efficiency in production activities as well as in the case of wood stoves for commercial food preparation, in pottery, brick making, drying and processing of agricultural products, and in many other traditional

[58] The distinction between production and reproduction or housekeeping and caring tasks is a principal distinction introduced in the Gender Framework of the Harvard Method. See Overholt et.al. 1984.
[59] Lamech et al 2000, p.2.

production activities. This also often forces the poor to cause and suffer greater environmental harm and damage to their health. Thus improvements in energy supply directed at the poor increase their well being both by reducing the costs or increasing opportunities[60]. Fuel wood and crop residues for example are inefficient energy sources for cooking in comparison to gas and electricity, which can be five to ten times more efficient. Electricity can be up to 30 times more efficient than a kerosene lamp in converting energy to useful light.

Thus where the poor do use cash, a greater percentage of cash resources are used for low quality, less efficient fuels at a greater cost in terms of the health impacts of respiratory diseases and premature death, higher demands on time, reducing ability to accumulate necessary financial resources for improving livelihoods. While using traditional fuels more efficiently and in ways less damaging to the environment and to people's health is possible, this is not occurring in large regions of the world; nor is a potential alternative, which involves shifting to modern[61] fuels, which most rural poor in developing countries would count as a blessing, progressing as rapidly as it could. The reasons for energy poverty are due to limited access to infrastructure because of dispersed populations, low purchasing power, lack of credit and lack of technical and knowledge resources. This forces the rural populations in the LAC region to continue to rely on traditional energy sources or inadequate modern energy services that restrict their ability to meet their energy and development needs.

There was a time when energy was considered a central part of the process of economic and social development, though exaggerated sometimes, Barnett (2002) laments that energy for the poor often appears to fall off the development agenda as an important factor in the development process and similarly the Millenium report comments that over the past 20 years donors have moved away from infrastructure, including energy.

Effect of Increased Energy Services on Poverty

All the evidence available[62] below, suggests that reduction in poverty levels will require increased quality and levels of energy services beyond that which is currently available in many poor regions of LAC. It does not follow, however, that all actions to promote energy supplies will lead to positive developmental outcomes, particularly given that increased supplies may not be accessible, do not always meet the needs for services required, and, almost all energy supplies carry with them additional environmental costs. Clearly alternatives, which use renewable energy and/or increase the efficiency of energy use, are always to be preferred when the economic and financial costs are appropriate; too often efficiency options are completely overlooked.

The table on MDGs and Energy below provides details on how energy services *can* help achieve the various goals when integrated with other development inputs[63]. Havet has taken a similar

[60] ESMAP 1999.
[61] The term modern always includes liquid petroleum gas (LPG), kerosene; electricity and coal. It should also include, and increasingly does, modern biomass based technologies such as improved stoves, gasification and other new energy technologies, as well as renewable sources such as wind, solar, and small-scale hydroelectric resources.
[62] For instance see citations by Barnett (2002) and Lamech
[63] Two other useful sources for such a map include the UN Millennium Project and Berthaud, A. 2004. Page 5, figure 1.

approach and elaborated the MDG goals with energy and gender and also has provided a case of energy services provided in Africa that is compared with these goals[64].

MDGs and Energy Services

Goals	Role of Energy	
	Direct	**Indirect**
1. Extreme poverty and hunger energy services	Facilitates enterprise development.	Necessary for economic growth.
Halve between 1990 and 2015, the proportion of the world's people whose income is less than one dollar a day.	Lighting enables income generation beyond daylight hours.	Pro-poor design, and inclusive of the rights of people in the design of basic services.
	Increases productivity through machinery use.	Efficient systems reduce costs. Create sustainable businesses/jobs.
	Local energy supplies provided by small scale, locally owned businesses create employment in local energy products and services.	Clean, efficient fuels reduce the share of household income spent on cooking, lighting and keeping warm.
Halve, between 1990 and 2015, the proportion of the world's people who suffer from hunger.	The majority (95%) of staple foods need to be cooked.	Energy for irrigation helps increase food production.
	Improving productivity throughout the food chain (in tilling, planting, harvesting, processing, transport etc.)	Clean water improves health. Increased health and nutrition increases employment and income generation.
	Reduction of post harvest losses through better preservation (for example, drying and smoking) also through chilling/freezing.	Chemical fertilizers, a form of captured energy, increase crop yields.
2. Universal primary education Ensure that by 2015, children everywhere will be able to complete a full course of primary schooling.	Can help create a more child friendly environment (access to clean water, sanitation, lighting and space heating/cooling) improve attendance and reduce drop out rates. Frees children's and especially, girls' time from helping with survival activities (gathering firewood and fetching water); lighting permits home study Lighting in schools allows evening classes, helps retain teachers, if their accommodation has electricity Enables access to new educational media and technologies.	Opportunity to use equipment for teaching.
3. Gender equality and women's empowerment	Frees girls' and young women's time from survival activities (gathering firewood, fetching water, cooking inefficiently, crop processing by hand, manual farming work)	Energy services offer scope for women's enterprises at home and externally.
Ensuring that girls and boys have equal access to primary and secondary education, preferably by 2005, and to all levels of education no later than 2015.		Street lighting improves women's safety
4. Child mortality	Indoor air pollution contributes to respiratory infections that account for up to 20% of the 11 million deaths in children each year.	Nutritious cooked food; space heating and boiled water contribute to better health.

[64] Havet, Ines. 2003. Linking women and energy at local level to global goals and targets. Energy for Sustainable Development, v. vii, no. 3, September.

Reduce by two-thirds, between 1990 and 2015, the death rate for children less than five years of age.		Allows for pumped clean water and purification. Cold chain allows better access to vaccinations
5. Maternal health To reduce by three-quarters, between 1990 and 2015, the rate of maternal mortality.	Provides access to better medical facilities, including medicine refrigeration, equipment sterilization operating theatres. Indoor air pollution reduced.	IAP, workload and heavy manual labour may affect a pregnant woman's general health, and well-being.
6. HIV/AIDS, malaria and other major diseases Halt and begin to reverse by 2015: - the spread of HIV/AIDS - the scourge of malaria - the scourge of other major diseases that afflict humanity.	Improved health centres and facilities. Energy for refrigeration allows vaccination and medicine storage for the prevention and treatment of diseases and infections	Access to public health education.
7. Environmental sustainability Stop the unsustainable exploitation of natural resources; and Halve, between 1990 and 2015, the proportion of people unable to reach or to afford safe drinking water	Machinery and irrigation allow for Increased productivity, which reduces the need to expand land under cultivation, reducing pressure on ecosystem. Renewable energy supply can reduce pollution.	National sustainability aided by greater use of indigenous renewable energy sources instead of imported fossil fuels.

Based on the table in *Energy for the Poor: Underpinning the Millennium Development Goals*, DFID, 2002
http://www.dfid.gov.uk/pubs/files/energyforthepoor.pdf

Unfortunately, for simple-minded programming, increased energy availability by itself will not reduce poverty unless accompanied by additional enabling factors. Apart from the energy sector's link to poverty, similar links also operate with other basic infrastructure inputs such as transport, communications and others. Each one of them can have a targeted and direct impact on the poor to the extent that they utilise these services, but in all these cases the indirect effect is often much larger and yet more difficult to establish.

WOMEN and GENDER: ENERGY and POVERTY

In the earlier sections it has been documented that poverty in the region is much higher than what is sometimes assumed and rural poverty is extremely high. The fact that lack of access to adequate energy services is a key dimension of poverty and that increased access, for men and women, to improved and modern energy services are an important tool to reduce poverty, both directly and through growth and income enhancing results was then presented. Further in the entire presentation we have documented the special needs of women among the rural poor and why improved energy services need to be provided for women, and, with women as a major participant in the efforts to improve their well being. Here we review briefly the changing perceptions of knowledge in the development field on the role of women and the treatment of gender.

Women and Gender

In the development field the acknowledgement of the role of women was a late realisation. It is often noted to have been legitimized with the pioneering work of Boserup "Women and Economic Development" in 1970[65]. An increased development focus on issues of women began with the United Nation's International Decade for Women (1975 - 1985) and saw increased research and study on women or the first phase of the "women in development" (WID)[66] perspective. The WID approach sought to integrate women, who had been left out earlier, into the existing development programs and paradigms. Increasing women's access to development inputs improved the lives of the women and also made the project more effective. Thus inclusion of women served to make the project achieve greater equity, efficiency and effectiveness[67]. It neglected to consider the unequal power relations in society and assumed that access alone would be sufficient to enable women to take advantage of the new opportunities offered and did not recognise their additional burdens of time and other burdens imposed by cultural and social expectations based on gender[68].

The WID perspective has its useful dimensions in that there was a formal recognition of the different experiences of women and men within society[69] and to correcting the apparently gender neutral policies. This legitimized the study of women as a separate category of people, attempted to find technological solutions to meet the special needs of women. It failed to ask the more fundamental questions about the basis for women's subordination and oppression. Finally, Rathgeber states that this first approach focused exclusively on the productive aspects of women's work and ignored the reproductive side of women's lives.

[65] As with many issues, the theory and the evolution of thinking and experiences in gender, development and energy can only be dealt with a very broad brush in this report. We have selected several well known and recent reports to guide the presentation of the key ideas and issues. These include Celeski (2004); Rathgeber 2005 and 1990;
[66] Rathgeber, 1990, states that the term WID was first used by the Women's Committee of Washington, D.C. chapter of the Society for International Development.
[67] Celeski (2004) page 5;
[68] Rathgeber, 1990.
[69] Ibid.

Gender:

Gender concerns the roles and power relations between men and women as socially and culturally defined. Gender relations, therefore, are contextually specific and often change in altering economic circumstances.
Sources: UNU/INIRA and Moser. quoted in Strategic Country Gender Assessments by the World Bank. The assessments are at http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/AFRICAEXT/EXTAFRREGTOPGENDER/0,,contentMDK:20295615~menuPK:584641~pagePK:34004173~piPK:34003707~theSitePK:502360,00.html

Gender is not biological – girls and boys are not born knowing how they should look, dress, speak, behave, think or react. Their "gendered" masculine and feminine identities are constructed through the process of socialisation, which prepares them for the social roles they are expected to play. These social roles and expectations differ from culture to culture and at different periods in history.
Source: Gender Mainstreaming at http://www.undp.org/gender/infopack.htm

This was followed by the short lived Women and Development approach that started with a class based and Marxist critique of women's role in the entire development process. It provides greater solidarity between oppressed men and women in poor countries, and argues that both women's and men's position is dependent more on international structures of power and economic relations[70]. The Gender and development approach emerged in the 1980s, with a base in socialist feminism, and it identified the social structures of production and reproduction, the specific roles, responsibilities, and expectations of men and women, as the roots of women's oppression. The newer approach integrates women's work both inside and outside the household, both paid and non-paid work, and calls for a more activist state to provide specific services to women. An important difference is that this approach sees women as change agents rather than passive recipients or victims. It stresses the need for women to organize and acquire greater political voice. The core problem was not lack of integration into development, but inequality between women and men and the social process that creates the inequality. Rather than consider women in isolation, account must be taken of the broader context of their lives in the family, economy and society.

An Example of Misguided Interventions

The beginning of the WID period coincided with the first increase in oil prices in 1973. This was followed by further jumps in energy prices in 1979 and 1983. The rise in oil prices and the sympathetic rise in other energy prices led many researchers to take a serious look at possible shortages of non-commercial energy, largely biomass based, and used for the majority of the energy supply in the poor and developing countries. This began the first phase of work on women and energy. The increased interest in women and the simultaneous interest in energy supplies led researchers and policy makers to note the key relationships between biomass, poor people, women and household energy needs.

[70] Ibid.

By the late 1970s and early 1980s the overall picture had become established. Household energy consumption is the dominant form of disembodied energy use in poor countries, and the poorer the country or the household, the share is higher. Most of that is required for cooking, almost all of that relied on biomass, which until then had been completely outside national energy balances and lacked data. Women were responsible for this task and related time and effort. They were already burdened with many production activities and most household chores. The inefficiency of the energy services available to them added to their burdens. Their strategies for survival required long days, with more working hours than men[71]. It was also well known by then with the "green revolution" in Asia that new technologies require new skills, time and capital investments, all in short supply among the rural poor. Thus if the inequity of resources was not dealt with from the beginning, the introduction of new technology is generally attractive only to those with more resources, with resultant differential impacts on incomes and other benefits.

Very soon it became clear that there were significant misperceptions. A major misperception was that the use of wood fuels led to environmental damage through deforestation. This led to commercial forestry projects under the guise of wood fuels and most were failures. Similarly the early effort at wood stoves was focused on efficiency of combustion with the idea of saving forests and biomass. Well meaning measures to protect the environment by forcible closure of natural forests cut-off fuel supplies and forced additional burdens. Women sometimes adopted other strategies such as purchasing kerosene or changing the type food cooked. (Sinha 2001).

In fact it was later seen that the main reasons for cutting down trees in most developing countries is first for agriculture (70%), second for timber (20-25%) and only finally for all domestic uses and fuel wood, at around 5-7% of the total[72]. The major sources of biomass for household energy are dead trees, cuttings of branches, from village and non-forest lands and agricultural wastes. Therefore, the perception that woodfuels are a major cause of deforestation needs to be laid to rest[73]. Among other misperceptions were that the new technologies were as useful in the field as they were in the test bed. As greater awareness of gender roles and theory was established it became apparent that women who cook know a lot about the stove, what works and what does not, they devise strategies to optimize their situation within the constraints faced by them. Outside experts were too often chasing and solving problems that were not there, or, not apparent to the women who were to benefit.[74] The critique of these interventions along the gender framework does much to explain the failure of these interventions[75].

The newer gender framework is discussed in the next sections. It is important to note that many development projects continue to have a WID framework, as the gender frameworks have been difficult to apply for a number of reasons that are discussed.

[71] For example see Tinker, Irene (1982) Energy Needs of Poor Households.
[72] See World Energy Council.
[73] There are a few specific places where woodfuel consumption exceeds production from accessible sources and create shortages and environmental degradation such as Haiti, some areas of the Andean highlands, the Sahelian countries, and around some large urban areas where the concerns remain valid.
[74] See Celeski 2004 chapters one and two for a longer description and analysis of energy and gender, particualarly with respect to biomass and cookstove.
[75] See Celeski 2004 for a longer and more detailed critique.

The Gender Framework

Gender relations everywhere are **patriarchal** – that is, they reflect and perpetuate a hierarchy where women are subordinate to men. Women's subordination is reflected in inequality and differences between women and men within the family and community, as well as in all social, economic, cultural and political interactions and relationships between people.

Patriarchal social structures and institutions are sustained and strengthened by value-systems and cultural rules which propagate the notion of women's inferiority. Patriarchy makes women powerless in many ways – by convincing them of their own inferiority to men; by demanding that they conform to certain stereotyped 'appropriate' roles and behaviour; by denying them control over their own bodies, lives and labour; by limiting their access to resources and by restricting their opportunities to participate in decisions which affect their own lives.

Gender equality cannot come about only through changes in women's condition – it requires transformation of the structures and systems which lie at the root of women's subordination and gender inequality . This transformation cannot be induced by external interventions. Women must themselves become **active agents** of change. Gender equality therefore demands **women's empowerment,** a process that leads to greater participation in social and political processes, greater decision-making power and to conscious action for social transformation.

The process of empowerment is not sectoral – it encompasses women's multiple roles and interests, and addresses the inter-relationships between them, leading to women gaining greater control over their own lives. Empowerment thus has many dimensions.

- Building a critical understanding of the causes and processes of disempowerment.
- Enhancing self-esteem and altering self-image.
- Gaining increased access to natural, financial and intellectual resources.
- Acquiring the confidence, knowledge, information and skills to understand and intervene in social, economic and political structures and processes.
- Increasing participation in and control of decision-making processes within and outside the family and community.
- Moving into new roles and spaces, which were hitherto seen as exclusively male domains.
- Coming together to question, challenge and change unjust and inequitous beliefs, practices, structures and institutions which perpetuate gender inequality.

- Development efforts in the last forty years have by and large not addressed the root causes of women's subordination, and have therefore failed to impact gender inequality in a significant way. Most mainstream approaches to women's development have not been based on analyses of the overall reality of women's lives, but have focused either on their roles as mothers and housewives, or as economic agents. The development of women was seen as an issue of "letting them participate" in projects which they were not involved in determining, on terms decided by others.
- The emphasis later shifted to targeting women through separate women-only projects. While many of these were innovative and catalytic, most were small, isolated and under-funded initiatives which had very little lasting impact. Where women's components have been included in large mainstream projects, the objectives and priorities of these projects were seldom influenced or informed by women's needs and concerns.
- Gender inequality is not a result of women's integration or lack of integration in development, or their lack of skills, credit and resources. The root cause of the problem lies in the social structures, institutions, values and beliefs which create and perpetuate women's subordination. The issue is not merely one of "adding on" women to various processes, but of reshaping these processes to create the space for women's involvement not only in implementing the development agenda, but also in agenda-setting.
- The need is therefore to move from **integrating** women into existing development approaches to a framework of **equitable and sustainable development.** This involves reshaping development to reflect the visions, interests and needs of those who have been rendered invisible and powerless by mainstream processes.

Source: UNDP Learning and Information Pack:: Gender Mainstreaming, P. 28

GENDER MAINSTREAMING[76]

The term "gender mainstreaming" came into widespread use to improve development outcomes. This was called for in the Beijing Platform for Action in 1995. The slow progress in achieving real change in the situation of women despite efforts over two decades suggests that significant change cannot be achieved by adding marginal programmes for women. Rather, changes were required in mainstream policies and resource allocations to reflect the interests and views of women as well as men. A mainstreaming strategy emphasizes systematic attention to gender equality issues in organization practices, policies and programmes with the goal of progress toward gender equality."[77]Mainstreaming is a process or a strategy to work toward the goal of gender equality. Mainstreaming strategies aim to make development more effective through "reshaping the mainstream" rather than adding activities for women at the margin; making gender equality as an objective, rather than women as a target group; ensuring that initiatives not only respond to gender differences but seek to reduce gender inequality; greater attention is given to women's organizations and the momentum for change; and attention is also given to men, in their role in creating a more equal society.[78]

What does mainstreaming mean and how is it applied? In practice, mainstreaming is undertaken largely within the first, 'integrationist' or WID approach where gender issues are built within existing development paradigms. Widening the applications of women-and-gender concerns across a broad spectrum of sectors is the key to the mainstreaming strategy. Normally, within this widening concept, the overall development agenda is not transformed, but each issue is adapted to take into account women-and-gender concerns. A good example of the 'integrationist' approach is the practice of designing WID 'components' in major sectoral programmes and projects. Women are 'fitted' into as many sectors and programmes as possible, but sector and programme priorities do not change because of gender considerations.

The second approach, is the 'agenda-setting' approach, and it implies the transformation of the existing development agenda with a gender perspective. The participation of women as decision-makers in determining development priorities is the key strategy in both approaches. In the first, women's participation is instrumental while in the second women's participation brings about a fundamental change in the existing development paradigm. Women not only become part of the mainstream, they also reorient the nature of the mainstream. It is not simply women as individuals but women's 'agenda' which gets recognition from the mainstream[79]. Thus an important distinction between the earlier approaches and the later is the extent to which women are "empowered" and the underlying structures of inequality changed.

[76] This section is based on the UNDP (2000) Gender Mainstreaming Information Pack; Rai, Shirin M. 2002 Chapter two "Gender and development. Theoretical perspectives in context," and the citations below.
[77] Ibid. p. 10.
[78] Ibid. p 14.
[79] Ibid P 21 citation of Rounaq Jahan, The Elusive Agenda: Mainstreaming Women in Development. London, Zed Books, 1995.

There are a large number of manuals and tools to mainstream gender with almost every agency preparing one of its own[80]. A number of reviews of gender mainstreaming find that in spite of the long history and wide adherence to gender mainstreaming there is considerable confusion about the meaning of "gender mainstreaming"[81]. Rathgeber states that the CIDA experience has found that the concept is more easily applied to social sectors that have a disproportionate effect on the lives of girls and women, and have more women involved in them, e.g. health, education, micro-credit. But in areas such as infrastructure and macroeconomics the application is less clear-cut. Also that gender advocates tend to have backgrounds in social and political sciences, humanities and communications, and find it difficult to take issue with the more quantitative or professional disciplines. Similarly the IDB reports that gender mainstreaming was achieved to a much larger extent in social sector (around 30% of investments) project design but generally did not occur outside the social sector. Again while it was easier to mainstream gender into the project design, usually undertaken by IDB staff with the support of experts, it was felt that there was no demand from client countries, difficulties and inconsistencies in the project execution phase[82]. Another review of 13 national Poverty Reduction Strategy Papers (PRSPs) produced in 2002 found that only three cases 'almost' mainstream gender. The others confine gender consideration to issues such as maternal health and female education and some ignored it completely. Most of them did not have disaggregated data[83], and where information is provided, women are significantly under-represented in consultations[84].

Rathgeber states another review found that gender mainstreaming in the UNDP and the World Bank had also been mixed. In practice, gender mainstreaming is equated with the visible presence of women, their numbers, though the mere presence of women either on professional staffs or within projects is not a reliable indicator that gender mainstreaming has occurred or that power relations have changed. Gender mainstreaming is strongly supported by the lobbying and activism by NGOs and so it is ironical to find that some NGOs also find it difficult to implement[85].

Gender mainstreaming is always stated as one major goal of many donors, but despite the oft stated commitment mainstreaming remains difficult and complex. Many reject gender mainstreaming to be part of a "feminist agenda" rather than a conceptual and practical tool that can point to real programmatic gaps in the impact of their projects[86]. It also suffers from the defect that when the "development industry uses the word "gender" it usually means "women"[87] Men are almost never analyzed as part of the gender equation. Therefore, on the one hand the development industry is still focussing primarily on women while ensuring that for project

[80] Useful and well known manuals and tools include UNDP 2000; Derbyshire 2002 prepared for DfID, several tools developed by the World Bank, some general, some for the PRSP, some for sectors such as water. See also the Canadian site for the status of women for a list of non energy Training & Tools for Gender-based Analysis at http://www.swc-cfc.gc.ca/resources/gba-training_e.html

[81] See Rathgeber 2005. She quotes from the OECD Development Assistance Committee (DAC) Source Book on Concepts and Approaches Linked to Gender Equality that 'Despite an increasing use of the term mainstreaming, there is still confusion about what it means and organisations use the word in different ways. Some find it confusing and difficult to translate into other languages.

[82] IDB, 2003. Pages 1,39

[83] In personal communication another donor agency reported that while gender has been fully mainstreamed there was no data on mainstreaming.

[84] Zuckerman, E and A. Garrett, 2003. He concludes that gender advocacy needs to continue and deepen.

[85] Oxfam 2003. Concluded that gender could not be mainstreamed at the programme level if it was not mainstreamed in the workplace.

[86] Rathgeber, 2005.

[87] Ibid.

purposes "women" are contextualized within their multiple roles (economic, reproductive, social, etc.). Rathgeber points out that projects rarely contextualize men as husbands, fathers, brothers separate from their economic roles. The use of "gender" terminology makes it less acceptable to focus on the situation of women separated from that of men, but such analysis is almost always exclusively done from the point of view of women. This helps to focus on women and is not intrinsically bad as women continue to be disadvantaged and need additional support, however this common approach does undermine the "real gender analysis"[88].

"More insidiously, although "gender analysis" has usually been one-sided, and starts from the assumption that women are in a relative position of vulnerability vis-à-vis men, it has also had the adverse side effect of shifting attention away from women's concrete problems into more abstract explorations of the social and power relations of gender. The pioneer thinkers in the 1980s who urged feminists working in international development to adopt the term "gender," hoped that the use of this terminology would lead to a deeper knowledge and recognition of the patriarchal structures which made it difficult for many women to fulfill their own potential. They did not foresee that gender analysis could become an end in itself, leaving poor women in situations that continue to be difficult"[89].

The practice of gender in energy

This report has already pointed out that poor, rural women face special deficits in their energy service needs. Yet "not only is assistance to women's cooking problems very limited: there does not seem to be much awareness of the gender face of energy in other energy sectors, such as electricity, or of the potential of energy as a factor in supporting women's emancipation and empowerment.[90]" The reasons for taking gender aspects into consideration are first due to the fact that men and women, especially when poor, have different needs for energy services. These differences show up not only in the reproductive tasks but also the production activities. Good design needs knowledge and appreciation of the different needs. Second some policies and approaches have greater impacts, both positive and negative on each gender. Both of these facts are amenable to the older WID formulation as well as the newer gender formulation because addressing these improve both the efficiency and effectiveness of interventions and widely stated objectives of donors and agencies. The fact that such "mainstreaming" experiences are limited can be due to several well-known reasons discussed earlier. The poor, the minorities, the women and their problems are often overlooked in attention and this has already been mentioned. Thus mainstreaming is often easier to accomplish through a count of the number of women in donor organizations, project implementing agencies and in local organizations but much harder to accomplish in the focus of the work. For instance in a recent document on renewable energy, biomass and sustainability in the LAC region supported by three international institutions, all committed to mainstreaming, any relationship of biomass to the users is completely absent with the words women, gender, cooking, all missing from the document.[91] Given the experience of

[88] ibid. The present report often falls into the same trap!
[89] Ibid.
[90] Skutsch 2004. Page 1. See references for additional evidence.
[91] See UN ECLAC 2003. On the other side the excellent review by Chant of Gender and Poverty in the region does not consider energy among the factors contributing to poverty or its determinants. Similarly, SNV the Netherlands

IDB discussed above, it is not surprising that an OLADE survey found little mention of the energy needs of either women, gender or rural poor in national energy policy documents[92] and the IDB's own 2004 policy document on energy does not include the word gender.[93] The OLADE baseline survey on energy in the LAC region provides more discouraging evidence. Of the 26 OLADE Member Countries only sixteen have a national energy policy or strategy posted on their Websites. Of these 16, only two include gender and two others mention Indigenous people's issues though neither detail any specific needs or how they are to be addressed[94]. Only two out of the 26 OLADE member countries returned a completed or partially completed questionnaire on gender and energy. Given this, it is not surprising that OLADE reported "We were unable to systematically document special provisions for the participation of women in decisions on energy project development"[95].

With the shortage of examples and the difficulties of even translating the simpler "instrumentalist approaches" it is not a surprise that many reviews have found that the integration of gender and energy in research, data collection, analysis, and, in project design and implementation remained weak or absent. There have been several recent efforts to attempt to remedy this weakness. DfID commissioned a study in 2001 to better understand why, even though "the presence of links between gender, poverty and energy have been hinted at in many studies, for example in DfID's publication Energy for the Poor (2002)", there are few that tackle it[96]. The conclusions reached were that most gender analysis tools, such as the Harvard Matrix, are too general. They call for data on time used by men and women for different activities and the differences in access and control over resources. However, they do not provide adequate emphasis on the role of energy and do not bring out the energy component in men and women's livelihoods[97].

Improved Gender and Energy Approaches

Skutsch has reviewed some of the weaknesses of available gender and energy tools[98]. She finds that the available tools are inadequate, the variables used do not illuminate energy demands well, data on key variables are often lacking, there is little clarity on the stakeholders that must be involved, and it is not clear which questions are most relevant at different points in the energy cycle. The weaknesses of the existing gender analysis tools to appropriately consider energy issues have led to several recent efforts to improve the situation[99]. It is important for any new

Development Organization does not report on gender in its successful biogas for cooking programs in 2004 documents or the web site.

[92] OLADE .No date. Baseline Study - OLADE Sustainable Energy Project, University of Calgary - Latin American Energy Organization (OLADE), draft mimeo.

[93] IDB 2004. Energy Policy, Policy and Evaluation Committee, GN-2299-3, 29 October 2004.

[94] OLADE .No date. Baseline Study, P. 12-14.

[95] Ibid. P. 16. There are isolated local and regional initiatives in raising awareness of women's needs and gender roles in energy and a number of these are listed in the bibliography and sources for further information. The most notable include the workshops under the "Women in Development Initiative" of the University of Calgary / OLADE Project; the work of the GENES network and of WINROCK, and a few national NGOs.

[96] Summary of DFID research project Integrating Gender, Poverty Reduction and Energy at http://www.dfid-kar-energy.org.uk/html/c13.htm

[97] Clancy, et. al. 2003. Finding the energy to address gender concerns in development. DFID Project CNTR998521. Available at http://www.sparknet.info/goto.php/view/21/file.htm

[98] Skutsch 2005. The paper provides a set of useful tables linking gender and energy goals, lists of gender questions, frameworks for data and indicators.

[99] Notable among these besides Skutch above, are the Gender in Energy: Training pack, also developed by Skutsch and available at http://www.energia.org/pubs/papers/tdg_g_e_manual.html; developed at the Technology and Development Group (TDG), University of Twente; a similar web based manual also prepared by the TDG, Energia and UNDP is available at http://www.undp.org/energy/genenergykit/; the ENPOGEN study reported in Ramani, K. V. and Enno

efforts at improving the energy services for the poor to utilize these new tools and frameworks in a manner consistent with the project goals and throughout the project cycle.

Skutsch points to at least one dilemma that does not disappear with the improved understanding of the issues or with better frameworks and approaches and this is the link between the empowerment objectives and the energy objectives. It starts with the fact that empowerment itself has been and can be defined in many different ways and so there is a need to agree on the concept being used to avoid confusion. Second, agreement is difficult between many different stakeholders who may be involved in the project[100]. Finally, we are left with a set of questions regarding gender, empowerment and energy to which answers are as yet unavailable. Is there evidence that energy projects and programs have been more successful where gender has received attention? Do energy policy, projects and programmes, which incorporate positive changes in gender relations, have more of an impact on reducing poverty? And, does improved access to energy and reducing energy poverty result in empowering women?[101] In practice interventions that start with empowerment objectives and the consideration of all gender issues relevant to existing social inequities and deprivations find that energy is not the highest priority.[102]

We suspect that greater access to appropriate energy services is likely to be an important "enabling" requirement for improving the condition of women and thereby it could promote empowerment. But improving energy services is unlikely to be either necessary or sufficient for empowering women. Again, "empowered" poor women are more likely to receive the attention of policy makers and project designers to meet their energy needs, and other needs, but it is unlikely to be automatic or most likely in the short term. There are limits to the "explanatory power" of both "gender" and "energy" and women (and men) continue to be excluded both with and without access to modern energy services[103].

Heijndermans, 2003; the report by Dutta, S. 2003 for UN ESCAP; and the recent Gender and Energy workshop reported in Energia 2004.

[100] Skutsch 2005, p 39, states that this is often a grand declaration and most subject to "policy evaporation".

[101] These questions are being answered through an ongoing research project, "Gender as a Key Variable in Energy Interventions: Are we asking the Right Questions?" supported by DFID and being coordinated by Energia. The background report for this study is Celeski 2004 and the first workshop to discuss the work is reported in Dutta, S. 2004.

[102] See for instance report of the project workshop in Guatemala and a number of other reports that have sought men and women to prioritize their needs where energy often falls within the top ten but around the middle in rank. This is actually reasonable and should not cause despair among those working in energy as we have discussed that both poverty and its reduction are multi-dimensional and all dimensions need attention.

[103] Barnett in Dutta, S. 2004.

TOWARDS EFECTIVE SOLUTIONS

The report has documented that men and women who live in rural areas and are poor in LAC are many more than often assumed. They are particularly badly served in meeting their energy needs. They have some common needs for production and for household needs and they also have specific areas where their needs and perceptions differ because of gender. In all households, the division of labour by gender usually results in women having the responsibility for most household activities including energy in the household, in particular, the kitchen[104]. Women are often helped by their children, mostly girls but sometimes also by boys. Men often become involved where sales, purchase, or transport are required. Women and men, naturally have different perceptions about energy, with many studies finding that men often see the benefits of electricity in terms of leisure, entertainment and quality of life. Women, on the hand see electricity as a means to reduce their workload, free up time for other activities, and improve small productive work to increase earnings, better health, and reduce expenditure. Both women and men often cite the potential value of increased energy for education for their children. On the other hand, in a number of studies it is shown that women gave a higher priority to biogas stoves than men[105] and appreciated more its cleaner and smoke-free properties, and that it allowed for tasks to completed sooner than with traditional cookstoves. Whereas, men usually preferred improved energy supplies for farming, irrigation and transport.

The fact that rural women tend to be particularly susceptible to energy poverty is well established. The impacts of energy poverty for women and their families includes impacts such as increased drudgery involved in collecting fuel resources; health problems linked to indoor air pollutants from inefficient use of traditional fuels, and; limited access to income generating opportunities requiring modern energy services. Women's susceptibility to energy poverty is largely a result of the distance of the poor, the rural population, marginalized ethnic groups and of women in national and international planning, policies and projects. The technocratic focus of most energy policies leads to a focus on issues of supply, financing, global pollution and others that at a systemic level fails to address poor women's and men's varied energy needs and abilities to access resources for energy services and for their development.

Energy Needs and Services

The major energy needs of poor, men and women, in LAC as elsewhere are for household, community and for productive needs. Ideally all three should be provided for. But unfortunately many times within a project choices have to be made between these while the mistakes are often made that energy supplies are equally appropriate for all needs. There is no evidence whether a focus on the household or community level or towards energy services for income generation is the most preferred route. If the focus is on removing a major burden on women and children then

[104] Clancy 2002 provides a comprehensive review on gender and energy, particularly at the household level.
[105] Reported in an Indian National Workshop on Biogas, 21-22 August 1995 organized by the Aga Khan Foundation and the European Commission and also from the author's small field surveys.

household cooking (and space heating where required) has to be a priority. On the other hand electricity services are to be preferred for lighting and for small domestic and commercial appliances. Finally there are many productive needs that do not require electricity but do need more efficient thermal heat supplies.

Household Cooking and Indoor Air Pollution

Most poor households, whether rural or urban, rely largely or solely on solid and biomass fuels such as coal wood, charcoal, animal dung, and crop wastes. Cooking occurs again mostly indoors, with the use of open fires or poorly functioning stoves[106]. Inadequate ventilation and smoke extraction lead to high levels of pollution in many homes[107]. The harmful substances emitted from the inefficient combustion of solids include particulates, carbon monoxide, nitrogen oxides, benzopyrene, benzene, and others[108].

The World Health Organization[109] ranked indoor air pollution (IAP) from solid fuels as the fourth most important health risk factor in developing countries. Poorly vented cook stoves may have the same negative health impacts as smoking two packs of cigarettes a day[110] A clear and direct physical health risk exists due to biomass smoke exposure which results in the increases likelihood of a range of health conditions, and common and serious diseases including:

- childhood acute lower respiratory infections
- chronic bronchitis
- chronic obstructive lung disease (narrowing of airways in the lung),
- low birth weight
- perinatal mortality (stillbirths and deaths in the first week of life)
- asthma, and middle ear infection in children (acute otitis media)
- cardiovascular disease
- tuberculosis
- nasopharyngeal and laryngeal cancer
- cataract in adults

Women and young children in particular are most at risk. Women because they are normally responsible for food preparation and cooking, and infants/young children as they spend time by their mothers. In Latin America during the early 1990s, the annual burden of disease attributable to IAP and solid fuel use was estimated as 29,000 deaths, over 58 million illnesses, and more than 918,000 disability adjusted life years (DALYS). These numbers are not broken down by

[106] There is such a large amount of work devoted to cook stoves that it is not possible here to review this material. See sources cited in the annex 3 Institutions and Networks, in particular, the work of the FAO, Energia newsletters, Household Energy Network, Boiling Point from the ITDG Stove and Household Energy Programme, and the GTZ Programme as well as, Annex 1 Guatemala.
[107] Another excellent recent review of the issues in Indoor Air Pollution is available in the ESMAP review March 2004.
[108] An early review of the issues related to Cooking, Pollution and Health is Smith, KR. 1987. Biofuels, Air Pollution, and Health. New York, NY: Plenum. A very recent review of a number of Energy and Health issues including biofuels for cooking is by Listordi, J.A. and F.M. Doumani, 2004, Energy and Environmental Health: A Literature Review and Recommendations, ESMAP, UNDP/World Bank, Technical Paper #50, Washington D.C. March, 2004.
[109] WHO (2002) World Health Report, Geneva.
[110] In UNDP Pushes for Expanded Energy Services to Meet the Poor's basic needs, UNDP press release, 10 April 2002.

gender or by rural / urban distinctions – but for the reasons discussed, these are predominantly rural and poor women.

Reducing the impact of IAP should not be as difficult as the lack of progress suggests. Effort is required since the health burden is high, and for several decades biomass, charcoal and coal will continue to be used by a large number of rural women in Latin America.

The principal interventions include[111]:

1. Smoke removal - Flues attached to stoves, hoods and chimneys to remove smoke.
2. Housing design - Changes to kitchen design to increase ventilation and control the distribution of pollution.
3. Fuels -promoting fuel switching to alternatives such as kerosene or LPG.
4. Replacing traditionally designed cookstoves with new and improved cookstoves, which reduce emissions through better combustion and more efficient heat transfer.
5. Using solar energy or other energy sources for lighting of their homes and space heating
6. Promoting awareness of long-term health effects -May lead to people finding ways of minimizing exposure through better kitchen management and infant protection
7. Local microcredit facilities – May help provide the upfront costs of switching to gaseous fuels through the provision of subsidies.
8. Training - to develop skills and expertise for stove development and use, improved housing design, and better education about health risks.

Possible Interventions to reduce exposure[112]

Source	*Living Environment*	*User Behaviour*
Improved cooking devices	Improved ventilation	Reduced exposure through operation of source
• Chimneyless improved biomass stoves	• Hoods / fireplaces and chimneys (built into structure of house)	• Fuel drying
• Improved stoves with flues attached	• Windows /ventilation holes	• Use of pot lids • Good maintenance
Alternative fuel	Kitchen design and placement of the stove	• Sound operation
• Briquettes and pellets	• Shelters / cooking huts	
• Charcoal, Kerosene	• Stove at waist height	• Keeping children out of smoke
• Liquid petroleum gas (LPG)		
• Biogas, Producer gas		
• Solar cookers (thermal)		
• Other low smoke fuels	Efficient housing	

[111] Based on the Household Energy Network (HEDON) 2003 (http://www.hedon.info/goto.php/ImpactsOfPoorIAQ) and Y. von Schirnding et al 2000.
[112] Abstracted from Y. von Schirnding et al 2000. See source for additional details and references.

• Electricity Reduced need for the fire Solar water heating		Partially pre-cooked food

Examples of interventions with costs.[113]		
Intervention	Approximate cost to users in US$	Reduction in particulate indoor air pollution (%)
Ceramic chimney-less stove	$ 4-7	Some studies show 50 improvements, others show increases in emissions.
Chimney stove	$ 10-150	Up to 80% reduction, varies by type.
Kerosene	Ordinary burner $3-$30 Pressurized stove $5-$50 Fuel <$1-3/ week	50-90%
Charcoal	Jiko stove $5-$10 Fuel <$1–$2/ week	50-90%
Electricity (e.g. micro-hydro)	2-ring stove $20-$50 Oven up to $100+ Fuel $0.50 - 2/week based on annual consumption/household of 1000 kWh	100% emission free for user.
Biogas, and processed biomass ethanol gel fuel	Digester and gas stove $300 – Nepal Only labour	90-100%
LPG	Burner $30-$120 Cylinder deposit and regulator – around $50-$60 for 12.5 kg. Fuel: $1-2/week	50-90%+ reduction
Solar cookers	$5-$50 varies by material used	No emissions, but use limited.
Hoods over stoves	$10-$60, depending on materials used, number produced and sold	Variable up to 80%.
Cooking window	$5-$15, depending on design of house	Up to 85%.
Abstracted from Y. von Schirnding et al 2000. See source for additional details and references.		

A promising development here is that in August 2002, at the World Summit for Sustainable Development a new Partnership for Clean Indoor Air was launched. This partnership aims to bring together governments, industry, and non-governmental organizations to address these

[113] Ibid.

serious health effects of indoor levels of smoke from cooking and heating practices[114] with greater vigor though no targets for have been set for actions or goals.

Household Lighting and Electrical Services

In terms of the order of increased efficiency, light is provided by cooking fires, candles, kerosene, gas, and electricity, all of which generate energy provide improved quality of light. With respect to quality and efficiency of the energy used to convert to light, electricity is the best source and is almost 30 times more efficient than kerosene lamps (a single 60- watt bulb requires 30 kerosene lamps[115]). Electricity in rural areas is first and most important for lighting – domestic, institutional, communal, public places and services such as health and education facilities.

At home and institutions it extends the potential for useful hours. After lighting and some communication uses, at higher income levels electricity makes women's work easier with refrigeration and domestic appliances such as blenders and grinders. It also improves their income-earning work opportunities. One of the main problems for the women of Tacna, Peru, was the absence of electricity in their homes: they wanted to make the most of the evening to speed up their textile work; they needed to feel secure in their homes; they needed to facilitate the task of caring for their children; they needed to make the night less dark; they needed to light the streets that they and their families used[116]. However, energy for production requires both process heat and electricity and for some applications like irrigation, diesel engines are an efficient substitute. Ultimately the value of electricity for cottage industries and the income generating potential of extended hours will depend very much on complementary resources such as credit, and markets[117].

The majority of electricity investments are for centralized power generation and distribution through the grid with increased access provided by grid expansion. This will remain the dominant and cheapest form of electricity supply for many regions. But where the population density is low, the distance from central sources is high and total demand is restricted to lighting the homes of poor people, expansion of the grid will be too expensive. In such cases, several distributed and off grid solutions must be investigated. There are many options to generate the electricity required, ranging from biomass, hydropower, wind turbines, photovoltaic systems among renewables and generators using fossil fuels. Decentralized electrification, in particular if biomass based energy adds local employment opportunities, provides opportunities for local participation through cooperatives and other structures. The focus in energy policies and planning on electricity, with or without the right prices, does little for cooking requirements as it is not cheap enough (except sometimes with small hydro) and so does little to change either the burden women face or the state of their health. At the same time without access to electricity, neither efficient lighting nor other modern services, including many productive uses are possible.

[114] USAID and U.S. EPA are funding 11 pilot projects to improve home cooking and heating practices with a $1.3 million grant that expects to reduce exposure of 160,000 people over the next two years or at a cost of $10 per person. In the LAC region three projects are being supported. In Mexico to make and sell 2,000 solar panel ovens for rural areas; in rural Guatemala the use of the retained heat cooker; and in Honduras more efficient wood-burning stoves in urban areas. http://www.epa.gov/iaq/pcia.html.

[115] World Energy Council.

[116] Yturregui 1998 cited by Celeski together with a very interesting set of coping strategies.

[117] The UNDP 2004 study on energy services and the MDGs discusses the case study of Brazil's rural electrification program and finds a number of associations between positive MDG and electricity access.

Many rural communities in Latin America have resource endowments to generate electricity through small hydro plants. Where these are a low cost option, one of the greatest advantages may be afforded in that cooking and domestic energy needs may be met, as well as production and growth capacities. It is our view that solar photovoltaic -based home systems should most often be the last choice solution where no other viable option exists. This is due to the cost of grid electricity which ranges between 10 to 20 cents per KW/Hr (depending on the scale), and most other renewable energy sources which can also be within the same range (sometimes at a lower and at other times at 0a little higher cost), SPV home systems have been estimated to cost up to $3.00 per unit of energy. Thus while they can make a difference in very specific circumstances, it is highly unlikely that they will be the system of choice in as many rural energy and poverty projects as has been the practice. PV electricity in homes has been used solely for lighting and entertainment such as radio and television in poorer households, if they are able to afford it even with high subsidization. But when they are the only choice, SPV for communications, for community uses such as meeting spaces, after school programs, health clinics can have a positive cost benefit ratio. Also the construction, sales and maintenance of solar systems, where they are appropriate, have been used successfully for empowering women through the creation of women technicians, sales agents and entrepreneurs and is a very attractive direction shown in two successful programs in Bangladesh and India[118]. Ideally, similar involvement of women in all energy services can be one component towards empowerment that has not been followed often though it must be recognized that only a small number of women and men will ever be required for the production and servicing as compared to the number of users of the energy services.

Biomass

At least since the mid-1970s it has been well known that the primary source of energy in rural areas of all developing countries is biomass[119]. While biomass provides up to 90% of the total energy in some poorer and African countries today[120], its share in the total national energy sources in the Latin American countries ranges from a low of 1% in Argentina to a high of almost 90% in Haiti.[121][122] The use of biomass, rural people, the poor, household energy and hence women are inexorably linked. While globally, it is certain that biomass will remain the fuel of necessity for the poor for many years to come[123]. When options increase, those who can afford the shift, invariably opt for the cleaner and more efficient “modern” energy carriers of electricity,

[118] See Khan, Hasna J 2003 and 2001 for Bangladesh. For India see http://news.bbc.co.uk/1/shared/spl/hi/picture_gallery/05/south_asia_villagers0_barefoot_college/html/1.stm that highlights through pictures the work of the innovative Barefoot College in the village of Tilonia that trains illiterate village women on various new technology services including energy. 'The centre’s web site is www.barefootcollege.org

[119] The biomass based fuels are also called traditional fuels, and sometimes non-commercial fuels. They include wood, agricultural residues, dung, grass, leaves, and other biomass materials, using traditional stoves. When coal and charcoal are included they are referred to as solid fuels.

[120] A more gendered perspective would suggest the main source of energy in poor rural households is not biomass but it is women's physical labor. But adding human energy to energy supply creates many conceptual difficulties that can not be taken up here.

[121] UN CEPAL and GTZ (2003) Energy Sustainability in Latin America and the Caribbean: The Share of Renewable Sources, Santiago, LC/L.1996, 20 October 2003, available in Spanish also, Table 1.

[122] Ironically, the city of Jacmel in Haiti was one of the first cities in the world to have electric power supply before the end of 1800. Source: Schubert P. (2002) How to Provide Universal Access to Electricity when the masses cannot afford it, Mimeo.

[123] Barnett, A. ,2000,

where cheap, or more commonly gas (LPG, natural gas or biogas) as available.

Biomass energy systems are technically and socially complex. Although most biomass is obtained at zero direct monetary cost, there are time and labour or human energy costs incurred, which makes purchasing stoves seem like a unsound economic choice to many. This is one part of the difficulty of increased use of new stoves despite efforts to produce low cost improved biomass stoves. Biomass production is integrated into local land-use management systems, and management of common property resources, which together have important gender dimensions. Changes in supply must take into account local conditions and require an integrated approach. The time to collect biomass for household needs could be addressed by planting trees for fuel, however, women often do not own land and where they have access to land, they may not have control over what is planted. Understanding the decision-making process within households when choosing energy services is important for designing effective interventions. In the technical area, while large-scale biomass burners are well established at smaller scale there remain a number of problems. Further the chain of possibilities from biomass to energy is very large and the field appears to be divided by perennial optimists and pessimists.

Fossil Fuels

Countries that have potentially easy and low-cost supplies of natural gas or LPG can make that LPG one of the most viable alternatives to traditional fuels. Gas can provide for both cooking energy, heat and also local, distributed off-grid electricity generation, all with relatively low emissions of most pollutants. We have mentioned that small diesel generators are likely to be a cheap source of electricity in many rural areas and should not be denied the poor under misguided notions regarding the environment. Diesel fuel provides for another attractive pilot project supported by UNDP to increase women's access to energy services through joint and community owned and managed diesel engines supplying motive power for grinding, milling, water pumping and lighting[124].

Renewables

For rural areas biomass systems could be a highly desirable source of renewable energy if several technical and institutional constraints could be resolved.

Small –hydro is a viable, established and relatively cheap electric power source that is available from scales as low as 500 Watts and upwards. In Nepal, Vietnam and China, small systems have been widely used for rural household electrification. But applications outside this region have been low for reasons that are not clear. ITDG provides examples of a highly successful small hydro community power supply for several regions in Peru. Where the requisite water resources are available this is a very attractive option for meeting household and productive energy needs.

[124] See details in UNDP 2004 and Brew-Hammond and Crole-Rees 2004 on the multifunctional platform in Mali.

Supply versus Access

The existing rural electrification programs are the best examples that supply is not the same as access. Access requires financial ability to use the supply that may be available. Increased access for the poor requires: designs to lower initial capital costs, credit to afford the connections, initial costs, and appliances to use of the modern energy carrier.

Public, Private and Policy

Recent policy debate in the energy sector has been on the costs and benefits of deregulation, privatisation and increased competition. But do these changes benefit poor rural women and their household energy needs? Unfortunately, traditional fuels, such as wood and charcoal, for the rural poor are largely in the informal economy and immune to these policy measures. On the other hand the commercial energy production sector offers large scale-economies, and so worldwide, the production of energy and some parts of the distribution are dominated by large state or private firms, limiting the scope for competitive markets. The changes are most noteworthy in the electricity generation sector but we have seen that electricity is yet to reach the rural poor and the deregulation has had little effect. For most rural poor women it is not an option for cooking or space heating. Petroleum based fuels have more often been private, enabling women to purchase small quantities to match their cash flows.

Where increased access to modern energy services have taken place the major drivers have been government policy and programs, and/or increased incomes that have increased affordability, provided incentives to the market, and not deregulation or pure market forces.

Financing for Modern Energy Services

Assuring at the minimum, equal, or even privileged access for poor women to modern energy and electricity opportunities must form a part of the overall strategy for poverty reduction. Access to credit together with extension and training are essential for the rural poor and women to take advantage of the energy services offered.

Subsidies, despite widespread criticism that they often do not benefit the poor as intended, as with general subsidies which lower the prices of electricity or diesel benefiting richer households, will also be required due to market failure. Large general subsidies for energy, however, are too expensive for most countries. Also they distort energy use patterns and too often penalize smaller, decentralized and renewable energy solutions. But targeted subsidies for the poor are, nonetheless, justified by the fact that access to adequate energy supplies is critical to improving the livelihoods of the poor. The ideal and best forms of subsidies take two forms. First is to ensure the availability of capital for easier borrowings by those who can. Second is lowering the initial and up front capital costs through appropriate technological and financial design such as stretching the payments for initial connections over time. Lowering the unit costs of purchase by reducing the cylinder size for LPG or the size of the solar light systems have been found to be important in increasing up-take by poorer consumers. Because the more modern services always require new and always more expensive appliances such as improved cook stoves, LPG burners, connections to the grid and so on, these first costs are often a barrier. The final type is to

subsidize some minimum level of consumption through “lifeline” rates, frequently adopted for electricity supplies and sometimes for gas.

Financing Energy Services and Income-Generating Opportunities for the Poor (ENSIGN)

This was a UNDP-financed project implemented in eight countries in Asia by the Asia-Pacific Development Center. Energy-linked micro-enterprise portfolios and revolving funds were developed with micro-credit banks and institutions in each country. In this project, process heat and motive power proved more crucial for income generation than lighting. T he project provided 36 percent of the loan funds, while national institutions provided 50 percent, and the borrowers provided 14 percent. Interest rates were 15 to 20 percent(slightly below market rates), with repayment periods of 2 – 6 years. Individuals and communities were financed. The vast majority of borrowers were women, who proved enterprising, innovative, and creditworthy. The productive uses selected by participants ranged widely – garment, embroidery, leather goods, utensils manufacturing, baking, cold storage, rubber stamp making, beauty salon, grain grinding, threshing, fish drying and powdering, soybean processing, spice drying, beedi (flavoured handmade cigarettes) wrapping, cinnamon peeling, and rice processing. Significant benefits for women included income generation, time saving, enhanced self-confidence, and greater control over self-generated finances. The average increase in income was 124 percent. At the same time, the borrowers were not usually the poorest, but the poorest often found employment in the pilot projects. (Source: Ramani 2002 cited in Celeski 2003)

Participation and Processes

The issue of participation of all beneficiaries in activities that are meant to improve their lives is now well recognized and accepted. But the words participation contain different meanings and practices as regards to this central concept. Very often it is used to describe a process where “experts” and outsiders have already decided on the solution and then seek to make the proposed interventions acceptable, not to seek changes in what is done, but attempts to make the way in which it is imposed more recipient-friendly.

In practice it took a little more time to recognize gender differences and include women as a special group in planning for rural energy solutions. Participation at the project level while well recognized is not easy to accomplish. Many project documents state that they first seek the input of the affected group to determine their needs and priorities. But projects and the participatory tools are designed such that if the delivery is related to health, energy or education services, the questions and answers are limited to the services being offered, with minor variations. The process can be further vitiated by commercial interests of contractors who provide a certain service such as a building, and know that there are funds available for a school building and then meet with the community to get their agreement to provide what they know and for which money

is available. Participation of women at the higher policy and planning levels is always out of the scope of projects, which as a result, forces proactive national efforts to be relied upon.

A different model of participation starts with the assumption that people everywhere have knowledge about their own situation that is not known to outsiders. Women users have significant knowledge and expertise on fuel resources and technologies that they use, know desirable and undesirable characteristics of fuel and stoves, their own cooking needs, habits, and their families' preferences, all relevant for designing appropriate solutions. They make complex trade offs about costs and time allocation all of which are unknown to outsiders. In this view, participation allows for more appropriate designs and solutions to the problem of users and hence also improved adoption and effectiveness.

There is a final model for participation of the women in determining their solutions. This stems from theories of empowerment and decision-making developed in the gender framework discussed earlier that focuses on inequities as symptomatic of unequal power relations in society and in particular on women's disempowerment. It tackles the broader issues and causes of women's subordination and the existing power relations between women and men[125]. Thus it is useful for practitioners to define their purposes in participatory processes as the tools and outcomes are quite different.

[125] Joanna Kerr (2002) From “WID” to “GAD” to Women's Rights: The First Twenty Years of AWID Occasional Paper no. 9, Association for Women's Rights in Development, October 2002, http://www.awid.org/publications/OccasionalPapers/occasional9.html

CONCLUSIONS and POLICY RECOMMENDATIONS

We have tried to look at the energy issues of poor rural women in Latin America and in doing so it is certain that we have been unable to cover in sufficient depth any single one of the issues. We have pointed out many other efforts on each of these issues as well as on the intersection of the issues. We have identified a number of sources for further information in the bibliography. We hope that this overview is adequate to highlight the seeming neglect of issues of the rural poor in Latin America, issues of rural poor women, and not surprisingly, energy issues of poor rural women in terms of data, information, actions and experiences, hence results.

We have emphasized the issues of poverty first and placed the issues of energy and women within that because of the importance of the MDGs and the upcoming review in 2005 of the achievements and shortcomings of these goals. This paper has looked at poverty while emphasizing household energy and the issue of IAP. This was selected for emphasis as it is uniquely a problem facing women, the costs of improving the situation is low enough that this can be done within the time line of the MDGs, and low enough that many key actors can individually undertake to remove this problem afflicting the region's poor women and children.

The first recommendation that we make is that all stakeholders involved in these issues – donors, intergovernmental agencies, national governments, activists and implementing agencies – should support the inclusion of the proposed energy and gender goals of the UN Millennium Project at the discussions leading up to MDG+5 in late 2005. The report proposes that countries agree to adopt the following specific targets for energy services to help achieve the Goals by 2015:

1. Reduce the number of people without effective access to modern cooking fuels by 50 percent and make improved cook-stoves widely available. *For the LAC region this could be improved to cover all rural poor.*
2. Provide access to electricity for all schools, health facilities, and other key community facilities.
3. Ensure access to motive power in each community.
4. Provide access to electricity and modern energy services for all urban and periurban poor. *For the LAC region this could also include the rural poor.*

(Italics are added by the author for consideration for LAC)

More useful and effective programming to improve the lives of poor, rural women will first require better location specific data than we have so far on each one of the above three variables. Energy use data must be collected at the household level on energy use for domestic cooking, lighting and productive needs separately, together with dis-aggregation by gender. The data should provide current supplies, especially of wood fuels, and impacts of various possible

solutions. All solutions including fossil fuels, and where relevant electric cooking, should be considered as possible solutions. When electricity supply is being considered, the specific electricity needs of women for domestic lighting, possibly communications and entertainment, small appliances, lighting for security outside the house, for water pumping, agricultural processing and other productivity enhancing uses and for micro-enterprise must be taken into account, together with access to savings and credit systems. *The second recommendation* is that projects such as this one and national and international institutions improve the data on gender, poverty and energy. It has been said again and again that lack of data leads to invisibility, invisibility means no interest, no policy change and no resources. All development oriented projects must place their data on the Web so that networks of groups and individuals can access the data and not have to constantly rediscover the same problems using the meager resources allocated in the process before any new and effective actions can be promoted.

We also emphasize that household energy is part of an energy system where it can be used as an entry point for rural development (again together with related efforts) and for women. Dealing with it and with lighting for the household offers opportunities for time and labour saving, income generation, health improvements and social empowerment. Other entry points are provided through access to energy for production and income generation, and, for community uses. They each have different facets and their unique characteristics need to be considered in the plans. All solutions require partnerships and these must include the international with the national, local institutions and local people, and be intersectoral. This leads to the third recommendation that projects such as the OLADE – University of Calgary, must ensure that they link with and help build the small and incipient networks in the region such as GENES, that have been struggling to provide advocacy and knowledge sharing of tools and experiences in the region.

The above relate to processes and advocacy that we believe is most important to increase the level of awareness and resources devoted to the issues. Finally new interventions must keep in mind several key lessons from the experiences in countries outside the region:

1. Advocacy efforts are required at the national and local levels to make general development policies and goals convergent with gender and energy goals. Rural energy usually has no clear institutional backing. All concerned sectors - technical ministries, NGOs, public and private industry and financial institutions - should be mobilized around a common policy framework and strategy
2. "Energy deficits" for poor women in the household sector in rural areas, where consumption is below subsistence level and barely covers cooking, heating and illumination needs should be seen as a part of their basic human right for survival.
3. The policies and actions for poverty, energy and gender must simultaneously match locally perceived and identified priorities, problems, resources and capacities. Local men's and women's organizations and local authorities must be involved fully in identifying, developing and implementing rural energy plans and programmes.
4. Energy solutions must be seen as a part of overall developmental goals and other sectoral plans, with the strategies integrated into these activities. It should not be seen as the driver of change but one of a number of enabling factors.

5. Energy solutions must be “full menu” and not restricted to renewables. Energy sources that require the minimum costs for a given level of energy services in many cases will be based on fossil fuels such as kerosene, LPG, natural gas for cooking, and diesel for lighting, community and productive uses. It is a grave mistake to confuse their use of fossil fuels with the global issue of green house gases. The poor have not contributed to the problem and their small use of fossil fuels in the near term is totally insignificant to global warming.
6. Beyond meeting the needs for survival, specific policies and programmes should be targeted to rural women, men and children using solid fuels such as crop residues, fire wood, charcoal and coal, for productive as well as household needs and should be directed to reducing the health impacts of indoor air pollution.
7. Where and as appropriate, policies should facilitate the use of renewable resources, such as bio-energy, small hydro and wind energy when and where they are appropriate. Upgrading the efficient use of biomass energy resources - including agricultural residues and energy plantations solves thermal energy needs and offers job opportunities, environmental benefits and enhanced rural infrastructure. In many cases, Solar Photovoltaic should be the last choice as it is the most expensive of all energy sources.
8. The potential benefits of privatization and reduced government intervention should be taken advantage of without becoming a dogma. The rural poor by definition do not have significant money, and they tend to live in smaller dispersed communities. This automatically means that they do not attract much market interest, it is more difficult to provide services for them and hence subsidies will be required from governments and donors. Most solutions require the involvement of both the private and public sectors and local and national government in partnership.
9. Mechanisms such as microfinance and credit institutions for the poor are required simultaneously to support the very small-scale investments that are always required of the user to pay for some of the initial costs. Energy projects can seek out successful micro finance, rural credit, women’s organizations which are already working successfully on identified problems and integrate energy components within these.
10. Better design of project interventions incorporating the complexities discussed is required to reach and provide benefits to the maximum number of the rural poor and women in a manner that also increases their capacity and resilience.

BIBLIOGRAPHY

Ahmed, Kulsum, Yewande Aramide Awe, Douglas F. Barnes, Maureen L. Cropper, and Masami Kojima, 2001. *Health Impacts of Traditional Fuel Use in Guatemala*, UNDP/ESMAP. http://wbln0018.worldbank.org/esmap/site.nsf/files/284-04_Web+vers.pdf/$FILE/284-04_Web+vers.pdf

Altomonte, Hugo and Manlio Coviello, 2003. *Energy Sustainability in Latin America and the Caribbean: The Share of Renewable Sources* , UN/ECLAC. http://www.eclac.cl/publicaciones/RecursosNaturales/6/LCL1966PI/Lcl.1966i.pdf

Annecke, Wendy Jill, 1999. "From the Kitchen to the Boardroom: reflections on power relations in gender and energy practice and policy." Presentation for ENERGIA workshop, Improving Women's Access to Energy: Policy, Projects or the Market? University of Twente, Enschede, 2-3 November. http://www.rwedp.org/wenFinal.html

Asian Development Bank, 1999, *Reducing Poverty: Major Findings and Implications*, Bangkok, September. http://www.adb.org/Documents/Brochures/Reducing_Poverty/reducing_poverty.pdf

Barnett, Andrew, 2000. "Energy and the Fight against Poverty," lecture delivered at the Institute of Social Studies, Hague, 1 August. http://www.livelihoods.org/post/Docs/ABISSI3a.doc

Barnett, Andrew, M. Bell, and K. Hoffman. 1982. Rural Energy and the Third World: A review of social science research and technology policy problems. Oxford: Pergamon Press.

Batliwala, Srilatha and Amulya K.N. Reddy, 2003. "Energy for women and women for energy (engendering energy and empowering women)." *Energy for Sustainable Development* 7(3): 33-43. www.ieiglobal.org/ESDVol7No3/energyforwomen.pdf

Batliwala, Srilatha and Amulya K.N. Reddy, 1996. *Energy for Women and Women for Energy: A proposal for women's energy entrepreneurship.* http://www.energia.org/energia/dec1996/EnergyForWomen.html

Berthaud, A. and others. 2004. *Integrating Gender in Energy Provision: Case Study of Bangladesh.* July 2004. ESMAP Report 30214. World Bank, Washington D.C.

Bhalla, Surjit S (2004) Poor Results and Poorer Policy: A Comparative Analysis of Estimates of Global Inequality and Poverty, CESifo Economic Studies, Vol. 50, 1/2004, 85–132.

Boserup, E. 1970. *Women's role in Economic Development.* New York: St. Martin's Press.

Brew-Hammond, A. and A. Crole-Rees 2004. Reducing Rural Poverty through Increased Access to Energy Services, A Review of the Multifunctional Platform in Mali, UNDP, Mali, April 2004.

Bruno, M., M. Ravallion and L. Squire, 1995, "Equity and Growth in Developing Countries: Old and New Perspectives on the Policy Issues." Paper prepared for the IMF Conference on Income Distribution and Sustainable Growth, June 1-2.

http://econ.worldbank.org/files/451_wps1563.pdf

Cecelski, Elizabeth, 2004. *Re-thinking gender and energy: Old and new directions*, Energy, Environment and Development, ENERGIA/EASE Discussion Paper, May.

Cecelski, Elizabeth, 2003. *Enabling Equitable Access to Rural Electrification: Current Thinking on Energy, Poverty and Gender*, Briefing Paper, Asia Alternative Energy Policy and Project Development Support: Emphasis on Poverty Alleviation and Women, Asia Alternative Energy Unit, The World Bank, Washington D.C, July. (Earlier versions were in 2000 and 2002).
http://www.worldbank.org/astae/enpogen/d-background%20reports/1-cecelski/1-cecelski.pdf

Cecelski, Elizabeth W, 2000. *Energy and Poverty Reduction: The role of women as a target group*, Paper presented at the Debate on Sustainable Energy in Danish Development Assistance, Copenhagen: Landstingssalen, Christiansborg, September 5.
http://www.sarpn.org.za/genderenergy/resources/cecelski/energypovertyreduction.pdf

Cecelski, Elizabeth, 2000. *The role of women in sustainable energy development*.
Gender and Energy Programme of the National Renewable Energy Laboratory, Boulder, Colorado, USA.
http://www.nrel.gov/docs/fy00osti/26889.pdf

Cecelski, Elizabeth 1997. "Planning Women into International Energy Meetings." ENERGIA News Issue 3, July.
http://www.energia.org/resources/newsletter/en_071997_editors.html

Cecelski, Elizabeth, 1996. *From Rio to Beijing: Engendering the energy debate*.
http://www.energia.org/energia/dec1996/FromRioToBeijing.html

Cecelski, Elizabeth, 1990. *Women and Energy - The International Network: Polices and Experience, A Resource Guide*, UNDP/ESMAP, September.
http://www-wds.worldbank.org/servlet/WDSContentServer/WDSP/IB/1999/08/15/000009265_396093004422 5/Rendered/PDF/multi0page.pdf

Chant, Sylvia, 2003. *New Contributions to the analysis of poverty: methodological and conceptual challenges to understanding poverty from a gender perspective*, Women and Development Unit, UN, ECLAC, Santiago, Chile, August.
http://www.eclac.cl/publicaciones/UnidadMujer/5/LCL1955/lcl1955i.pdf

Clancy, Joy, 2004. "Exploring the gender-energy-poverty-nexus," EASE –CERES Workshop, 28 June.
http://www.ease-web.org/pdf/2004_ss_gender.pdf

Clancy, Joy, Sheila Oparaocha, Ulrike Roehr, 2004. *Gender and Equity and Renewable Energies, Thematic Background Paper*, International Conference for Renewable Energies, Bonn.
www.renewables2004.de/pdf/tbp/TBP12-gender.pdf

Clancy, Joy, 2000. "Policies, Projects and the Market - Empowering Women?" Paper presented at the workshop, ENERGIA Improving Women's Access to Energy: Policy, Projects or the Market? 2-3 November, University of Twente, Holland.
http://www.energia.org/pubs/papers/clancynov.pdf

Clancy, Joy S., Batchelor S. and M. Skutsch (2003) *The gender - energy- poverty nexus: Finding the energy to address gender concerns in development.* DFID Project CNTR998521. Available at http://www.sparknet.info/goto.php/view/21/file.htm

Coto, Oscar and Iván Azurdia, 2000. "Social Implications of Energy Sector Reforms," Paper for a workshop on Energy in Washington DC, February.

Department for International Development, 2004. "Energy Use to Reduce Poverty, Final Report for Phase 1: (R8020)," April.

Department for International Development, 2002. *Energy for the Poor: Underpinning the Millennium Development Goals*.
http://www.dfid.gov.uk/pubs/files/energyforthepoor.pdf

Derbyshire, H. 2002. Mainstreaming Gender Manual: a Practical Guide for Development Policymakers and Practitioners. June, Department for International Development(DFID), UK.

Dutta, S. 2004 Inception meeting of the collaborative research group on Gender and Energy (CRGGE) - Gender as a Key Variable in Energy Interventions: Are We Asking the Right Questions?, 19-22 April, 2004, Report of Meeting at Cape Town, South Africa. ENERGIA.

Dutta, S. 2003. *Mainstreaming Gender in Energy Planning and Policies*, UNESCAP Project on Capacity Building on Integration of Energy and Rural Development Planning, Background paper for expert group meeting, June-July.

ECLAC, 2004. *Statistical yearbook for Latin America and the Caribbean 2003*.
http://www.eclac.cl/cgi-bin/getProd.asp?xml=/publicaciones/xml/3/14833/P14833.xml&xsl=/deype/tpl-i/p9f.xsl

Energy for Sustainable Development, 2003 "Editorial." *Energy for Sustainable Development* 7(3): 3-7.
http://www.ieiglobal.org/esdvol7no3.pdf

Energy for Sustainable Development, 2003. "Linking Women and Energy at the Local Level to Global Goals and Targets." *Energy for Sustainable Development* 7(3): 33-43.
http://www.ieiglobal.org/esdvol7no3.pdf

ESD Ltd (UK), Konserve Consult Ltd (Uganda), LGA Consultants (Sri Lanka), MGP Ltd (Ethiopia), SBB Ltd (Nepal), 2003. *Partnerships for Access to Community Electricity (PACE), Policy Guidelines, Ethiopia, Nepal Sri Lanka, Uganda,* DfID Contract no R8148, December.

ESD Ltd (UK), Energy Alternatives Africa (Kenya), Megen Power (Ethiopia), Renewable Energy Development Centre (Uganda), Rural Technology Enterprises (Kenya), 2000. *Poverty Reduction Aspects of Successful Improved Household Stoves Programmes, Project 7368: Final Summary Report*, December.

ESMAP, 1990. *Women and Energy*, *The International Network: Polices and Experience, A Resource Guide*, September.

Fields, G., 1989, "Changes in Poverty and Inequality in Developing Countries." World Bank Research Observer, 4:167-186.

Finance and Development, 1997. "Tackling the Rural Energy Problem in Developing Countries." *Finance and Development*, June.
http://www.imf.org/external/pubs/ft/fandd/1997/06/pdf/barnes.pdf

Fisher, G. 1996. “New Light on the Behaviour of Poverty Lines Over Time,” *Newsletter of the Government Statistics Section and the Social Statistics Section of the American Statistical Association*, Summer, 10-12.

GEF-FAO Workshop on Productive Uses of Renewable Energy: Experience, Strategies, and Project Development, Summary Report, FAO Headquarters, Rome, Italy, 18 – 20 June, 2002. http://www.gefweb.org/ResultsandImpact/Experience_and_Lessons/GEF-FAO_productive_uses_workshop_summary.pdf

GENES. 2004*. Supporting Gender and Sustainable Energy Initiatives in Central America, Volume I.* December. ESMAP, World Bank, Washington, D.C.

Gender and Poverty Challenges in Scaling Up Rural Electricity Access, presented at the Conferencia de Village Power ’98, 6-8 October, Washington, DC, 1998.

GENES (Red Mesomericana de Genero en Energia Sostenible), 2001. *Central American Exchange on Efficient Cooking and Food Processing Technologies and Improved Cooking Stoves*, Antigua, Guatemala August 16-18.

Gitonga, Stephen, 2002. *The Energy Ladder*. http://solstice.crest.org/discussiongroups/resources/stoves/Gitonga/Energyladder.html

Goldemberg, José, Amulya K.N. Reddy, Kirk R. Smith, and Robert H. Williams, 1995. “Chapter 10: Rural Energy in Developing Countries.” *World Energy Assessment: Energy and the Challenge of Sustainability.* World Energy Council. http://stone.undp.org/undpweb/seed/wea/pdfs/chapter10.pdf

Haddad, L. and R. Kanbur, 1990. "How Serious is the Neglect of Intrahousehold Inequality?" *Policy, Planing and Research Working Paper* No. 296. Washington, D.C.: World Bank.

Havet, Ines. 2003. Linking women and energy at local level to global goals and targets. Energy for Sustainable Development, v. vii, no. 3, September.

Hogendorn, J.S. 1992. *Economic Development.* New York: Harper Collins.

Household Energy Network (HEDON), 2003. *Impacts of IAQ.* http://www.hedon.info/goto.php/ImpactsOfPoorIAQ

IEA, 2001. *Electricity in Latin America* http://www.iea.org/Textbase/stats/electricitydata.asp?country=Latin+America&SubmitA=Submit

IFAD 2001. *Rural Poverty Report 2001: The Challenge of Ending Rural Poverty.* http://www.ifad.org/poverty/

Jackson, Cecile. 1998. "Rescuing gender from the poverty trap," in Feminist visions of development: Gender analysis and policy. Cecile Jackson and Ruth Pearson ed. London: Routledge, .

Jackson, Cecile and Ruth Pearson, eds. 1998. Feminist visions of development : Gender analysis and policy. London ; New York: Routledge.

Johansson, Thomas B. and José Goldemberg (eds.), 2003. *Energy for Sustainable Development: A Policy Agenda*, UNDP. http://www.undp.org/energy/publications/2002/20013108FNRapport.pdf

Kabeer, N. 2003. Gender mainstreaming in poverty eradication and the Millennium Development Goals: How readdressing gender inequalities can help achieve the MDGs. Ottawa: International Development Research Centre (IDRC).

Kammen, Daniel M., Robert Bailis and Antonia V. Herzog, 2002. *Clean Energy for Development and Economic Growth: Biomass and other renewable energy options to meet energy and development needs in poor nations,* UNDP/ESDG.
http://www.undp.org/energy/publications/2002/Clean_Energy_Biomass.pdf

Kammen, Daniel M., 1995. "Cookstoves for the Developing World."
http://ist-socrates.berkeley.edu/~kammen/cookstoves.html

Kanbur, R. and L. Squire, 1999. "The Evolution of Thinking about Poverty: Exploring the Interactions." Paper presented at the Symposium on Future of Development Economics in Perspective, Dubrovnik.
http://unstats.un.org/unsd/methods/poverty/evolution_of_thinking_about_poverty%20Kanbur%20Sept%201999.pdf

Kerr, Joanna, 2002. "From 'WID' to 'GAD' to Women's Rights: The First Twenty Years of AWID. Occasional Paper no. 9, Association for Women's Rights in Development, October.
http://www.awid.org/publications/OccasionalPapers/occasional9.html

Khan, Hasna J 2003. Case-study: battery-operated lamps produced by rural women in Bangladesh, Energy for Sustainable Development, Volume VII No. 3 September 2003

H.J. Khan,2001. ''Battery operated lamps produced by rural women'' in Karlsson, G., and Misana, S., (eds.), Generating Opportunities: Case Studies on Energy and Women, New York, United Nations Development Programme, 2001.

Khan, Hasna. 2001. "Battery-operated lamps produced by rural women - Bangladesh." ENERGIA News, 4:3, pp. 13-15.

Lamech, Ranjit, and Kyran O'Sullivan, 2002. "Energy, Ch.21 PRSP Sourcebook: Guidance on integrating energy policy into PRSPs," *Volume 2 Macroeconomic and Sectoral Approaches*, World Bank.
http://poverty.worldbank.org/files/4722_chap21.pdf

Lipton, M. and M. Ravallion, 1995. *Poverty and Policy*. Washington, DC: Policy Research Department, World Bank.

Listordi, J.A. and F.M. Doumani, 2004. "Energy and Environmental Health: A Literature Review and Recommendations." Technical Paper #50, ESMAP, UNDP/World Bank, March.
http://wbln0018.worldbank.org/esmap/site.nsf/files/Energy+and+Environmental+Health+_final+3-5-04_.pdf/$FILE/Energy+and+Environmental+Health+_final+3-5-04_.pdf

Meadow, Kate, Cathy Riley, with Govinda Rao, and Paul Harris, 2003. *Modern Energy: Impacts on Micro-enterprises, Phase 1, Task 1.2, A literature review into the linkages between modern energy and micro-enterprise,* A report produced for UK DfID, July.
http://www.etsu.com/energy_voices/Assets/ED03493LiteratureReviewFINALissue1.pdf

de Melo Branco, Adélia, 2002. *Gender and Energy Issues in Latin America*, Regional paper prepared for the World Summit on Sustainable Development, ENERGIA, August.
http://www.winrock.org.br/media/Latin_Am._Reg_Paper1.pdf

Menon-Sen, Kalyani. 1998. Moving from Policy to Practice: A Mainstreaming Strategy for UNDP India. UNDP, October. http://www.undp.org.in/Report/Gstrat/ cited in

Moser, C 1993: Gender Planning and Development: theory, practice and training. Routledge, London and New York.

OLADE, 2004. Sustainable Energy Project, Multiparty Roundtable*: Social Issues In Rural Energy Development Draft*., Group Session Outcomes, October 14, 2004

OLADE .No date. *Baseline Study - OLADE Sustainable Energy Project*, University of Calgary - Latin American Energy Organization (OLADE), draft mimeo.

Oxfam 2003. Mainstreaming gender, May Oxfam UK. At http://oxfam.org.uk/what_we_do /issues/gender/links/

Overholt, Anderson, et. al. 1984. Gender Roles in Development Projects: A Case Book. Kumarian Press: Connecticut.

Paolisso, Michael and Sarah Gammage, 1996. Women's Responses to Environmental Degradation: Poverty and Demographic Constraints. United Nations Expert Group Meeting on Women, Population and Sustainable Development. Dominican Republic. http://www.icrw.org/

Paolisso, Michael, 1995. *New Directions for the Study of Women and Environmental Degradation.* International Center for Research on Women http://www.icrw.org/

Panjwani, Anja and Elizabeth Cecelski, 2002. *Major Activities and Actors in Energy, Poverty, and Gender*, ENERGIA, July. http://www.worldbank.org/astae/enpogen/d-background%20reports/2-panjwani-cecelski/2-panjwani-cecelski.pdf

Proyecto E&D, OLADE, CEPAL, GTZ, 1999. *Energía y Desarrollo Sustentable en América Latina y el Caribe: enfoques para la política energética*, Quito, Ecuador.

Rai, Shirin M. 2002 "Gender and development. Theoretical perspectives in context," in Gender and the political economy of Development. Cambridge, U.K.: Polity, , pp. 44-83.

Ramani, K. V. 2002. "Energy as an Instrument of Women's Economic Empowerment." ENERGIA News, April 2002.

Ramani, K. V. and Enno Heijndermans, 2003. *Energy, Poverty, and Gender. A Synthesis*, The International Bank for Reconstruction and Development, The World Bank. http://www.worldbank.org/astae/enpogen/g-summary%20reports/8-ramani-heijndermans/8-ramani-heijndermans.pdf

Rathgeber, Eva. M. 2005. "Gender and Development as a fugitive concept". Canadian Journal of Development Studies, forthcoming.

Rathgeber, Eva. M. 1990. "WID, WAD, GAD: Trends in Research and Practice" The Journal of Developing Areas, v 24, July, p. 489-502.

Ravallion, M., 1995. "Growth and Poverty: Evidence for the Developing World." *Economic Letters*, 48:411-417.

Ravallion, M. and D. van de Walle, 1991. "Urban-Rural Cost of Living Differentials in a Developing Economy." *Journal of Urban Economics* 29: 113-127.

Regional Wood Energy Development Programme in Asia (GCP/RAS/154/NET), 2002. *Wood Energy News*, Final Issue, December.

Von Schirnding, Y., N. Bruce, K. Smith, G. Ballard-Tremeer, M. Ezzati, K. Lvosky, 2002. *Addressing the Impact of Household Energy and Indoor Air Pollution on the Health of the Poor: Implications for Policy Action and Intervention Measures*, Paper Prepared for the Commission on Macroeconomics and Health, World Health Organization.
http://www.who.int/mediacentre/events/H&SD_Plaq_no9.pdf

Skutsch, Margaret M. 2005 Gender analysis for energy projects and programmes,

Skutsch, Margaret M. 2004. Tooling up for Gender and Energy. Paper prepared for ENERGIA, available at www.energia.org/pubs/papers/skutsch_tooling.pdf

Sen, Amartya, 1981, *Poverty and Famines: An Essay on Entitlements and Deprivation,* Oxford Clarendon Press.

Smith, KR. 1987. "Cooking, Pollution and Health." *Biofuels, Air Pollution, and Health*. New York, NY: Plenum.

Squire, L., 1993. "Fighting Poverty." *American Economic Review*, 83(2):377-382.

Tinker, Irene, 1982. *Energy Needs of Poor Households*, Working Paper 4, Women & International Development Program.

Törnqvist, Anika (Equipo de Género de LAC-RP, El Banco Mundial), 1998. *La Integración del Género en la Cartera Centroamericana del Banco Mundial,* Resumen de hallazgos, estudio, Costa Rica.

UN ECLAC 2003. Energy Sustainability in Latin America and the Caribbean: The Share of Renewable resources. With GTZ. No. LC/L.1966, 20 October. Santiago.

UN Millennium Project. 2005. *Investing in Development: A Practical Plan to Achieve the Millennium Development Goals*. New York.

UNDP 2004. Achieving the MDGs: the Role of Energy Services, Case Studies from Brazil, Mali and the Philippines. UNDP, New York.

UNDP, 2003. *Human Development Report 2003: Millennium Development Goals: A compact among nations to end human poverty*. New York: Oxford University Press.
http://hdr.undp.org/reports/global/2003/pdf/hdr03_complete.pdf

UNDP (2000) Gender Mainstreaming: Learning and Information Pack.
http://www.undp.org/gender/infopack.htm

UNDP, 1997. Energy after Rio - Prospects and Challenges, Chapter 2 Energy and Major Global Issues. Energy and Atmosphere Program.
http://www.undp.org/seed/energy/chapter2.html

UNDP, 1995. *1995 Human Development Report: Gender and Human Development.*
http://hdr.undp.org/reports/global/1995/en/

UNDP/ ESMAP, 2003. *Central America Gender and Sustainable Energy Project*, December.

UNDP/ESMAP, 2003. *Household Fuel Uses and Fuel Switching in Guatemala*. http://wbln0018.worldbank.org/esmap/site.nsf/files/036-03+Fuel+use+Guatemala.pdf/$FILE/036-03+Fuel+use+Guatemala.pdf

UDP/ESMAP, 2003. *Household Energy Use in Developing Countries: A Multicountry Study*, October. http://www-wds.worldbank.org/servlet/WDSContentServer/WDSP/IB/2004/01/15/000090341_20040115105717/Rendered/PDF/275880PAPER0Ho1Developing0Countries.pdf

UNDP/UN Economic and Social Affairs/World Energy Council, 2004. *World Energy Assessment Overview: 2004 Update*. http://www.undp.org/energy/docs/WEAOU_full.pdf

UNDP Energy and Atmosphere Programme, 2001. *Gender and Energy: How is Gender Relevant to Sustainable Energy Policies?*

Unión Mundial Para la Naturaleza y Fundación Arias para la Paz y el Progreso, 1999. *Humano Develando el género*, Serie Hacia la Equidad, Master Litho, San José, Costa Rica.

UNU/INIRA Working Group: Agenda for Gender and Natural Resources Conservation and Management, 1997.

Vandemoortele, J. 2002. "Are we really reducing global poverty?" UNDP. http://www.undp.org/poverty/docs/arewereally-reducing-gobal-poverty.pdf

WHO, 2002. *World Health Report: - Reducing Risks, Promoting Healthy Life*. http://www.who.int/entity/whr/2002/en/whr02_en.pdf

WHO/UNDP 2004. Joint Statement on Indoor Air Pollution, World Rural Women's Day, 15 October. http://www.undp.org/energy/docs/indoorairpollution.doc

Winkler, Katja, 2000. *Desarrollo con equidad: el papel de la energía en Centro América*, Estudio Regional sobre el papel de la energía y el género en la regíon (borrador), Fundación Solar, Ciudad Guatemala, Julio.

Winkler, Katja and Lisa Büttner, 2000. "Central American GENES Network" ENERGIA News, Newsletter of the Network for Women and Sustainable Energy 3(1), University of Twente, Enschede, The Netherlands.

Wodon, Q., R. Castro-Fernandez, et al. Poverty in Latin America: Trends (1986-1998) and Determinants. Cuad. econ., ago. 2001, vol.38, no.114, p.127-153.

Winrock International, 2004. *Partnerships for Clean Indoor Air - Household Energy, Indoor Air Pollution and Health: Overview of Experiences and Lessons in Guatemala.* Clean Energy Group. October. www.pciaonline.org/assets/Guatemala_Household_Energy_and_Health_Overview.pdf

World Bank, 2005. *Improving women's lives,* Washington DC: The World Bank.

World Bank, 2005. Challenges and Opportunities for Gender Equality in Latin America and the Caribbean. Washington DC: The World Bank.

World Bank Group, 2004. "Latin America and Caribbean Country Profile." *Millennium Development Goals*. http://devdata.worldbank.org/idg/IDGProfile.asp?CCODE=LAC&CNAME=Latin+America+%26+Caribbean&SelectedCountry=LAC

World Bank, 2003. *Challenges and Opportunities for Gender Equality in Latin America and the Caribbean*. http://wbln0018.worldbank.org/LAC/LACInfoClient.nsf/d29684951174975c85256735007fef12/e4bf3b5369a28e6285256cde0074c903/$FILE/challenges.pdf

World Bank, 1999, "Attacking Poverty: A Public Discussion of WDR2000/01". http://www.Worldbank.org/devforum/current-poverty-outlinetext.html

World Bank, 1999. *Building Poverty Reduction Strategies in Developing Countries*, September 20. http://poverty.worldbank.org/files/building_english.pdf

World Bank, 1990, *World Development Report 1990*. New York: Oxford University Press. http://www-wds.worldbank.org/servlet/WDSContentServer/WDSP/IB/2000/12/13/000178830_98101903345649/Rendered/PDF/multi_page.pdf

World Bank, 1980, *World Development Report 1980*. New York: Oxford University Press.

World Commission on Environment and Development, 1987, *Our Common Future*. Oxford: Oxford University Press.

Zuckerman, E and A. Garrett, 2003. *Do Poverty Reduction Strategy Papers (PRSPs) Address Gender? A Gender Audit of 2002 PRSPs*. March, Gender Action.

SELECTED BIBLIOGRAPHY IN SPANISH

Banco Mundial, 2003. *Desafíos y oportunidades para la equidad de género en América Latina y el caribe*. http://wbln0018.worldbank.org/LAC/LACInfoClient.nsf/d29684951174975c85256735007fef12/b630d9fb55e9de9685256cde007565dd/$FILE/desafios.pdf

CEPAL, 2004. *Anuario estadístico de América Latina y el Caribe 2003*, Mayo. http://www.eclac.cl/cgi-bin/getProd.asp?xml=/publicaciones/xml/0/14820/P14820.xml&xsl=/deype/tpl/p9f.xsl&base=/tpl/top-bottom.xslt

Chant, Sylvia, 2003. Nuevas contribuciones al análisis de la pobreza: desafíos metodológicos y conceptuales para entender la pobreza desde una perspectiva de género*, Unidad Mujer y Desarollo, Naciones Undias, CEPAL,* Santiago, Chile, August. http://www.eclac.cl/publicaciones/UnidadMujer/5/LCL1955/lcl1955e.pdf

Naciones Unidas Programma de Desarollo (NUPD), 2003. Informe Sobre Desarrollo Humano 2003: *Los objetivos de desarrollo del Milenio: un pacto entre las naciones para eliminar la pobreza*. Nueva York: Oxford University Press. http://hdr.undp.org/reports/global/2003/espanol/pdf/hdr03_sp_complete.pdf

Proyecto E&D, OLADE, CEPAL, GTZ, 1999. *Energía y Desarrollo Sustentable en América Latina y el Caribe: enfoques para la política energética*, Quito, Ecuador.

Törnqvist, Anika (Equipo de Género de LAC-RP, El Banco Mundial), 1998. *La Integración del Género en la Cartera Centroamericana del Banco Mundial,* Resumen de hallazgos, estudio, Costa Rica.

Unión Mundial Para la Naturaleza y Fundación Arias para la Paz y el Progreso, 1999. *Humano Develando el género*, Serie Hacia la Equidad, Master Litho, San José, Costa Rica.

Winkler, Katja, 2000. *Desarrollo con equidad: el papel de la energía en Centro América*, Estudio Regional sobre el papel de la energía y el género en la regíon (borrador), Fundación Solar, Ciudad Guatemala, Julio.

ANNEX 1: GUATEMALA

This small piece on Guatemala was undertaken to provide some concrete location and context for the issues discussed more broadly for the region. Of course this is not meant to represent the whole region. This is based on the following principal documents.

Guatemala is one of the poorer countries of the LAC region with a little over 11 million people. Thirty-six years of war have had many negative impacts on Guatemala's entire social and economic structure.

In 2003 approximately 8.5 million people, 77% of the Guatemalan population received electricity service from the grid. The coverage is approximately 92% in urban areas and only 50% in rural areas. Approximately 2.6 million persons in around 500,000 households are without access to electricity and almost all live in rural areas. It is estimated that almost half of this population living in 2,700 communities will not be connected to the electric grid by 2010[126]. These are all communities with less than five to six hundred people and in more remote locations. Small farmers and agriculture are both important in Guatemala. Most small farms are concentrated in the highlands.

A new Government of Guatemala (GOG) took office on January 14th, 2004. The GOG has declared its intentions to foster rural energy services, for poverty alleviation under the Peace Accords. It also aims to promote sustainable development and economic growth by using environmentally friendly technologies. The GOG is committed to poverty reduction by exploring synergies between programmes. It aims to promote rural energy services that catalyze productive uses of electricity in the agroforestry sector, ecoturism, health, education and of new services. The Guatemalan Congress approved in October 2003 a Law of Incentives for Renewable Energy projects in Guatemala. The law provides a framework for the development of distributed energy services developed by community, municipal and private sector efforts.

The GVEP Guatemala: Energy for Poverty Reduction (Phase I), aims to concentrate in including energy supply to foster local employment and social services in the Franja Transversal del Norte (FTN), one of the most isolated and excluded regions of the country. The FTN region is in Guatemala's north, in the Department of Alta Verapaz. Its local population is composed almost entirely of Maya-Q'eqchi'. Subsistence agriculture and minor livestock activities represent their principal economic activity and infrastructure is weak. The 36-year civil war had a great impact on the Mayan population in particular. The department of Alta Verapaz is among the least electrified departments in the country. The activities will identify how energy services can leverage and complement integrated rural development programs through coordination between the agricultural, energy, health, education, and environmental sectors in the region.

IFAD describes the situation in another area of Guatemala - Cuchumatanes Highlands where it has undertaken a Rural Development Project. The Cuchumatanes Highlands, located in the north-western part of the country, is isolated and mountainous with people living at 1800 - 3000

[126] GVEP Project document.

metres. The population is also of Mayan ancestry and more than half live in extreme poverty. Up to 90% of the 22,000 rural families in the area have no drinking water or electricity. Seventy-nine per cent of the families have annual incomes of less than USD 1 per day per person. High rates of illiteracy, infant mortality, child malnutrition and inadequate healthcare are prevalent. Most rural villages lack access to roads, health and educational services and credit facilities.

Most of the highland people are small farmers, others are landless.. Their income is primarily from traditional farming and sheep-breeding, off-farm artisanal activities in textiles and pottery and from seasonal migration. The majority of small farmers produce maize, beans, potatoes, wheat and oats, with most of the output used for family consumption and small quantities sold to buy other basic goods.

The Cuchumatanes project supported 16 farmer organizations, which together constitute the Asssociation of Cuchumatanes' Organizations (ASOCUCH). Among the most important recent achievements was the legal recognition of ASOCUCH by the Guatemalan authorities. The association provides a range of services - to protect natural resources and the environment, promote efficient use of human, material and financial resources, and generate savings, and market higher quality produce to obtain better prices.

Project beneficiaries reached 87% of the families. New farm technologies were applied for the environmentally-friendly production of vegetables, coffee and organic coffee, for soil conservation and the appropriate use of natural resources, and for the improvement of livestock management and production, and the commercialization of sheep products. Technical and financial project assistance made the construction of new irrigation works possible. Through newly created communal banks, financial services became available to rural families, who receive loans of up to USD 100 for income-generating activities and family emergencies. These banks have also promoted the Women's Credit Self-Managed Fund. The fund's participants receive loans for microenterprises and training in savings and credit management. Financial services had to be adapted to the local culture and traditions.The high illiteracy rate of 73% in the Project area required support to the National Committee for Literacy (CONALFA) focused on improving women's education. Women also received training in nutrition and food preparation. Both men and women received training in gender roles and were involved in family projects resulting in better conditions for women in the home.

In the Words of Our Clients - From interviews conducted in March 2001

Ricarda lives with her husband and five children in a single room, where she also stores potatoes. She is 37 years old and lives in Huiton, the poorest of poor areas. Their dwelling has a mud roof, which Ricarda considers a major improvement over the previous one made of straw. Up before dawn, she must walk a kilometre to gather firewood. She then works the land, plant potatoes and look after the few chickens and pigs they have, while the children look after the sheep. The children have no milk and eat primarily potatoes, maize tortillas and every so often beans. The Project provided her with technical assistance, training and marketing support as well as a loan. Now she plants potatoes using a new technique and improved crop. She also plants forage crops and oats, something she didn't do before because the crops would wither. The seeds she

received under the project have given good results. Ricarda and her family built several water cisterns and now only when they run dry, they walk two and a half hours to fetch more water.

Juana is 22 years old, lives with husband and four children. They are Maya and speak Mam and do not speak and understand Spanish easily. Juana also fetches firewood at four in the morning and prepares tortillas for breakfast in their only room, where they sleep, cook and keep warm. After breakfast her husband helps her with the potato crop. The project loaned Juana 32 000 quetzales (approximately USD 500), which she has not yet been able to repay because her last crop was ruined by frost . "Life is hard, but I think things might be better for my children. We now have schools. There were none before. I didn't have the chance to go to school", she says, "but they will be able to".

Guadelupe, 58, is one of the 71 members forming the Cooperativa Agrícola Integral Paquixeña Cuchumateca at Paquix. The cooperative used to sell its produce to middlemen, "…sharks, who were making the most profit, and earning more than we were", she says. Thanks to project services and training, these farmers - who previously had never attended school or at least not for very long - are now managers, assistant bookkeepers and loan officers, marketing their own produce with doubled returns. They have been exporting potatoes to Honduras, along with some vegetables, carrots, oats and beets. They had no access to bank credit before, but with project loan assistance Guadelupe's cooperative set up a rural savings bank and is now able to grant loans to its members.
Froilán likes to demonstrate his ability at using the computer purchased with a loan by "the Cuchumateca cooperative". He never attended school beyond third grade, but the training he received has helped him become an assistant bookkeeper. First thing in the morning, he switches on the computer to get the online market situation. "This opened up a new world for us." Now Froilán knows at what price produce is, where the demand is and much more about sales potentials and best markets.

Another IFAD project focused on improving family nutrition and incomes by incrementing traditional crop production, diversifying crops with fruit and vegetables and starting small-scale farm irrigation schemes. The project also aimed to support rural banks, enhancing credit availability and financial services that enabled small landholders to improve farm practices. To address the area's serious ecological situation, project activities introduced sustainable farming methods and financed conservation works.

The organization and training of peasant groups was considered fundamental to the project's strategy and success. By strengthening existing associations and creating new ones, farmers gained bargaining power through shared facilities and information. Furthermore, trained peasant leaders, men and women, interacted and coordinated the project's activities.

The project reached almost 8000 families. About 45% of the beneficiaries were rural women, including heads of families and the landless. In selecting who was to benefit, priority was given to the local peasant associations, to those farmers wanting to join these groups, to women (with capacities for) community leadership and to the landless, whose family members must migrate seasonally.

ANNEX 2: INFORMATION ON INSTITUTIONS AND NETWORKS

Data Sources

1. For many UN statistsics: http://unstats.un.org/unsd/demographic/products/indwm/
2. Demographic data http://unstats.un.org/unsd/demographic/products/indwm/indwm2.htm
3. UN Human Development Data http://hdr.undp.org/default.cfm-
4. Biomass information UN FAO http://www.fao.org/sd/epdirect/EPre0036.htm
5. Energy data – IEA, OLADE, World Bank

Institutions That Have Done Work on Women, Energy, and Rural Poverty in Latin America

ENERGIA has recently worked to create a web-based document that describes the major institutions and networks that work on issues of energy, poverty and gender. It is an exhaustive 97 page document that should be reviewed by anyone wishing to know more on institutions.

Anja Panjwani and Elizabeth Cecelski (2002) Major activities and actors in ENERGY, POVERTY AND GENDER, July 2002.

ENERGIA is an international network on women and sustainable energy which links individuals and groups concerned with energy, environment and women. At http://www.energia.org

There is a network on gender and energy "Mesoamerican Gender in Sustainable Energy" (GENES) that has been active in Central America and are a member of Energia. The network includes over 50 members from Costa Rica, El Salvador, Guatemala, Honduras, Mexico, Nicaragua and Panama. But more information about the network could not be collected as the web site appears to be inactive.

UN Agencies

Economic Commission for Latin America and the Caribbean (ECLAC)/ Comisión Ecconómica para America Latina y el Caribe (CEPAL)
www.eclac.cl

Food and Agriculture Organization (FAO)
It looks to integrate energy as a tool for food security and sustainability, supports renewable energy sources adapted to the needs of rural populations, and the efficient use of conventional energy sources.

FAO has helped establish a Latin American and Caribbean Working Group on Energization for Sustainable Rural Development (GLAERS). Regional wood energy networks in Latin America have promoted more efficient end use of wood as a modern energy carrier. FAO's biofuels programme covers such technologies as anaerobic digestion of organic wastes and residues, organic recycling, pyrolisis and briquetting. Solar energy applications include solar drying and solar cooking, heating, water pumping, communications, lighting, greenhouses and refrigeration. It also promotes alcohol production from biomass. Contacts - Gustavo Best, Rome and Carlos Repetto, GLAERS Secretariat, Uruguay.
www.fao.org

Regional Wood Energy Development Programme in Asia (RWEDP) - The FAO, the Government of the Netherlands and 16 Asian countries participated in a regional project focused on wood energy. The project started in 1986 and was closed in 2002 but the information and literature arising from it

remain available in a database which can be down loaded from the RWEDP web-site http://www.rwedp.org. The web site will be maintained by FAO as a part of its continued involvement in these issues and will be updated from time to time. Those interested in receiving additional information should contact Mr. Miguel Trossero miguel.trossero@fao.org.

UNDP Energy for Sustainable Development has produced a book of case studies on energy and women. The publication looks at critical policy and programme design options to improve women's access to modern energy services based on the lessons learned in the eight case studies presented.
www.undp.org/energy

United Nations Environment Programme (UNEP) (www.unep.org) and the Regional Office for Latin America and the Caribbean/ Programa de las Naciones Unidas para el Medio Ambiente (PNUMA): Oficina Regional para América Latina y el Caribe - information on UNEP programs and projects including data on environmental training, natural resources, environmental law, ozone action program, etc.
www.rolac.unep.org

UNDP Initiative for Sustainable Energy (UNISE) *Document*
The central tenet of this document is that energy is not an end in itself, but rather the means to achieve the goal of sustainable human development.
www.undp.org/seed/energy/unise

UNIFEM Latin America and Caribbean Region Offices (Andean Regional Office)
P.O. Box 17-03-4731
Edif. Naciones Unidas, 2do Piso
Avenida Amazonas 2889 y La Granja
Quito, Ecuador
www.womenwarpeace.org/unifem.htm

International Financial Institutions

Asian Development Bank (ADB)
www.adb.org/

Inter-American Development Bank
www.iadb.org

World Bank - Energy Sector promotes development goals, energy, poverty reduction and women.
http://www.worldbank.org/energy

> *Energy, Poverty and Gender*
> This project is funded by the World Bank Asia Alternative Energy Programme (ASTAE), and investigates the linkages between energy, poverty alleviation and gender equity.
> http://www.worldbank.org/astae/econ_sector.htm
>
> *ESMAP* (Energy Sector Management Assistance Programme) is a technical assistance program sponsored by the World Bank and the United Nations Development Programme (UNDP). It is managed by the World Bank, and focuses on the role of energy in the development process, with the objective of contributing to poverty alleviation, improving living conditions and preserving the environment in developing countries.
> http://wbln0018.worldbank.org/esmap/site.nsf

Other Multilateral Organizations and Development Agencies

Canadian International Development Agency
http://www.acdi-cida.gc.ca/index-e.htm

Department for International Development (DfID)
British international development agency.
www.dfid.gov.uk

> *DFID KaR Energy* is one of the larger and longer term research program examining energy and development issues.
> www.dfid-kar-energy.org.uk
>
> http://www.dfid-kar-energy.org.uk/html/links.htm is a very useful page linking to several key web sites and programs on energy and development and specifically on gender and development. It has no links to Latin America.
>
> *Gender Equality Mainstreaming* (GEM) information resource is a DFID web site with information to help put its gender policy into practice.
>
> *id21* is a research reporting service funded by DFID. It aims to bring UK-based development research findings and policy recommendations to policymakers and development practitioners worldwide
> www.undp.org/energy
>
> *Livelihoods Connect* is DfID's, the British international development agency, learning platform for creating sustainable livelihoods to eliminate poverty.
> http://www.livelihoods.org/

Global Environment Facility (GEF), helps developing countries fund projects and programs that protect the global environment. Established in 1991 as a trust fund, which operates in collaboration and partnership with the three implementing agencies (UNDP, UNEP, and the World Bank), GEF is the designated financial mechanism for international agreements on biodiversity, climate change, and pollution.
http://www.gefweb.org/
http://www.undp.org/gef/

International Development Research Centre (IDRC)
www.idrc.ca

International Energy Agency (IEA)
http://www.iea.org

International Fund for Agricultural Development (IFAD)
FIDAMERICA network of the IFAD promotes the exchange of experiences and information among IFAD-financed projects in the region and rural communities and other development partners. Information exchanges center on topics such forestry, roles of farmers' organisations and financial services for the rural poor. The project goal is to strengthen rural organizations by linking them to the network, "since today "being poor" means "lacking access to" – not just access to resources and capital but also to information".
www.ifad.org

Latin American Energy Organization (Organización Latinoamericana de Energía) (OLADE)
www.olade.org.ec
It has data on energy demand and supply and national energy balance sheets for countries in the region. It does not have any gender disaggregated data or experiences on gender and energy.

Organization of American States (OAS) Unit for Sustainable Development and Environment (USDE)/ *Organizacion de los Estados Americanos (OEA) Unidad de Desarrollo Sostenible y Medio Ambiente* (UDSMA)
www.oas.org/usde/spanish/defaultesp.htm
www.oas.org/usde/
Organization of Eastern Caribbean States (OECS), *Environment and Sustainable Development Unit* (ESDU)
Previously known as the Natural Resources Management Unit of the Organization of Eastern Caribbean States, the Unit is now called the Environment and Sustainable Development Unit (ESDU). ESDU assists in the management of the sub-region's natural resources by providing technical assistance and by developing tools and techniques for natural resource management.
www.oecs.org/esdu

Non-Governmental Organizations, Networks and Associations

African Energy Policy Research Network (AFREPREN)
AFREPREN consists of 106 African energy researchers and policy makers who have a long-term interest in energy research and the attendant policy-making process.
www.afrepren.org

African Rural Energy Enterprise Development (AREED)
As a UNEP initiative supported by the UN Foundation, AREED seeks to develop new sustainable energy enterprises that use clean, efficient, and renewable energy technologies to meet the energy needs of under-served populations. The objective is to reduce the environmental and health consequences of existing energy use patterns by offering rural energy entrepreneurs a combination of enterprise development services and start-up financing.
www.areed.org

Asociación Interamericana de Ingeniería Sanitaria y Ambiental (AIDIS).
Founded in 1948, AIDIS maintains close ties with the World Health Organization, and has its headquarters in São Paulo, Brazil. The organization's primary concerns include climate change, air pollution, energy, ecosystem, legislation, environmental policy, recycling, and solid waste.
www.aidis.org.br

Center for International Forest Research (CIFOR)
www.cifor.cgiar.org

Comparative Research Programme on Poverty (CROP)
CROP, an international NGO initiated by the International Social Science Council, is organized around an extensive international and multi-disciplinary research network, open to all poverty researchers and others interested in a scientific approach to poverty.
www.crop.org/

ENERGIA is an international network on women and sustainable energy which links individuals and groups concerned with energy, environment and women. ENERGIA aims to strengthen the role of women in sustainable energy development through information exchange, training, research, advocacy and action.
http://www.energia.org

Energy Development Corporation (EDC) is an African energy and development policy research, consultancy and capacity-building institution, based at the University of Cape Town, South Africa. It seeks to deepen knowledge and understanding of the energy and development needs and challenges in South Africa, SADC and the rest of Africa and to search for innovative responses.
http://www.cef.org.za/about/edc/index.htm

Environment and Development Action in the Third World (ENDA) is an international non-profit organization based in Dakar, Senegal. ENDA collaborates with grassroots groups in search of alternative development models on the basis of the experience, expectations and objectives of marginalized peoples.
http://www.enda.sn/english/index.htm
European Association for Renewable Energies
The association was founded in 1988 as the non-profit European Association for Renewable Energy that conducts its work independently of political parties, institutions, commercial enterprises and interest groups.
http://www.eurosolar.org/new/en/home.html

Forest Action Network (FAN) was established in 1995 as a non-governmental organization to work closely with local communities in utilizing forest resources on a sustainable basis. FAN works to ensure that forests are treated with the respect they deserve, and that those who depend on them participate in caring for them.
http://www.fanworld.org/aboutfan.html

Friends of the Earth International (FOEI)
www.foei.org

Global Network on Energy for Sustainable Development (GNESD) is a global network of developing work centres of excellence and network partners focusing on energy, development and environment issues. The objective of GNESD is to make it easier for these centres and partners to contribute to the provision of environmentally sound energy services supporting sustainable development.
http://www.gnesd.org/

Global Village Energy Partnership (GVEP) brings together developing and industrialized country governments, public and private organizations, multilateral institutions, consumers and others in an effort to ensure access to modern energy services by the poor. This new partnership of partnerships aims to help reduce poverty and enhance economic and social development for millions around the world and has a substantial network of members in the region.
http://www.gvep.org/

Household Energy Network (HEDON) is an informal consultative forum dedicated to improving social, economic, and environmental conditions in the South, through promotion of local, national, regional and international initiatives in the household energy sector.
www.hedon.info/goto.php/

Inter-American Institute for Global Change Research (IAI) is an intergovernmental organization supported by 17 countries in Latin America dedicated to pursue the study of global change phenomena and their socio-economic implications. These countries are, in alphabetical order, Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, Guatemala, Jamaica, Panama, Paraguay, Peru, Uruguay, and Venezuela.
www.iai.int

International Center for Research on Women
http://www.icrw.org/

International Network for Sustainable Energy (INFORSE) is a worldwide network of 200 NGOs in more than 60 countries. All of these organizations work to promote sustainable energy and social development. Together they act as an independent initiator of programmes and projects and is actively engaged in international awareness rising. The network was established by NGOs in Rio in 1992 to secure follow-up on the political decisions at the United Nations Conference on Environment and Development (UNCED).

http://www.inforse.org
Women and Development Research Resources organised by the Global Development Research center on the Internet: http://www.gdrc.org/gender/link-resources.html

Programa Ambiental Regional para Centroamérica (PROARCA) is the Regional Environmental Program for Central America funded by the United States Agency for International Development (USAID). It was created in 1994 by the Joint Central America--USA Declaration (CONCAUSA) to support conservation and natural resources management in the region.

RARE Center for Tropical Conservation.
Site for the nonprofit organization featuring information on the organization, its structure, history, guiding principles, etc. RARE's two main programs are Conservation Education and Ecotourism and Community Development. The Protection of Wildlands is another priority. In the Caribbean, RARE Center is currently working in the Dominican Republic, Antigua, Dominica, St. Vincent, and Grenada.
http://www.rareconservation.org/

Red de Latinoamérica y el Caribe (REDLAC)/ *Latin American and the Caribbean Network of Environmental Funds*.
REDLAC is a coalition of 23 environmental organizations commanding approximately US$500 million which is divided among more than three thousand regional projects. Its web site features documents, upcoming meetings, finances, and projects.
http://www.redlac.org/

Red Ecorregional para América Latina Tropical (REDECO).
Web site for the environmental network linked to the Centro Internacional de Agricultura Tropical (CIAT) and other organizations dealing with the conservation of natural resources and rural development. Features a complete archive of its Boletín Ecorregional online as well as news updates, upcoming events, etc.
www.redeco.org

Red Interamericana de Recursos Hídricos (RIRH)/ *Inter-American Water Resources Network* (IWQRN)
Features information about the Network, its activities, discussion groups, information resources, meetings, and links. There is also a news update. Click on either topic displayed on the Network's homepage for information.
http://pollux.ces.fau.edu/iwrn/mainspanish.html

Red Panamericana de Manejo Ambiental de Residuos (REPAMAR) - Web site for the regional directory dealing with waste management. Provides a list of networks from member countries including participating organizations with contact information. Regional members are Argentina, Brazil, Chile, Colombia, Costa Rica, Ecuador, Mexico, Panama, and Peru.
http://www.cepis.ops-oms.org/bvsare/e/home.html

Renewable Energy and Energy Efficiency Partnership (REEEP) is a WSSD Type 2 partnership to deliver the energy policy objectives agreed at WSSD and take forward the recommendations of the G8 Renewable Task Force. Its main aim is to accelerate and expand the global market for renewable energy and energy efficiency technologies by identifying and removing market barriers to their deployment and by increasing access to financing for such technologies.
www.reeep.org

Renewable Energy Policy Project (REPP) (http://solstice.crest.org/index.html)
Especially relevant is the discussion group on stoves and in particular see:
http://solstice.crest.org/discussiongroups/resources/stoves/Winrock/GENES/GENES.htm

Ríos Vivos **-** Deals with water resources in the Amazon region. Features articles, press releases, and documents cover: Waterways, Energy, Agriculture, Banks & Businesses, Waters, Images, Events, etc.
www.rios-vivos.org

SPARKNET is an interdisciplinary interactive Knowledge Network focusing on energy for low-income households in Southern and East Africa. SPARKNET is sponsored by the European Commission's 5th Framework Programme for Research. SPARKNET brings together stakeholders from seven countries in Southern and East Africa and three from the European Union around the issue of energy and poverty in low-income households.
http://www.sparknet.info/

Tropenbos International, a Dutch-based non-governmental organization, which focuses on tropical forest management for people, conservation, and sustainable development.
www.tropenbos.nl/

Winrock International is a nonprofit organization that works around the world, including in Latin America, to increase economic opportunity, sustain natural resources, and protect the environment. Some of the issues that WINROCK cover include agriculture, natural resources management, clean energy, and leadership development.
-CHRYSALIS: Leadership Training for Pioneering Women is a training handbook that empowers women leaders and helps build gender- sensitive organizations. The most value- added feature of Winrock's Leadership Development program is the use of knowledge- sharing information and communication technologies web sites, list serves, learning networks, electronic mail, and the application of Internet tools.
-Forestry & Natural Resource Management Projects
-Guide on Renewable Energy in Brazil Addressing Social Problems through the Engagement of Civil Society and Local Government: A Success Story
-Renewable Energy and Gender Workshop organized by Winrock and the Institute of Sustainable Development and Renewable
www.winrock.org

World Council for Renewable Energies (WCRE)
http://www.wcre.org/

World Energy Council (WEC) promotes the sustainable supply and use of energy for the greatest benefit of all. The Council has member committees in over 90 countries and is the world's foremost multi-energy organization.
http://www.worldenergy.org/wec-geis/

World Rainforest Movement/ Movimiento Mundial por los Bosques Tropicales.
www.wrm.org.uy

Information Portals

Eldis - Gateway to Development Information
http://www.eldis.org

Medio Ambiente Online - Also known as the *Environment Business Network/Red de Negocios para el Sector Ambiente*, this site focuses on the Latin American environmental market, its problems and solutions.
http://www.portofentry.com/

Online Bibliography for Environmental History of Latin America - Features over 600 references to the environment in Latin America and the Caribbean. Divided into geographical areas: Amazon, Andes,

Brazil, Caribbean, Southern Cone, and Mesoamerica. Sponsored by Stanford University, Palo Alto, California.
http://www.stanford.edu/group/LAEH/

Sustainable Development (SD) Gateway - Features Development Projects in the following environmental areas/themes : Environment, Natural Resources Management, Environmental Protection, Climate Change, Biodiversity, Environmental Law, and Population and Environment.
http://www.sdgateway.net/default.htm

ANNEX 3: TERMS OF REFERENCE

Prepare a review document:

• To provide energy policy makers in the Latin American region with information, examples and resources to facilitate gender-mainstreaming in rural energy policies and project development in the Latin American region, and as a resource for participants of a multi-stakeholder forum on social issues in rural energy development.

• Review existing documents and web sites, contact researchers, project developers, government agencies, and other relevant actors by phone and email in the Latin American region – and where appropriate internationally – to compile information for analysis as outlined below.

The Report shall, at least, identify and analyse:

• Key developmental impacts resulting from women's improved access to appropriate energy services (recognizing women's roles as both producers and end-users of energy services), particularly in rural areas;

• Institutional barriers limiting women's access to appropriate energy services, and; strategies and / or policies aimed at overcoming the identified barriers in areas such as:

- Access to credit, relevant training and information;
- Participation in the design, implementation, maintenance and evaluation of energy projects; and in policy and decision making processes;
- Identification of gender-differentiated energy needs.
- Other best practices supporting gender-equitable access to appropriate energy services and addressing women's energy and developmental needs.

• Networks and organizations working to address gender and energy issues that may provide policy input, training, and institutional resources to support gender-equitable energy development in the Latin American region.

• Where applicable, best practices and / or lessons learned from international policies and programs that have helped to create an enabling environment for women in accessing appropriate energy services to support their development needs should be considered with the aim of identifying how similar policies, programs and or resources could facilitate gender-sensitive energy development in the Latin American region.