

Supporting Gender and Sustainable Energy Initiatives in Central America, Volume I

December 2004

Joint UNDP/World Bank Energy Sector Management Assistance Programme
(ESMAP)

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First printing December 2004

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Acknowledgments

This report was prepared by Maria Elena Ruiz Abril (Poverty and Gender Group, Latin America and Caribbean region), and summarizes the findings of the Central America Gender and Sustainable Energy Project. The World Bank project team included Maria Correia (task manager), Maria Elena Ruiz Abril (main consultant), Selpha Nyairo, Ricardo Mejia, and Milagros Leyton. The Regional Unit for Technical Assistance (RUTA) team included Jean Claude Balcet (task manager) and Ronald Meza (main consultant). Additional support in RUTA was provided by Roxana Romero and Irma Gundaker. The project was financed by the joint UNDP/World Bank Energy Sector Management Assistance Program (ESMAP).

The team is grateful to Winrock International, which implemented the first phase of the project, and to the members of the Mesoamerican Gender in Sustainable Energy (GENES) network for their contribution and participation in the workshops and other project activities. The work of FUNDACIÓN PANAMÁ and PROLEÑA Nicaragua during the implementation of the two pilot subprojects is also acknowledged.

The team is also grateful to Marcelo Bortman (LCSHH) and Yewande Aramide Awe (LCSEN), who organized the Guatemala Indoor Air Pollution Workshop.

Particular mention should also be made of Dominique Lallement and the ESMAP team, including Kazim Saeed, Marjorie Araya, and Nyra Guice, which provided constant support throughout the project.

Finally, the comments of peer reviewers Waafas Ofosu-Amaah (PRMGE), Douglas Barnes (EWDES), and Sheila Oparaocha (ENERGIA network) are gratefully acknowledged.

Abbreviations and Acronyms

ANAM	National Environmental Agency (Panamá)
ASOCIACION AK	Asociación Ak' (Nuevo) Tenamit (Pueblo) (New People Association)
BUN-CA	Biomass Users Network – Central America
CEFA	Centro de Estudios y Capacitación Familiar (Family Studies and Training Center)
CEPM	Centro Panameño de la Mujer (Panamá Women's Center)
CNE	Comisión Nacional de Energía (National Commission for Energy)
CNFL	Compañía Nacional de Fuerza y Luz (Power and Light National Company)
CORDES	Fundación para la Cooperación y el Desarrollo Comunal de El Salvador (Foundation for the Local Cooperation and Development of El Salvador)
EMOLEP	Estrategia para Mejorar la Oferta Sostenible y Uso Eficiente de la Leña en el Pacífico de Nicaragua. (Strategy to Improve the Sustainable Supply and Efficient Use of Wood in the Pacific Area of Nicaragua)
ESMAP	Energy Sector Management Assistance Programme (UNDP/World Bank)
FUNDACIÓN NATURA	It is a Non-Governmental Organization
FUNDACIÓN PANAMÁ	Fundación de Parques Naturales y Medio Ambiente (Foundation for National Parks and the Environment)
FUNDAR	Fundación pro Niños del Darién Pro-Darien Children Foundation
GENES	Género en Energía Sostenible (Red Mesoamericana) (Gender in Sustainable Energy (Mesoamerican Network))
IAP	Indoor Air Pollution
JICA	Japanese International Cooperation Agency
LPG	Liquefied Petroleum Gas
MSPAS	Ministerio de Salud Publica y Asistencia Social (Ministry of Public Health and Social Assistance)
NGO	Non-governmental Organization
PROGENIAL	Gender Institutional Innovation Program for Central

America

- PROLEÑA** Environmental NGO in Nicaragua
- RUTA** Regional Unit for Technical Assistance (Costa Rica)
- SEDESOL** Federal Secretary of Social Development
- UNDP** United Nations Development Programme
- UTN** Universidad Tecnológica Nicaragüense
(Technological University of Nicaragua)
- UTP** Universidad Tecnológica de Panamá
(Technological University of Panama)
- WHO** World Health Organization

Executive Summary

1. *This report presents findings on the ESMAP-funded Central America Gender and Sustainable Energy project.*

- The purpose of the project, in operation between June 2001 and December 2003, has been to support the provision to rural and peri-urban populations of equitable access to sustainable energy, with the goal of ensuring that the available energy sources serve both women's and men's energy needs in the productive and domestic spheres. The project has provided support to the Mesoamerican Gender in Sustainable Energy (GENES) Network, which seeks to enable the equitable access of women and men to sustainable energy services. The activities supported by the project have included a series of workshops and regional exchanges/field visits with GENES members on gender and sustainable energy; the implementation of two pilot projects to test energy innovations and approaches; and the identification of policy interventions that are of relevance in the area of gender and sustainable energy.

2. *Between April and July, 2002, a series of two binational and one trinational workshop on gender and sustainable energy was conducted for members of the GENES Network.*

- More than 60 people from NGOs, universities, producer groups, government agencies, and the private sector participated in the workshops, which were held by neighboring countries (Costa Rica and Panama; Honduras and Nicaragua; and El Salvador, Guatemala, and Mexico). During the workshops, participants learned the relevant gender issues in the energy sector and were introduced to the tools with which to integrate gender into the design and implementation of energy projects. To ground the concepts presented, each workshop incorporated a technology demonstration and/or a field visit to a project site where participants could see one or more applications of sustainable energy technologies. These trips included exchanges on solar coffee drying and solar cooking; solar lighting and water pumping and brief field visits to projects involving photovoltaic pumping and electrification; solar fruit and wood drying; and the use of improved cook stoves.

3. *Following the workshops, the project supported two proposals for pilot ideas for the integration of gender into energy projects.*

- The two pilots supported were Improved Stoves with Community Participation in El Cauchal (Panama) and Mainstreaming Gender in the Commercialization of Improved Stoves (Nicaragua). While similar in their objectives—that is, to increase the access of the poor to improved stoves—the pilot projects took different approaches during implementation. The Panama pilot combined community work and a process of technological innovation and development, driven by international and national exchanges of experiences, to develop and make available improved stoves to 18 rural communities in the Panama Canal watershed area. The Nicaragua pilot combined a

process of technological development with consultation with communities to achieve the inclusion of socioeconomic aspects in the marketing of stoves to low-income households in peri-urban Managua. The pilots demonstrated that efforts to address the energy needs of the poor need to be negotiated on a case-by-case basis, as different socioeconomic realities require different approaches. They also showed how a strong focus on the user, toward which a gender approach can significantly contribute, can greatly improve the results of energy sector programs. Finally, the importance of using financing mechanisms to make the intended solutions affordable to the poor was strongly underscored during pilot implementation, particularly in the case of Nicaragua. This finding deserves special attention from development agencies and from the ESMAP program.

4. *Policy dialogue with the Government of Guatemala, a country with a high incidence of deaths due to respiratory infections, was initiated to raise awareness over the health consequences of indoor air pollution and to motivate a policy response.*

- The health consequences of IAP emerged early as one of the most important energy-related problems with gender ramifications affecting Central America's poor. These consequences must be treated from a policy perspective. A workshop involving government staff from health and other agencies was held in Guatemala in November. The workshop sought to increase awareness of the issue by facilitating discussion of the health consequences of IAP among a varied constituency of government agencies. IAP is not the highest priority of the Guatemalan Environmental Health Agenda, as environmental health problems such as water supply, sanitation, and solid waste management continue to hold the attention of policymakers, but it is gradually raising its profile.

5. *A survey and a series of meetings with members of the GENES network confirmed the valuable development work that the network does as well as severe difficulties in the network operations at regional level.*

- The information gathered confirmed the increasing value-added brought by the GENES network to its members and to Central America's poor in the area of the safe, efficient supply of energy. The potential of the network to transfer knowledge across peer organizations and between different types of energy sector operators (such as universities and implementing NGOs) is high, and the expected benefits for Central America's poor are promising. The network's potential to influence government policy is as yet unrealized, however, and more work is needed to develop this facet of the network. Additionally, while the network seems to be working well in the countries visited (Panama and Nicaragua), operations at a regional level appear to be weaker. High running costs and weak communication and coordination are the main challenges to the successful operation of the network at the regional level.

6. *Overall, the project represents an enormous source of knowledge and lessons for GENES members and for other stakeholders who want to learn from it.*

- Some of the principal findings of the project include: (a) the ability of exchanges of experiences to foster and accelerate the innovation process for intermediate technologies; (b) a need for a stronger user orientation in the design of technology intended to meet the energy needs of the poor; (c) a need to build the capacity of energy sector operators in social and economic approaches; (d) the importance of constantly seeking the input of users of the technology to ensure that designs are appropriate and to reinforce ownership and sustainability; (e) a need to implement financial mechanisms to support the successful transference of energy-efficient technology to the poor; and (f) that a gender approach can greatly contribute to energy projects by improving targeting mechanisms such that the projects appropriately benefit the poor.

1

Introduction

Background

1.1 Up to 35 percent of Central America's population lives without electricity. A much higher percentage has no supply of clean, modern energy services for non-electric needs, such as domestic and commercial cooking. This lack of modern energy services limits the income-generating potential of rural and peri-urban populations and has significant negative health consequences, exacerbating the oppressive conditions in which these typically poor populations live. The costs of conventional rural electrification often are prohibitively high, and rural electrification programs additionally tend to disregard the need of the population for a combination of energy sources. In particular, the fundamental energy burden associated with cooking, the primary energy need of poor and rural households, often is overlooked.

1.2 There is a clear need for investigation of alternative approaches to the provision of energy supply. These approaches should meet household needs and provide income-generating opportunities for women and men; they also must be affordable, non-harmful to health, and environmentally sound. Examples include the use of sustainable energy from off-grid solar, wind, and micro hydro resources and efficient biomass use.

1.3 Traditional gender roles mean that men and women tend to use energy for different purposes and manage its use in different ways. Fuelwood collection and cooking are dominant among the domestic chores of women, but the main place of energy in the lives of men is its use in income-generating activities outside the home. The decision-making processes affecting the design of energy projects tend to be dominated at the community and institutional levels by men, however, with little consultation taking place to determine the energy needs or the income-generating potential of women. These inequities in decision-making and the differences in the energy needs of and uses by men and women are rarely addressed in the development of energy projects.

1.4 The failure to recognize the different energy needs of men and women can lead to projects that both neglect basic household needs (such as for less smoky, more fuel-efficient stoves) and underemphasize the income-generating potential of women. Men

alone are perceived as engaging in “productive,” out-of-household activities.¹ A more thorough understanding of men’s and women’s needs for and potential uses of energy could enhance the ability of energy-related projects and programs to achieve their goals of improved quality of life and greater productivity. It also could help ensure that these goals are realized in ways that are equitable to women and men, and ultimately could help bring greater benefits to families and the community as a whole.

Project Objectives

1.5 The overarching purpose of the ESMAP-funded Central America Gender and Sustainable Energy project has been to support the provision to rural and peri-urban populations of equitable access to sustainable energy and to ensure that the available energy sources serve both women’s and men’s energy needs in the productive and domestic spheres. Specifically, the project aimed to:

- identify, pilot and disseminate innovative energy techniques/systems that meet women’s and men’s multi-needs and uses, and at the same time are efficient, economically and technically viable, culturally and environmentally appropriate and sustainable;
- identify, adapt and test participatory approaches with a gender perspective, i.e. that work with and involve both women and men on energy techniques/systems for multi-needs and uses;
- reduce time use due to energy-related tasks such as fuelwood and water collection, and ensure gender-equitable access to energy for productive and income generating activities (i.e. addressing specifically women’s reduced access vis-à-vis men);
- identify constraints for introducing and operating new energy systems to meet women’s and men’s multi-needs and uses as well as opportunities for overcoming these constraints; and
- disseminate findings within and outside the GENES network, the World Bank and other international organizations.

1.6 The project has provided support to the Mesoamerican Gender in Sustainable Energy (GENES) Network, which seeks to achieve the equitable access of women and men to sustainable energy services. The GENES network has representation from seven countries (Guatemala, Honduras, El Salvador, Nicaragua, Costa Rica,

¹ Women (and their children) bear a disproportionate share of the burden associated with the absence of efficient energy services. They typically are the greatest energy providers and consumers in rural areas, where fuelwood collection and use dominate the household energy profile. As a result, women’s health (and that of their children who accompany and often assist them in their tasks) is compromised through direct and extensive exposure to indoor air pollution and from the physical strain of daily fuelwood collection. The time invested in fuelwood collection and other energy-intensive activities (such as water collection) furthermore clearly is time that is not available for personal or family development, such as education and income-generating activities, within or outside the domestic sphere.

Panama, and Mexico) and comprises approximately 50 entities, including NGOs, producer associations, government agencies, academic institutions, and private enterprises.

1.7 The first phase of the project ran from June 2001 to December 2002, and was implemented by Winrock International, an NGO with experience in energy and development projects and a founder member of the GENES network. The second phase was implemented directly by the World Bank, in close collaboration with the Regional Unit for Technical Assistance (RUTA) in Costa Rica.

Activities

1.8 The project has supported the following activities:

Project launch

1.9 The Central America Gender and Sustainable Energy project was launched at a 13–15 August 2001 workshop in Antigua, Guatemala, with the participation of the regional and national coordinators of the GENES network. The workshop participants validated the project's objectives and activities, designed a plan of action, established mechanisms to coordinate the activities of network members, and initiated the planning of the main activities.

Gender and energy workshops

1.10 Two binational and one trinational workshop on gender and sustainable energy were conducted between April and July 2002, with the involvement again of members of the GENES network. More than 60 people from NGOs, universities, producer groups, government agencies, and the private sector participated in the workshops, which were held between neighboring countries (Costa Rica and Panama; Honduras and Nicaragua; and El Salvador, Guatemala, and Mexico). The objectives of the workshops were twofold: (a) to present and discuss case studies on innovative techniques and systems that meet the disparate energy needs and uses of women and men and that are efficient, economically and technically viable, culturally and environmentally appropriate, and sustainable; and (b) to present and discuss methodologies capable of engaging women and men in the development and implementation of energy-based projects. (A detailed description of the workshop outcomes and lessons learned follows in Section 2 of this report.)

Regional exchanges and field visits by GENES members

1.11 Each of the gender and energy workshops was followed by an exchange of experiences or a field visit to enable participants to view and compare different techniques, systems, and approaches being taken in the practical application of new energy systems. In the case of Costa Rica, the workshop was accompanied by a two-day exchange on solar coffee drying and solar cooking. The second and third workshops included demonstrations of solar (photovoltaic (PV)) lighting and water pumping and

brief field visits to projects involving PV pumping and electrification; of solar fruit and wood drying; and of the use of improved cook stoves.

GENES information exchange

1.12 The project also undertook activities designed to strengthen the GENES network by enhancing the coordination between project members and by improving the exchange of information. Quarterly bulletins were produced and distributed (see Annex 1) and an online database developed.

Table 1.1 Pilot Project Proposals

Project Title / Institution / Country	Proposed Project
<p>Project to apply gender focus in the context of energy applications for the production of dried fruit and aromatic and medicinal plants, and for dried coffee</p> <p>Institution: Fundación CORDES Country: El Salvador</p>	<p>Incorporate a gender component in an expanding and innovative project that adds value to agroforestral production through solar fruit and coffee drying in 10 rural communities</p>
<p>Sustainable Energy Contributes to Nutrition and Environmental Protection</p> <p>Institution: FUNDAR, with Universidad Tecnológica de Panama, Fundación NATURA, Centro Panameño de la Mujer, Centro de Estudios Familiares, and FUNDACIÓN PANAMÁ</p> <p>Country: Panama</p>	<p>Technical assistance for the adoption of an improved stove and a biodigester in a rural school, under FUNDAR’s nutrition and ecologically sound farming programs, with the objectives of decreasing the following negative impacts: health (smoke); fuelwood consumption and hauling for men and women; and management of pig waste</p>
<p>Improved Stoves with Community Participation in El Cauchal</p> <p>Institution: FUNDACIÓN PANAMÁ Country: Panama</p>	<p>Identify and implement an appropriate improved stove model for 20 families in a rural, indigenous community. The stove to cook efficiently, conserve fuelwood, be of an appropriate height, and reduce smokiness</p>
<p>Hydroelectric Power for Integrated Community Development</p> <p>Institution: BUN-CA Country: Costa Rica</p>	<p>Strengthen small textile businesses through the introduction of a micro hydro system and substitute domestic electricity for fuelwood use in a rural community of 80 people, through rehabilitation and optimization of an existing 15kW system</p>
<p>Mainstreaming Gender in the Commercialization of Improved Stoves</p> <p>Institution: PROLEÑA Country: Nicaragua</p>	<p>Incorporate a gender focus into the ESMAP/World Bank-supported project to commercialize the efficient stove model “ecofogon.”</p>

Capacity-Building Courses for Women in Dos Asentamientos, Managua, on the Rational Use and Advantages of Energy Institution: Universidad Tecnológica Nicaragüense (UTN) Country: Nicaragua	Create a permanent culture of efficient energy use through the development of courses for peri-urban women in the efficient use of energy in the household
Implementation of Renewable Energy in the Educational Processes of Q'eqch'ies Girls in the Río Dulce region of Izabal Institution: AK' TENAMIT Country: Guatemala	Obtain a photovoltaic (PV) demonstration system for educational purposes; the demonstrations to be oriented principally toward indigenous girls in a rural community

Pilot subprojects to test energy innovations and approaches

1.13 After the workshops were completed, members of the network were asked to present pilot ideas for the integration of gender into energy projects. Seven proposals were received (see Table 1.1), of which two ultimately were implemented. Criteria for selection of the proposals for implementation included that: (a) the proposal use gender-sensitive participatory methods to engage women and men; (b) the proposal employ innovative energy techniques and systems; and (c) the executing organization have experience in the implementation of similar projects. The proposals presented were varied in their scope, target population, and in the type of energy and technology that would be exploited, but the final selection was constrained by the limited operational capacity of some of the presenting organizations. Four projects were selected for funding (two to develop efficient stoves; one to develop a solar drying technology; and one to build a biodigester) but implementation problems² eventually led to the cancellation of two of these. Two only were taken to completion: Improved Stoves with Community Participation in El Cauchal, Panama; and Mainstreaming Gender in the Commercialization of Improved Stoves in Nicaragua (see Section 4).

Identification of policy interventions

1.14 This activity involved the identification of areas in Central American energy policies in which gender could be mainstreamed in a meaningful way, producing sizable benefits for poor men and women. The problem of indoor air pollution was identified early as one of the most important energy-related problems with gender ramifications affecting the poor, and a dialogue accordingly was initiated with the Guatemalan government to address this issue from a policy perspective (see Section 5).

² In one case taking the form of significant delays in implementation of the activities, and in the other inability to meet the project closing date.

2

Workshops and Exchanges of Experiences on Gender and Energy³

Background

2.1 Between April and July 2002, two binational and one trilateral workshop on gender and sustainable energy were conducted for members of the Mesoamerican Network on Gender in Sustainable Energy (GENES). More than 60 people participated, including representatives of NGOs, universities, producer groups, government agencies, and the private sector. The workshops were held between neighboring countries (Costa Rica and Panama; Honduras and Nicaragua; and El Salvador, Guatemala, and Mexico). GENES national coordinators considered the workshops to be essential for the establishment of a common understanding within the network.

2.2 Participants separately brought to the workshops practical experience in solar energy, micro hydro energy, improved wood stoves, and biogas; they also brought experience in gender-sensitive, participatory development processes. Few had experience in both areas, however. Participants similarly spanned a range of levels of influence, with workshop membership including government program planners, nongovernmental development practitioners, university professors and researchers, and private sector entrepreneurs.

Workshop Descriptions

2.3 The general objectives of the workshops were to:

- promote the incorporation of a gender focus and the use of renewable and/or sustainable technologies among the institutions, projects, and programs of GENES member organizations, and among other actors that seek to incorporate or otherwise associate with the network;

³ This section is based on the report *Gender and Sustainable Energy Workshop's Series*, by Winrock International. A more detailed description of the workshops can be found in the same report, forthcoming as an ESMAP Technical Paper.

- reflect on the relationship between gender equity, sustainable development, and renewable energy, and identify how key concepts of gender equity can be applied in the workplace and projects;
- promote the increased involvement in the energy field of women, both as beneficiaries and as decision-makers;
- establish a foundation of information, goals, and commitments, and identify the next steps necessary to advance the gender and energy agenda in Mesoamerica; and
- identify opportunities for implementing projects that in the short term are able to demonstrate the benefits of applying a gender perspective to rural energy initiatives.

2.4 The workshop coordinators aimed to combine theory with enough practical tools and exercises to enable participants to immediately begin to put the concepts into practice. In response to a request by GENES members for guidance in the fundamental principles of gender theory, and to establish a common base of understanding, the trainers introduced basic gender concepts using a combination of presentations, videos, and discussions. The trainers agreed that understanding of basic concepts and terminology is essential for effective communication on the subject.

2.5 Each workshop additionally incorporated a technology demonstration and/or a field visit to a project site where participants could see one or more applications of sustainable energy technologies. The field visits provided valuable, “unprogrammed” time for discussions and the exchange of experiences. In the case of Costa Rica, the workshop was accompanied by a two-day exchange on solar coffee drying and solar cooking. The second and third workshops included hands-on demonstrations of solar (photovoltaic, or PV) lighting and water pumping and brief field visits to projects involving PV pumping and electrification; solar fruit and wood drying; and improved cook stoves. These visits and the associated discussions reinforced participant interest in further, in-depth study of specific innovations.

2.6 An essential part of the workshops was the identification of specific actions by which the different institutions might integrate a gender/energy focus in their work. Workshop facilitators encouraged the participants to be as exact as possible in identifying the steps that their institutions could take toward achieving a more gender-sensitive, more sustainable form of development. Participants also were asked to indicate any potential synergies that they had identified with other organizations, both at or outside the workshops.

Workshop Outcomes

There were three primary outcomes of the workshops, as follows:

2.7 *Enhanced capacity to address gender issues in energy projects and programs.* The workshops resulted in a new understanding of gender-related concepts that previously were unfamiliar or poorly understood. With this understanding and with the exposure to practical applications of sustainable energy that were provided through case studies, technical demonstrations, and site visits, workshop participants were able to identify specific actions that they could take in their work to ensure that energy projects and programs account for the needs both of women and of men.

2.8 *Enhanced capacity to incorporate socioeconomic considerations into energy projects and programs.* The workshops were instrumental in fostering a significant change in the approach to development that was demonstrated by the participants. The discussion of social aspects of development projects was an essential part of the workshops, engendering the realization that energy is not an end in itself, but rather is a means for achieving better life conditions. Participants recognized that if renewable energy projects are to be better received, they must respond to the demands of the community.

2.9 *Enhanced capacity of the GENES network operational mechanisms*

- *At the regional level.* The bi- and trilateral workshop structure appears to have been useful for exchanging experiences and building regional bonds. The workshops brought together neighboring countries that share many common cultural, socioeconomic, and environmental characteristics, ensuring that participants could, to a large extent, identify with and benefit from the experiences of others. Numerous ideas emerged about exchanges within and between countries that could further facilitate practical learning and lead to specific project action.
- *At the national level.* Each workshop provided an opportunity for participants to work in groups to identify actions that could be taken in the short, medium, and long terms, with the objective of determining which would be next steps to follow at the level of institutions, as sub-networks at the national level, and at the regional network level.

Box 2.1 Examples of Actions Taken as a Result of the Workshops

Costa Rica National Power and Light Company (CNFL)

- CNFL staff gave a seminar to fellow staff on gender issues. This was the first company-sanctioned event focused on gender topics. Approximately 80 percent of CNFL staff are male engineers

Nicaragua Technological University (UTN)

- UTN professors from the Population and Environment Unit of the Environmental Engineering Program held a seminar on gender and energy for undergraduates
- The Bluefields Indians Coastal University (BICU) held a similar event on gender and energy, for professors
- Nicaragua National Energy Commission (CNE)
- CNE is reviewing its projects to ensure that their design takes into account gender issues
- Technological University of Panama
- A module on gender and energy has been included within the post-graduate and masters programs offered by the faculty of Mechanical Engineering

Línea Biosfera (Mexican NGO)

- Women from a community in Chiapas sought the support of the Federal Secretary of Social Development for training in stove construction and maintenance
- Línea Biosfera has begun to work with the government of the state of Chiapas to reassess its promotion of just a single stove model

Federal Secretary of Social Development (SEDESOL)

- SEDESOL committed itself to funding at least one gender-sensitive sustainable energy project in the state of Chiapas by the end of 2002. A gender-specific RFP was expected to be released in September

Panama Women's Center (CEMP)

- CEMP is funding projects for women in new areas such as solar drying and improved stoves

Lessons Learned

2.10 Energy can be a driver for equitable development, to the extent that it supports the equitable redistribution of responsibilities (such as a reduction in the burden of work through the use of mechanized grain grinders or water pumps, for example, or

through greater family cooperation); equitable access (for example, to education); and the equitable control of resources (such as economic resources, for example, by enabling the implementation of new projects). A lack of energy can constrain the opportunities that would permit women and men to overcome their social and economic poverty.

2.11 The use of an approach that mainstreams gender in a renewable energy project can contribute to that project being more efficient and more pro-poor. The organizers of such projects typically have technical rather than social science backgrounds, however, with the result that incorporating gender into these projects can be difficult, but the returns on any effort made to achieve this can be high. For example, by addressing socioeconomic issues an energy project can in some instances lift constraints on the benefits that the project would bring. By taking social and gender aspects into consideration, an energy project can better target its benefits to the poor.

2.12 During the workshop, participants identified tools that might help integrate gender into energy projects. These include:

- *Case studies on gender and energy.* Extremely useful as a knowledge transference tool and dissemination strategy, case studies that document experiences of the integration of a gender focus into energy projects unfortunately are scarce. The presentation of available case studies nonetheless provided for an appreciation of the rich experiences of the region. These studies, while requiring more documentation and analysis, clearly merit wider diffusion.
- *Participatory approaches.* While essential for the success and sustainability of energy projects, participatory processes typically take more time than most people and institutions are prepared to invest in them. The level of organization of the local community is extremely important to the sustainability of any renewable energy project. Such projects therefore should consider providing greater support to the formation of local organizations and enterprises.
- *Gender and energy indicators.* Discussions of the case studies underscored the urgent need to develop gender and energy indicators. Significant advances have been made in this area, and the region is rich in terms of people and organizations that can help guide this process.
- *Exchanges of experiences.* The workshops offered an efficient means by which the participants could exchange their experiences, insight into methodologies used, and other information. The identification of local synergies also drew attention to other important actors that are involved in local development efforts. The challenge itself of organizing binational and trinational workshops additionally required a significant degree of coordination among the organizers and the facilitator team.

Conclusions

2.13 The first Mesoamerican series of gender and sustainable energy workshops catalyzed ideas into actions. Analysis of the gender aspects of sustainable energy technologies helped equip the GENES participants with tools that will enable them to critically assess their work and that will help them explore approaches to energy-dependent development needs that are both sustainable and more equitable. The workshops increased the understanding of the underlying drivers of behavioral change and technology transfer, and increased awareness of the means available to deliver solutions to the critical development needs of women, men, children, and the elderly.

2.14 Most important, the workshops motivated GENES members to seek change within their own organizations as well as through partnerships with complementary groups. The GENES network itself has been strengthened through the bonds established between the different member groups, and a closer national and regional network has resulted. GENES workshop participants are eager to share the lessons and their learning with others, within and beyond Mesoamerica.

3

Pilot Projects: Improving Access to Safer Energy Options for the Poor in Nicaragua and Panama

Introduction

3.1 This section presents findings on the two pilot projects supported by the ESMAP Central America Gender and Sustainable Energy Project:

- Improved Stoves with Community Participation in El Cauchal, Panama; and
- Mainstreaming Gender in the Commercialization of Improved Stoves in Nicaragua.

3.2 The findings are based on the review of secondary information, including surveys and socioeconomic profiles of the communities concerned, and visits to the projects.

3.3 During the visits a team of three consultants met with staff from the two implementing NGOs (PROLEÑA and Fundación de Parques Naturales y Medio Ambiente – Fundación PANAMA), with beneficiaries of the projects (both male and female), and with staff from the Japanese International Cooperation Agency and the Autoridad Nacional del Ambiente in Panama working in the Proyecto de Conservación de la Cuenca Hidrográfica del Canal de Panamá. In Panama, the team conducted four single-sex focus groups with men and women stove users and four with women non-users in the two communities where the project operated. In Nicaragua, women that used the stove for domestic purposes (and also for productive activities) and women non-users were interviewed. The team carried out four focus groups with women users (domestic) and non-users, and interviewed seven women who were using PROLEÑA's stove to prepare and sell tortillas in Ciudadela. At both project sites, agencies and NGO staff members additionally were interviewed. The focus groups and interviews with beneficiaries researched the impacts of the project, and the interviews with staff members focused on implementation issues.

3.4 This section explains the background to the projects and briefly describes the projects themselves, focusing in turn on the impacts of and lessons learned during implementation.

Improved Stoves with Community Participation in El Cauchal

Background

3.5 The Improved Stoves with Community Participation in El Cauchal project aims to develop and introduce a model of stove that meets the cooking needs of households in rural communities in the watershed area of the Panama Canal. The project is implemented by FUNDACIÓN PANAMÁ, an environmental NGO with 20 years of experience working in participatory natural resource management projects. It consists of the development of a low-cost improved stove and the gradual transfer of the stove, effected through the sharing between neighbors of experiences in its use, to 18 rural communities in the district of Capira.

3.6 Communities in the project area depend primarily on subsistence agriculture (75 percent) and waged agricultural work (25 percent). Although the producers are close to their markets, high soil erosion and lack of proper infrastructure (transport costs represent about 45 percent of product price) means poverty is high. The average monthly income of a family in the area is US\$91.90, well below the rural basic basket of US\$200. Houses are built of a combination of zinc and wood. Families do not often eat meat as the few animals that are kept are meant for sale. Access to health and education services is limited, and most adults are illiterate or have only primary education.

3.7 The energy options are limited, constraining income generation and development opportunities and contributing to a deteriorating quality of life. Most households (89 percent) use only wood to cook, and in the project site almost none use LPG or charcoal—only one of the households interviewed reported using LPG, and that only to prepare quick meals or drinks, such as coffee, due to its high cost (US\$6 for a 4-liter cylinder). Electricity is available to households close to the main road, but high start-up (US\$30) and monthly costs (US\$7–US\$12) preclude most households from using it. Kerosene is the main source of energy for lighting, but has serious associated problems. It is, for example, known to damage sight, and because of its cost its use is kept to a minimum—several families reported getting up late to avoid having to burn fuel. Most families stated that they would enjoy having longer hours of light to study, read, or watch television. Domestic chores that are particularly time-consuming for women, such as rice cleaning, also could be greatly eased through the use of electric appliances.

3.8 Finally, few families have refrigerators, tending instead to dry meat, with the result that some of its nutritional value is lost. The lack of refrigeration also constrains income-generation opportunities, precluding for example the development of agro-industry-based microenterprises that depend on it for the preservation of their produce.

3.9 Traditional cooking methods used in the project area are energy-inefficient and unsafe, comprising primarily open-fire cooking on three rocks. This method not only uses tremendous amounts of fuelwood but also produces considerable smoke. It is also the cause of accidents and burns, particularly for women and children. Cases of children having been hospitalized because of serious burns are common. Although no study is

available of respiratory disease in the area, children and women may spent up to five hours breathing smoke, the negative health consequences of which are well documented.

Table 3.1 Sources of Energy Available in the Project Area

Energy source	Use	Quantity	Cost
Wood	Cook regularly	Inefficient stove: 15 units of fuelwood per meal Efficient stove: six units of fuelwood per meal	Gathered from nearby forests at no cost
LPG	Limited to use for quick meals or coffee	One 4-liter cylinder lasts one month and a half	US\$6.00 (US\$5.50 plus US\$0.50 transport costs)
Kerosene	Lighting	One 16-ounce (about 455ml) bottle lasts three to six days	US\$0.50
Electricity	Not used		Start-up cost: US\$30 Monthly cost: US\$7–US\$12

3.10 A needs assessment carried out in 2000 by the Project for the Conservation of the Panama Channel Watershed revealed a widespread interest among women in better cooking options. Specifically, they wanted faster, less polluting, safer stoves that burn less wood and that are easier to use.

Project Description

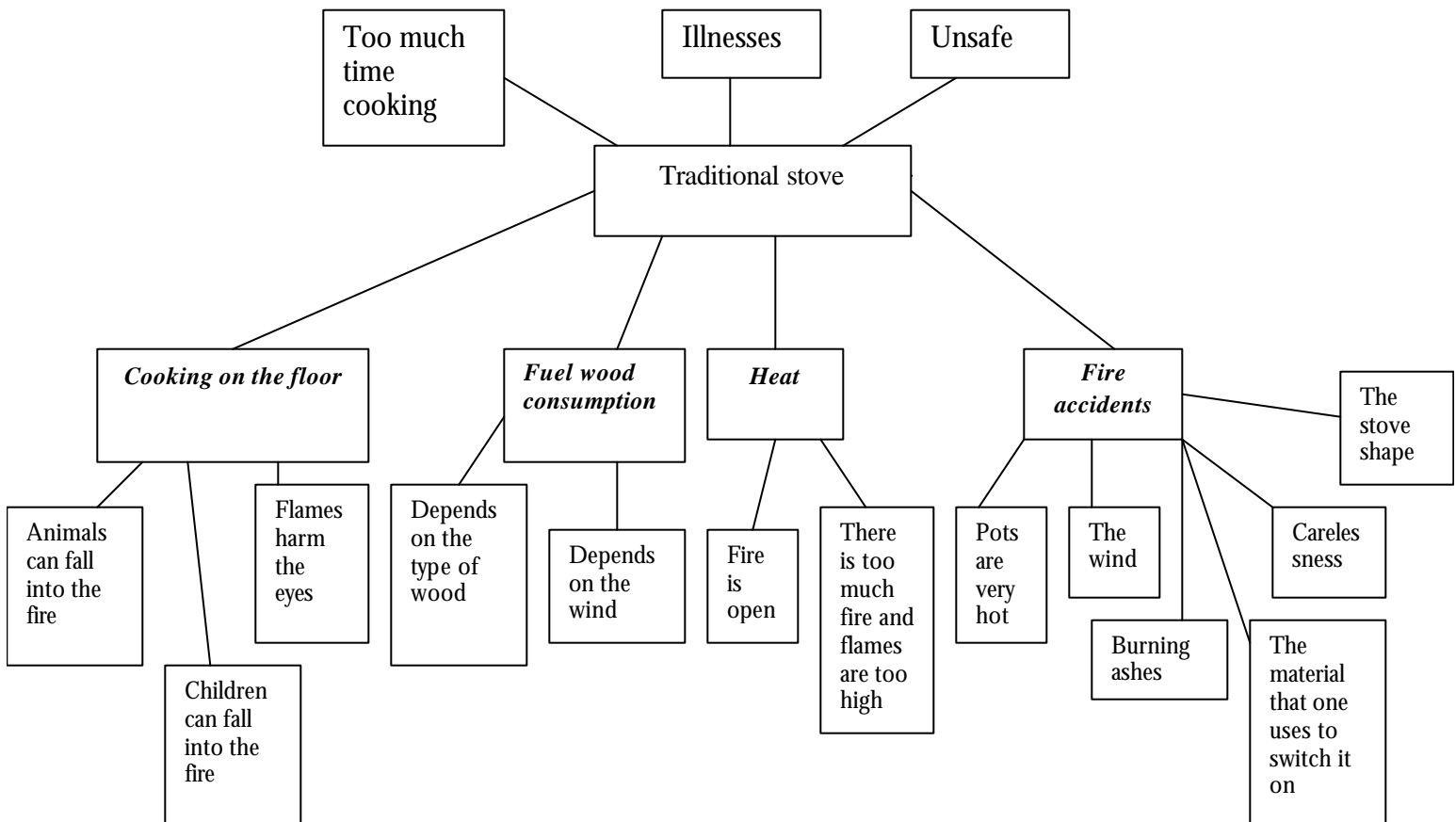
Development of the stove prototype

3.11 FUNDACIÓN PANAMÁ experimented with multiple options before arriving at the final version of its stove. The foundation took a field trip to Nicaragua to study PROLEÑA's prototype stove, subsequently setting out the technical specifications of its own stove with the support of the School of Architecture of the Technological University of Panama. Although technically sound, the prototype was not suitable for poor rural communities due to its cost and design features. Taking instead as a basis a model that was being implemented in a community by the Peace Corps, FUNDACIÓN PANAMÁ involved local men and women in the design of the final model. The approved stove reduced smoke emissions significantly and halved wood consumption. Its material costs are no more than US\$5, and its construction requires only the work of three people for three hours. It is made primarily of clay and is similar to the Lorena prototype developed in Central America in the late 1980s.

Transference of technology

3.12 FUNDACIÓN PANAMÁ sought to transfer the technology to users by organizing a series of meetings that brought together neighboring communities. In a first visit, a group from one community would visit another community where an improved stove was already in operation. Following this visit, and provided that there was interest in the stove on the part of the visitors, a second visit would be scheduled, this time bringing members of the community using the stove to the community that had expressed an interest in it. Over three days the visitor group would explain the benefits of the stove to the new community and would teach how to build the stove and how to maintain it. As many stoves as possible would be built during the three days. The new user community would then repeat the process for the benefit of a third community. FUNDACIÓN PANAMÁ was responsible for coordinating visits, putting communities in touch with one another, and providing building materials.

Figure 3.1 Problems with Indoor Stoves in El Cauchal



3.13 The first phase of the project resulted in 150 stoves being built in communities that have high poverty rates and that are based in environmentally fragile areas. The process of dissemination, as described above, is expected to rapidly expand the

use of the stove to any family that is willing and able to pay the US\$5 materials cost. FUNDACIÓN PANAMÁ and the user communities have developed a simple manual for the construction and use of the stove, and in December the Japanese International Cooperation Agency additionally held a workshop to train its cooperation workers in Central America how to build the stove and how to communicate its benefits to potential users across the region. The links of the project with the ANAM (National Environment Agency) in Panama also are expected to help promote similar initiatives in other projects of the ministry.

3.14 The sustainability of the project is assured by three main factors: (a) the project is grounded in an assessment of local needs that identified an efficient stove as a priority; (b) the project has involved users in the design, construction, and transference of the stove prototype to neighboring communities, ensuring ownership of the stove and of the ability to build and maintain it; and (c) the stove can be easily built and maintained with local materials at a low cost. In interviews, the men and women who have used or are now using the stove have repeatedly emphasized its usefulness and their satisfaction with the project.

Mainstreaming Gender in the Commercialization of Improved Stoves in Nicaragua

Background

3.15 This pilot project aims to introduce gender considerations into the commercialization of improved stoves in poor areas of Nicaragua. PROLEÑA, a local NGO with long experience in the development of efficient stoves, has been responsible for the implementation of the project. PROLEÑA (which is also supported by ESMAP under a different project) had set itself the task of developing a stove that eliminated indoor air pollution, is energy-efficient, and can be used by the poor. After developing the stove PROLEÑA transferred the technology to producers that would be responsible for commercializing the stove to the general public. The ESMAP-supported pilot introduced gender aspects to this commercialization of the stove, by incorporating women in the process of its construction and marketing in poor areas of peri-urban Managua. Notable accomplishments of the pilot have been its improvement of targeting mechanisms to bring the stove to the poor, with the result that it has been introduced to 104 poor households in peri-urban Managua.

3.16 The pilot project operates in a poor settlement 18km east of Managua. Ciudadela is an irregular settlement comprising around 1,160 households. Household monthly income ranges between US\$55 and US\$96 (the Nicaraguan poverty line for 1999 was drawn at US\$33 per month). The principal sources of employment are, for men, waged work in agro-industry, such as sugar processing; and for women, waged work in the maquila export trade zones in Managua, domestic work in Managua, and small informal trade in Ciudadela. Fertility is high and early pregnancy common among girls. A recent survey by PROLEÑA revealed that families cook only one or two times a day because there is not enough food for three meals.

3.17 The two main sources of energy in Ciudadela are electricity for lighting and wood for cooking. Half of the households in Ciudadela are connected to the electricity network, many others access the network illegally. Although the connection cost is expensive, at US\$30, the possibility of spreading this cost over time has been essential to get households connected. Most households use electricity for lighting, television, radio, ironing, and so on. Few households have a refrigerator, buying food instead on a daily basis. Ciudadela reflects the situation generally of Nicaragua, where 70 percent of households use wood for cooking. Even in urban areas of Nicaragua 60.3 percent of the population uses firewood for cooking; LPG is the main cooking fuel for 31.6 percent of households.⁴

3.18 PROLEÑA's stove has proven extremely effective in reducing indoor air pollution (IAP) and decreasing wood consumption, but its cost has precluded a wider use of the stove in Ciudadela. The stove reduces wood consumption by one-third and IAP by 86 percent, but at about US\$64 for the domestic model and US\$80 for the small business model is too expensive for most potential users.

3.19 While extremely effective in reducing Indoor Air Pollution (IAP) and decreasing wood consumption, budget constrains preclude a wider use of PROLEÑA's stove in Ciudadela. The stove developed by PROLEÑA reduces wood consumption by one third and lowers IAP by 86 percent. The cost of the stove, however, about US\$64 for the domestic model and US\$80 for the small business model, is a clear barrier for households with an average monthly income of US\$55 to US\$96.

Table 3.2 Sources of Energy Used by Households in Ciudadela

Type of energy	Use	Quantity	Cost
Wood (inefficient stove)	To cook regularly	Nine units of fuelwood	US\$60 per month
Wood (efficient stove)	To cook regularly	Three units of fuelwood	US\$20 per month
LPG	Limited to use for quick meals	One 4-liter cylinder lasts one month and a half	US\$6.45
Kerosene	Not used		
Electricity	Lighting, television, radio, ironing		US\$50 start up US\$4 monthly
Coal	Limited use (for example, to roast meat)	Two bags to roast meal for family	US\$0.16 per bag

⁴ PROLEÑA, 2002, "Producción, Comercialización y Regulación de Leña en San Francisco Libre." Unpublished report. Managua: PROLEÑA

Project Description

3.20 The pilot project aimed to increase the role of women in the construction and marketing of improved stoves in poor areas of Nicaragua. It has helped enhance the access of poor households in peri-urban Managua to clean, energy efficient technologies by: (a) facilitating access to credit to buy improved stoves; (b) bringing stove supply closer to poor users by training a group of men and women to build and maintain stoves locally; and (c) persuading large-scale commercial stove producers to more effectively address the needs of women stove users. The project's activities consisted primarily of workshops and capacity-building exercises for users and producers of stoves and the operation of a credit-rotation fund. The project took a participatory approach and women played an important role throughout implementation.

3.21 To improve the marketability of the stoves the project facilitated the exchange of experiences between the stove users (mainly women) and producers and between users and potential users. PROLEÑA organized workshops in Ciudadela and encouraged dialogue between commercial stove producers and local women (see Box 3.1). These exchanges proved extremely useful for the producers by informing them of ways to improve their stove design; they also gave producers better insight into the nature of the poorest segment of their market. Demonstration events and exchanges of experiences between women users and non-users also were effective in spurring demand for the stoves in Ciudadela. PROLEÑA additionally advised stove producers how to educate the public on the benefits of the stove, in particular to convey the message that the stoves improve indoor air quality and bring consequent health benefits.

Box 3.1 Dialogue between Stove Producers and Women Users

Producer: Which one of the two models, half stovetop or whole stovetop, heats better?

User: To do tortillas, the whole stovetop stove is better than the half stovetop, but for the rest the half is better because the fire directly touches the pot

Producer: When did you start using the stove and how much did it cost?

User: We have it since four years ago. I think it was cordobas 700.00 (US\$ 45)

Producer: What difference is there between the old stove and the new one?

User: The savings in firewood. I spent C\$10.00 before and today I spend C\$3.00 because the heat lasts longer.

Producer: Is there anything that tends to break in the stove?

User: The shoe, and in some houses, water goes into the chimney.

Producer: How do you maintain the stoves? The concrete, is it regular or special?

User: With ashes. It's preferably special concrete

User: When are you going to start repairing stoves?

Producer: We're waiting for the materials to arrive.

User: Is there a lot of demand for stoves outside Ciudadela?

Producer: People ask a lot but they don't buy.

Source: Gender Training Workshops

3.22 The project set up a credit fund to overcome the inability of potential users to afford the stoves. Among women there was a genuine strong interest in the stoves, but the issue of inability to afford them came up early in the workshops. It became clear that women could over time pay for a stove, but that they were unable to meet the purchase price in one payment. The project therefore established a credit facility to fund stoves for domestic use and for small-scale business use (primarily the cooking of tortillas and frijoles for sale). The project is expected to benefit about 104 families in Ciudadela by providing cleaner, more efficient energy options. Throughout the four rotations of the credit fund the project will benefit about 104 families, or 9 percent of Ciudadela's population. Other local NGOs, such as Handicap International, working in similar neighborhoods are watching closely the evolution of the PROLEÑA credit component, with a view to introducing similar facilities.

3.23 To increase the availability of stoves in Ciudadela, the project additionally trained a group of men and women and provided materials to enable the stoves to be produced locally. A mid-term review of the project had revealed the limitations of traditional channels of commercialization: middle-income families were the main target market of stove producers, and their marketing strategies were ineffective in reaching the poor. Few Ciudadela inhabitants own a car, and few therefore can reach the producers' shops in the center of Managua, let alone transport the stove from the shop to their homes. A decision thus was made to create a local workshop to produce and sell stoves in Ciudadela. Three women and two men were trained in the necessary skills to do this, and PROLEÑA provided the materials needed to build the stoves.

Project Impacts

3.24 The use of improved stoves has important benefits for women, their families and communities at large. In different degrees, both projects are contributing to reducing deforestation, improving health of household members; improving household budget and freeing women's time. Men and women are well aware of the immediate benefits of using stoves. For example, a survey carried out by PROLEÑA in Ciudadela revealed that when asked about the main advantages of the stove, all the women mentioned the lack of smoke; 91.7 percent of women referred to the savings in wood consumption; and 50 percent mentioned the time saved in cooking.

Health

In Nicaragua

3.25 PROLEÑA's stove has helped improve the health of household members by reducing indoor air pollution (IAP) by 86 percent. As IAP is a primary cause of serious illnesses that disproportionately affect women and children (see Box 4), the health benefits of the project are among its most valuable (it nonetheless should be noted that the consequences of IAP typically impact all household members, as houses often do not have room partitions). Prior to the introduction of the stoves almost all households interviewed had at least one member suffering from asthma, and women repeatedly

complained about headaches and swollen eyes. Women cooking tortillas for sale typically spend up to six hours exposed to the smoke from their cooking fire.

3.26 The stove has also reduced the risk of burns. PROLEÑA's survey of women users revealed that 58.3 percent of users have never burned themselves with the new stove; a further 29.2 percent reported having burned themselves only when the stove was new and unfamiliar.

In Panama

3.27 By far the most important among the perceived benefits of the new stoves are those related to the user's health and the health of his or her family. The stove has minimized accidents and burns by reducing heat while cooking, and to a certain extent has improved indoor air quality. The reduction of IAP and the subsequent health improvements generally are the most important health benefits of efficient stoves, but in the project site cooking is mainly an outdoor activity, thus limiting the potential positive benefit of a new stove in terms of reducing the incidence of respiratory disease. The main health benefit in the Panama project instead pertains to the reduction of burns, which previously were common in the area. Many women also mentioned the advantage of cooking without being so directly exposed to the heat of the stove, a problem with open fires that manifests itself particularly during pregnancy.

Box 3.2 Health Consequences of IAP

Indoor air pollution (IAP) is one of the leading causes of death globally. For example, household solid fuel use in India causes an estimated 500,000 premature deaths per year among women and children aged less than five years. The World Health Organization estimates that about 2.5 million people die from IAP every year.

The use of solid fuel in traditional stoves is the main cause of IAP. Data indicate that the incidence of acute respiratory infections among women is roughly twice that among men. IAP due to the use of solid fuel in household stoves is a risk factor for several major diseases, including acute respiratory infections, chronic bronchitis and chronic obstructive pulmonary disease in women, lung cancer, tuberculosis, low birth weight and perinatal conditions, asthma, cataracts, and heart disease.⁵

Deforestation

In Nicaragua

3.28 The extraction of wood for commercial use has caused a loss of forest area around Managua of some 13,300 hectares over the last fifty years. According to the Forestry Department, energetic biomass could be extinguished in three to four years. 19.2 percent of urban dwellers in Nicaragua report that they use firewood to cook because it is fast, 16.5 percent because of concerns about preserving the traditional ways of cooking;

⁵ Source: J. McCracken and D. Charron, "Evaluation of the Efficacy and Effectiveness of the Ecostove for Reducing Indoor Air Pollution Exposures among Nicaraguan Women" (2003, Berkeley: Center for Entrepreneurship in International Health and Development); and M. Ezzati, H. Saleh, and D.M. Kammen, "The Contributions of Emissions and Spatial Microenvironments to Exposure to Indoor Air Pollution from Biomass Combustion in Kenya" (2000, *Environmental Health Perspectives* 108(9):833-840).

15.5 percent because it produces better flavor; and 13.8 percent because of its low price and its availability in small quantities.⁶

In Panama

Large-scale livestock rearing and the use of wood for cooking and heating similarly has caused considerable deforestation in the Panama Canal watershed area. The improved stove promoted by the project is helping ease the problem by reducing the amount of wood needed for cooking: bringing down the average consumption of wood for cooking from 13 bundles per month to less than six. Some interviewees even report that the amount of wood that once would have lasted just two to three days can last for up to two weeks with the new stove. Interestingly, in the project area the naturally high consumption of wood in open-fire cooking was aggravated by the fact that women are obliged to make time both for domestic chores and work in the field, and to do so often would use excessive amounts of wood simply to cook faster. By helping reduce deforestation the project also is expected to deliver the positive benefit of supporting the recovery of exhausted local watersheds.

Time saving

In Nicaragua

3.29 The use of the improved stoves saves women time that previously would have been spent cooking, and that now may be given over to other household chores or rest. Women report saving between 30 and 60 minutes per meal (see Table 3.3), and say that the capability of cooking two meals at the same time is particularly helpful. Overall, 54.2 of women think that the stove is faster to boil and 58.3 percent think it is faster for frying.

In Panama

3.30 The new stoves are used by most household members, but it is unquestionably women who benefit the most from the new technology. The time savings enabled by the stoves are greatly appreciated, as in particular is the fact that the cook can prepare two meals simultaneously. As the stove fire does not require constant management it also permits the simultaneous commission of cooking and of other household chores.

⁶ National Commission for Energy, 1999, Strategy to Improve the Sustainable Supply and Efficient Use of Wood in the Pacific Area of Nicaragua. Managua: National Commission for Energy.

Table 3.3 Daily Timetable of Ciudadela Women Stove Users and Non-Users

Women stove non-users		Women stove users	
<i>Time</i>	<i>Activity</i>	<i>Time</i>	<i>Activity</i>
4:00-5:30	Get up and prepare breakfast	5:30-6:15	Get up and prepare breakfast
5.30-8:00	Clean house, brush patio	6:15-8:00	Clean house, brush patio
8:00-10:00	Wash clothes	8:00- 9:30	Wash clothes
10:00-11:00	Have a bath, watch TV	9:30-10:00	Have a bath
11:00-12:30	Prepare lunch	10:00-11:00	Watch TV
12.30-13.30	Have lunch	11:00-12:00	Prepare lunch
13.30-15:00	Wash dishes, iron	12:00-13:00	Have lunch
15:00-16:00	Rest	13:00-14:00	Wash dishes
16:00-17:00	Supervise children's homework	14:00-15:30	Iron and run errands
17:00-18:00	Run errand and visit neighbors	15:30-16:30	Supervise children's homework
18:00-19:00	Prepare dinner	16:30-17:00	Prepare dinner
19:00-20:00	Have dinner and wash dishes	17:00-18:00	Rest and visit family
20:00-21:00	Watch TV	18:00-19:00	Have dinner and wash dishes
21:00	Go to bed	19:00-22:00	Talk to family
		22:00	Go to bed

Budget Effects

In Nicaragua

3.31 The reduction in the consumption of firewood translates into family savings that may be spent on basic needs such as food. In urban areas of Nicaragua people buy firewood in local grocery stores. According to data from 1999, 96 percent of people buy their wood in units (38 percent) or in bundles (58 percent); 4 percent collect it from nearby fields.⁷ In the case of Ciudadela 75 percent of households buy wood; 16.7 percent collect it; and 8.3 percent do both. By decreasing firewood consumption by one-third, the improved stoves enable family savings of approximately US\$35 per month.⁸ Given an average monthly household budget of US\$55–US\$96, this is a significant savings. According to the PROLEÑA survey, 79.2 percent of people spend the savings on food, purchasing eggs, milk, and cheese four times a week and 1 pound (450g) of chicken once a week. They also buy clothes and school essentials for their children. The health benefits of the stoves also deliver a financial benefit: money saved on medicines is cited

⁷ National Commission for Energy, 1999, Strategy to Improve the Sustainable Supply and Efficient Use of Wood in the Pacific Area of Nicaragua. Managua: National Commission for Energy.

⁸ Nine units of firewood may previously have been used per meal, but with the new stove three units may be sufficient. Each unit costs cordobas 1.5 (about US\$0.10); assuming that the household has two cooked meals per day, over the course of a month as much as US\$35 may be saved with the stove.

as further additional income that can be diverted to meet other household needs (cough syrup for babies, for example, can cost as much as US\$9 per unit in Nicaragua).

3.32 These savings appear to be having a direct positive impact on the nutritional status of families, but other effects commonly associated with women's control over resources, such as higher decision-making power, are not evident in this project. While control of an additional US\$35 per month would seem to imply for women a new source of power in intra-household bargaining, the fact that the income is spread over a month means that women have just a few additional cents a day to spend. This money furthermore typically goes directly to basic household purchases, constraining the ability of women to accumulate sums sufficient to provide bargaining leverage in the household.

In Panama

3.33 The improved stoves, by reducing fire-related accidents, remove also the economic costs of such accidents. These include notably the cost of getting an injured person to the health center (quoted as costing as much as US\$40); and medicines. In more dramatic examples, individual interviewees report knowing of as many as three people who have lost their homes to cooking-related fires.

Employment Generation

In Nicaragua

3.34 Through its credit component, the project has supported the emergence of income-generating activities for female-headed households. In addition to domestic stoves, the project has financed the purchase of larger stoves for business use. The production of tortillas is a common occupation for women, particularly single mothers, in Ciudadela, enabling them to supervise their children at home while at the same time working for profit. Tortilla makers tend to be the only source of income in their household, generating net daily earnings typically of between US\$6.50 and US\$9.50.

Gender Benefits

In Nicaragua

3.35 The project has promoted changes in gender roles. Women played an important role throughout all the project activities, and men and women alike participated in training events. At the request of the project, training activities for stove producers, a traditionally male-dominated industry, included women representatives. The local building and repairing workshop in Ciudadela has trained and employs three women as mechanics, another nontraditional female profession.

Lessons Learned

3.36 The exchange of experiences at different levels is essential to foster and accelerate the innovation process of intermediate technologies. The development process of the FUNDACIÓN PANAMÁ stove was one of trial and error, ultimately producing an excellent model fully adapted to the needs of the user. At different levels, learning from

others has throughout played an important role in fostering innovation. First, FUNDACIÓN PANAMÁ's commitment to learn from organizations, such as PROLEÑA, that have long experience in the field of improved stoves served as a starting point from which to replicate, improve, and adapt the technology. Second, through its interaction with the University of Panama FUNDACIÓN PANAMÁ benefited from high-quality technical advice. Although unrealistic and unfeasible (too large, too uncomfortable for women, too expensive) the university prototype helped FUNDACIÓN PANAMÁ to rapidly identify the problems of the Peace Corps stove (concrete-based, and therefore expensive; difficult to store in the community; and nonresistant to high temperatures) and move forward. Finally, the exchanges of experiences between communities proved helpful in making the prototype evolve. Families as well as communities learned from each other how to improve the model (with or without chimney; one or two openings for the firewood; one or two spaces for the pots; and so on). Overall, at this level of technological development exchanges of experiences can be a high-return option to speed up innovation.

3.37 A stronger user orientation during the design stage is required if the end product is to meet the needs of the poor. The experience with the development of intermediate technology at times has been one of frustration due to a lack of focus on the ultimate user of the device. Emphasis on the technical specifications of the stove frequently led to unrealistic prototypes that never were used. PROLEÑA characterizes the process as: "15 years of failure competing to get the best machine ... without considering who was going to use it." The case studies in Panama and Nicaragua offer some clues as to how to achieve a stronger user focus. Notable among these are the following:

- *Capacity building in social and economic approaches among energy sector operators.* This is essential to help institutions fine-tune their work for the poor. Many of the institutions involved in stoves development are from the energy sector, and their technicians tend to be engineers. There is a clear need to incorporate other type of professionals to their cadre, to get to know users better both from an economic point of view (for example, to establish whether or not there is demand for the stove and if the ability exists to pay for it) and from a social point of view (how to better target the product to the socioeconomic conditions of poor users in marginal urban areas).
- Constantly seeking the input of users of the technology to ensure a good design and to ensure ownership and sustainability. The success of FUNDACIÓN PANAMÁ's project lies in part in its continuous consultation with users and its deep knowledge of the realities of life in the target communities. FUNDACIÓN PANAMÁ succeeded in involving the community from the outset through needs assessment. Women had asked for the stove and were eager to participate in its development and transference. In Nicaragua, exchanges of experiences

between users and producers also have taken place and will surely help producers tailor their products to their clients' needs.

- *A gender approach in projects can be an entry point to adapt energy services to the needs of users.* Taking a gender approach can be an effective way of getting projects and agencies to think about the ultimate user of their services. In the case of the pilot in Nicaragua, the gender focus brought about activities that were instrumental in making the project work for poor men and women. By facilitating consultations and exchanges of experiences among users and between users and producers, the project identified important weaknesses in the project, in terms of design, pricing, and even marketing. The establishment of a credit fund and a workshop to produce stoves locally were essential for the success of the project, and were discovered entirely because the project had a community/gender focus.

3.38 Agencies and projects need to balance efficiency and affordability. They must develop low-cost technological options for low-income groups. There inevitably will be trade-offs between technological efficiency and affordability: the pilot experience in Panama, for example, suggests that, when working with low-income groups, producing a low-cost stove is as important as producing a stove that eliminates smoke emissions. In the Panama pilot project, as efficient as the university prototype might have been its cost meant that it would never be a practical solution. Agencies must find the right balance between technical excellence and affordability when working for the poor.

3.39 Technological excellence may be essential to the product, however, in which case the project must include financial mechanisms that can help put the product within reach of the poor. In this area empirical evidence and recent research recommend alternatives to simple subsidies. PROLEÑA's experiments with subsidies failed, as the users did not as a result fully value the stoves received and failed to maintain them. Similarly, World Bank studies⁹ suggest that subsidies to energy, contrary to conventional wisdom, tend to benefit middle-income groups rather than the poor. In the case of credit, formal financial market institutions (such as banks, credit unions, and so on) seldom are interested in financing the small amounts of money that are needed for these small-scale technologies, and when they are there are myriad problems that can arise. For example, in the case of Ciudadela, a human settlement where property rights are not well defined and land titles are scarce, the ability of the inhabitants to provide collateral for credit is extremely limited. The project agencies therefore must internalize this component of the project, and must include a credit element as an essential part of the project.

3.40 Projects need to be flexible, and should offer different solutions to different social realities. The Nicaragua project employed a high-tech stove, for example,

⁹ S. Pagiola, R. Martin-Hurtado, P. Shyamsundar, M. Mani, and P. Silva, *Generating Public Sector Resources to Finance Sustainable Development: Revenue and Incentive Effects* (2002, World Bank Technical Paper No.538. Washington, D.C.: World Bank).

and the Panama project used a humble, clay-based model, but each one works in its given context. Panama's stove probably would not have worked in Nicaragua, nor would the high-tech stove have worked in Panama. While the Panama stove has a high potential to be replicated and adapted for other rural settings, for example, its potential for implementation in urban areas such as Ciudadela is limited. The lack of local materials to build the stove is an obvious limitation, but, more important, the cultural concern that tends to prevail in cities, that the stove appear modern, would also have stood in the way of its use. Energy solutions must be grounded in the social realities of the target community; and these social realities must be fully understood before a project strategy is designed.

3.41 Finally, more work needs to be done to educate the public about the health impacts of IAP. The knowledge of women and men in both project sites about the health risks of IAP proved to be limited. While they knew about the immediate impacts of smoke on their health—asthma, headaches, and swollen eyes—almost none of them were aware of the graver, long-term health consequences of continuous exposure to polluted air in their kitchens. When asked about the health implications of IAP most women answered: “Yes, but it doesn’t kill and I need to cook.” It is noteworthy that some of these women had already received education in the health consequences of smoke. Projects and governments alike need to actively pursue the dissemination of health information to the poor (as main users of open fires).

Conclusions and Next Steps

3.42 Although very different in their approaches to the energy needs of the poor, both projects have succeeded in improving the living conditions of poor men and women in rural locations by providing more efficient, cleaner energy options. A combination of thoroughly grounded community work and a process of technological innovation and development, driven by international and national exchanges of experiences, has led FUNDACIÓN PANAMÁ to extremely good results. Likewise, a process of technology development, consultation with communities, and the vision to include a socioeconomic aspect in the commercialization of its stoves helped PROLEÑA reach poor families in Ciudadela.

3.43 These pilot projects show that the solutions to the energy needs of the poor need to be negotiated on a case-by-case basis, as different socioeconomic realities require different approaches. A strong focus on the poor user, and specifically an approach that has a gender component, can greatly enhance the work of energy sector operators.

3.44 Finally, the issue of financing mechanisms came up strongly during this report, particularly in the case of Nicaragua, and deserves more attention from development agencies. As a first step, the ESMAP program could explore this issue by comparing the results of the revolving credit fund component of this project with the effects of the subsidy scheme for improved stoves that was implemented by PROLEÑA under a separate ESMAP project.

4

Indoor Air Pollution Workshop with the Guatemalan Government

Background

4.1 The ESMAP Central America Gender and Sustainable Energy Project has supported activities to build the capacity of the government of Guatemala to address the health consequences of indoor air pollution, an important energy-related problem that affects primarily poor women and children. While there is ample evidence and knowledge of the negative consequences of IAP on people's health, there is no sense of urgency in the Guatemalan Government nor of ownership of this important issue by the Ministry of Health. A recent ESMAP-funded study, "The Health Impacts of Traditional Fuel Use in Guatemala,"¹⁰ notes this and recommends working with the Guatemalan Ministry of Health to raise awareness of the issue and to identify actions to tackle the problem. As a follow-up to the study's recommendations, the ESMAP Central America Gender and Sustainable Energy Project has supported a workshop involving staff from the Ministry of Health, the Ministry of Energy and Mines, the Ministry of the Environment, and donors and civil society organizations working in this field, to raise awareness of the importance of IAP as an environmental health problem and to motivate a policy response from the Ministry of Health.

Workshop Description

4.2 A one-day workshop organized in collaboration with the Guatemalan Ministry of Health (Ministerio de Salud Publica y Asistencia Social, MSPAS) took place on 24 November 2003 in Guatemala City. The objective of the workshop was to identify priority areas for attention in environmental health in Guatemala and to raise awareness among decision makers at the Guatemalan Ministry of Health of the importance of IAP as an environmental health problem. The results of the workshop will inform the preparation of the Environmental Health Component of the Guatemalan Health and Nutrition Project.

¹⁰ ESMAP, "Health Impacts of Traditional Fuel Use in Guatemala"(draft version, June 2003; Washington, D.C.: World Bank/ESMAP).

4.3 The workshop was attended by 32 participants from various sectors of the government (MSPAS, the Ministry of Energy and Mines (MEM), and the Ministry of the Environment and Natural Resources (MARN)), NGOs (Fundación Solar), PAHO/WHO, and academia (Universidad del Valle, Guatemala).

4.4 The workshop was inaugurated by the Minister of Health, Dr. Jose Molina Aviles, and comprised the following presentations :

- A background to the preparation of the proposed project on health and nutrition, by Dr. Hugo Alvarez (Director, Unit for Strategic Planning, MSPAS);
- Status of diseases under mandatory notification program that are related to the environment, by Dr. Malvina De Leon (Department of Epidemiology, MSPAS);
- Status of environmental health in Guatemala, by Dr. Dannys Cifuentes (Head of the Environmental Health Department, MSPAS);
- A study of indoor air pollution in rural households in Guatemala, by Dr. Byron Arana (Universidad del Valle, Guatemala);
- Experiences from improved stoves programs in Guatemala, by Mr. Danilo Alvarez (Fundación Solar); and
- Social exclusion and health in Guatemala, by Dr. Raul Ovando, (Consultant, PAHO/WHO).

Box 4.1 Environmental Health in Guatemala: Priorities, Strategies for Action, and Actors

<p>Priority areas</p> <ul style="list-style-type: none"> - Water - Sanitation - Solid waste Management - IAP <p>Strategies</p> <ul style="list-style-type: none"> - Involving citizens in identifying needs and monitoring progress - Strengthening existing law enforcement mechanisms - Education programs to change health behavior, implemented in partnership with the Ministry of Education - Development of technologies to reduce IAP - Strengthening the National Council for Environmental Health - Establishing monitoring systems to follow up environmental health problems - Strengthening environmental vigilance programs <p>Actors</p> <ul style="list-style-type: none"> - The Ministry of Public Health would act as a coordinator of all the agencies involved and as regulator of environmental health problems - The Ministry of Environment and Natural Resources would control water, soil and air pollution - Municipalities would act as executing agencies - NGOs would be involved in education and awareness-raising activities - The private sector would be responsible for ensuring healthier working environments <p><i>Adapted from workshop working groups results</i></p>
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4.5 In the afternoon session, participants broke out into four working groups to discuss the priority areas to be addressed under the environmental health component of the proposed Guatemala Health and Nutrition project, the strategies to be implemented, and the roles of different stakeholders. Following the breakout sessions each group presented its results in a plenary session prior to closure of the workshop.

Results

4.6 The working groups identified the following priority areas: (a) potable water supply, (b) sanitation, (c) solid waste management, and (d) mitigation of indoor air pollution. They also identified the need for development of adequate surveillance systems, especially in the first three areas. They recognized the intersectoral nature of these issues and identified possible strategies to address them. The use of primary environmental care and health promotion were identified as ways to involve communities in interventions in these areas. In parallel, the groups recognized that other strategies entailing a wider approach must be developed to address these subjects. The workshop was productive and well organized, as was reflected in the comments of the participants.

Conclusion

4.7 While acute respiratory infections are the first cause of death in Guatemala, IAP mitigation is not the highest priority of the Guatemalan Environmental Health Agenda. Judging by the workshop results, other environmental health problems, such as water supply, sanitation, and solid waste management, continue to hold the attention of policymakers in the health sector. However, IAP is gradually taking its place in the environmental health agenda and clearly is now among the problems being discussed. The workshop has contributed to awareness of the issue by facilitating discussion of the health consequences of IAP among a varied constituency of government agencies. The incorporation of IAP-related activities in the Bank-funded health project currently under preparation will further raise awareness and strengthen the government's capacity to address the issue. In the meantime, wider dissemination of studies on the health consequences of IAP, addressed to government but also to the media, the general public, and other relevant stakeholders, should pave the way for a future interinstitutional effort to mitigate IAP.

5

The Mesoamerican Gender in Sustainable Energy (GENES) Network

Background

5.1 The GENES Mesoamerican Gender in Sustainable Energy Network was founded in 1998 “to join efforts in Central America to make visible the role of women as energy users and to promote gender-equitable energy projects to contribute to the social and economic development of the region.” The network comprises about 50 members from Mexico and Central America working in the energy and development sector (see Annex 2 for a list of member organizations). The network has a Regional Coordinator (Fundación Solar from Guatemala for 1998–2002; now Centro Panameño de la Mujer, of Panama); as well as national coordinators in each country. Following the network’s establishment in 1998, a second major meeting was held in 1999 to design the proposal of the current ESMAP-supported Central America Gender and Sustainable Energy project. The main activities of the network since have corresponded to those funded under the ESMAP project in the last three years, as described in this report. An organization member in the United States, Winrock International, and Fundación Solar are instrumental in overseeing the activities of the network, providing technical support to member organizations in the region, and leveraging funds from international donors.

5.2 Members of the network include energy and environmental NGOs, women NGOs, government agencies, private operators, and universities. Energy and environmental NGOs represent approximately 30 percent of GENES membership, followed by development NGOs, most of which have a gender focus (22.4 percent). Government agencies (10 percent social-development related agencies and 12 percent energy-related government institutions) comprise about 22 percent of the membership, and utility companies, either public or private, represent 6 percent of members. Universities also participate in the network, representing 14.3 percent of overall membership, but their contribution is concentrated primarily in Panama and Nicaragua. The private sector is mainly represented by energy consultancies, which account for 4 percent of GENES members. Membership is highest in Honduras, Panama, and Nicaragua, which have 11, 10, and eight members respectively, and lowest in El Salvador, which has just three members.

5.3 Membership composition by country is varied. Guatemala and Mexico are represented mainly by governmental agencies, Honduras and El Salvador by NGOs, and Nicaragua by universities and the private sector. Panama and Costa Rica are represented by participants from across the spectrum.

Box 5.1 The GENES Network: Vision, Mission, and Objectives

Vision

Within a context of increasing globalization, to contribute to the construction of a region in which all human beings, men and women, participate with dignity and equal opportunities in the efficient use of energy and natural resources to meet their present and future needs.

Mission

To combine together all efforts in Central America to make visible the role of women as energy users and to promote energy projects that are gender-equitable, with the goal of contributing to the social and economic development of the region.

Objectives

- Increase access to and use of sustainable energy as a means to empower men and women
- Increase the participation of all GENES members in a process of equitable development through the exchange and sharing of information, knowledge, and experience
- Strengthen the capacity of GENES members in the areas of gender and energy, through awareness-raising exercises and training
- Develop energy-efficient and gender-equitable projects
- Influence policymaking in the region
- Support national and regional gender and energy policy agendas

5.4 A survey of opinions and a series of meetings were carried out among network members to assess the ability of the network to operate beyond the ESMAP project closing date. The focus groups included members of the network in Nicaragua and Panama, including the current Regional Network Coordinator, Centro Panameño de la Mujer. A summary of the findings follows.

Findings

Value-added of the GENES network

5.5 One of the objectives of the survey and focus groups was to examine the contribution of the GENES network as a unit to the development process in

Mesoamerica. Two main findings were established: that the network has an important role as a facilitator of learning across different constituencies of energy practitioners; and that it has a role in promoting exchanges of experiences and organizing the field visits that are so significant in improving the work of each individual organization.

5.6 The network contributes to the cross-fertilization of new ideas and projects by providing its members with a place for dialogue and mutual learning. Survey respondents emphasized the ability of the network to connect different practitioners, for example, facilitating learning among peer and between nonpeer organizations. They valued most positively the dialogues between: (a) energy practitioners and gender practitioners; (b) government agencies and NGOs; (c) energy research groups at universities and project-executing NGOs; and (d) local communities and technology developers. During the focus groups the members of the network in Nicaragua emphasized how the network could help establish two-way communication channels between research centers and communities, to assist the rapid transfer of technological developments to communities and to integrate the input of those communities within the technology development process. This type of exchange is readily supported by the GENES network as it comprises a varied array of agents, from universities to grassroots organizations.

5.7 The network also can play an important role in facilitating the transference of knowledge to foster innovation within the region. National and international field visits and exchanges have helped spread the application of sustainable energy technologies to other countries (see, for example, the Panama pilot project described in Section 3). As the level of technical expertise needed to apply intermediate technology is relatively low, the network also has significant potential to transfer clean technologies from energy NGOs to gender NGOs in Central America. For example, prior to joining the network Centro Panameño de la Mujer (CPM) was unaware of the existence of wind-based and micro hydro energy technologies. Motivated by a visit to a village in Costa Rica where multiple small-scale applications of solar technology were displayed, CPM now is implementing solar technology in its projects in Panama.

5.8 Finally, respondents reported that membership of the network represents an opportunity to become better informed about funding; makes possible the preparation and implementation of multidisciplinary projects; and increases the ability of individual organizations (particularly civil society organizations) to influence government policy.

Obstacles and needs to operate successfully

5.9 GENES members were also asked to identify obstacles to successful operation and specific needs that must be met to support successful operation. The two main problems identified were (a) the lack of adequate communication and coordination mechanisms between members and (b) the lack of financial resources to fund the network operational costs. The most pressing needs were identified as: (a) better channels of communication between members (such as email; web pages; and electronic databases); (b) better coordination mechanisms at the regional level; and (c) better dissemination

among governments and other institutions in Central America of the role played by the network.

Current and proposed role for the GENES network

5.10 The services that the network currently provides to its members are focused on the exchange of experiences, on training, and on information sharing. The members identified these services as essential to their daily work and hoped that the network would continue to provide them. Some aspects of these services nonetheless could be improved, notably through the provision of greater access to case studies, of a bibliography related to gender and sustainable energy work, and to the lessons learned from projects; and through the promotion of a deeper dialogue between members. In addition to the continuation of its current functions, members recommended that the network's role be expanded to: (a) provide technical assistance in the fields of gender and/or sustainable energy to members; and (b) focus on influencing policy by working with policymaker agencies.

Conclusions and Recommendations

5.11 The information gathered confirms the increasing value-added brought to energy development by the GENES network. Of the various benefits derived by GENES, the following are noteworthy:

- experience sharing among network members and the discovery of complementarities between members;
- feedback from network members in the course of project implementation, particularly during training activities and user consultations;
- the development of multidisciplinary capabilities within the network, encompassing gender, energy, environment, poverty, and community development; and
- the introduction and employment of participatory approaches to project design and implementation involving women and men.

5.12 The network's potential to influence government policy is as yet unrealized, however. More needs to be done to develop this area. One possibility would be to form a steering committee or advisory group of policymakers to assist the network in shaping its strategy and coordinating its projects with national policies. Complementary work on other projects, to include macro analysis of gender and energy links, could be another way forward, making the idea of gender-energy indicators (initiated during the binational workshops) one clearly worth pursuing as a network common task. GENES, with the assistance of ESMAP and/or other donors, could put together gender-disaggregated energy accounts for a number of regional countries. It could present these to national governments, help the governments identify desired improvements over time, and assist them in monitoring a set of progress indicators. This,

if accepted by the governments, would offer GENES a distinct legitimacy, bringing greater policy support and improving donor appeal.

5.13 On the operational front, while the network seems to be working well in the countries visited (Panama and Nicaragua) operations at a regional level appear to be weaker. Financial constraints on running costs and poor communication and coordination are challenging the successful operation of the network at this level. After five years of operations and following a recent change of regional coordinator, the network is entering a transitional period. This might be the time for GENES to stop and think, evaluate its achievements, assess the obstacles uncovered by and lessons learned in the process, and redefine its goals and operative mechanisms. This analysis should include a review of the composition of GENES membership and how this is likely to change as a result of the ESMAP project. For instance, financing issues were not an explicit part of the project's objectives, but in the course of implementing the pilot projects the need for financing has emerged as important. GENES might now need to include among its members or partners financing institutions, in particular microfinancing institutions. The network should also clarify the extent to which poverty features in its outlook. There are explicit and critical linkages between gender and poverty that often are submerged under gender-neutral approaches to poverty alleviation and reduction. Defining these linkages and adopting them as a core objective of the network could help its mission, as well as enhance its appeal to governments and donors. Finally, a strategy to sustain the network's payment of its operational costs needs to be devised sooner rather than later, to ensure that the program does not lose momentum when the ESMAP project closes.

6

Conclusions

6.1 While the energy problems facing the poor in Central America are unlikely to have changed during the two and a half years that the project has been operating, the capacity of the energy sector to better respond to men and women and to enhance their quality of life is likely to have increased. Limited access to clean, safe, and efficient sources of energy continue to afflict millions of men and women in the region, limiting deeply their quality of life. Nevertheless, some 50 energy sector operators in Central America are better prepared now to tackle some of these problems than they were before the project started.

- Following the project, there is greater awareness among Central American energy practitioners of the different roles played by men and women as energy users and managers. There also is new awareness of the importance of taking the concerns of these people into account when identifying, designing, and implementing energy projects.
- The project has enhanced the ability of individual operators to integrate gender issues into energy projects. The workshops supported by the project provided these operators with the tools with which to undertake gender analysis and to apply these concepts in practice.
- Operational capacity, beyond that of the individual members, has increased with the efforts of the GENES network to transfer innovation and to replicate and multiply the work of individual members.
- Perhaps most important, through their participation in the workshops and their exposure to social and gender analysis, energy practitioners have come to see energy projects as part of the wider development process. Energy is just a means by which to improve people's quality of life and the development opportunities available to them. This realization will help energy practitioners to direct their projects such that they are more effective in serving the energy needs of men and women in Central America.

6.2 In addition to increasing GENES capacity building, the ESMAP project as a whole, and in particular the two pilot projects carried out under it, have:

- actively involved women beneficiaries in Nicaragua and Panama in needs identification and technology absorption;
- assisted women technically and financially in acquiring cooking devices that are more efficient and less polluting and that have significant health-related advantages;
- increased the incomes of some of these women through enabling savings in fuel costs and by increasing their sale of commercial food products;
- resulted in significant savings in their time; and
- raised their awareness of the benefits of improved energy technologies.

6.3 The pilot projects featured innovations that are not normally associated with gender-neutral energy projects. The pilots have, among other things:

- brought together women users with technology designers and vendors to better enable the identification of appropriate technologies;
- enabled the transfer of technical and commercial know-how from energy NGOs and technology vendors to gender NGOs and women users;
- promoted capacity-building among gender NGOs and women users, in particular through a strategy of employing trained women users to in turn train other women users;
- widened the vision of energy organizations and practitioners to include women-specific energy issues; and
- developed a financing mechanism to help women users acquire improved energy technologies.

6.4 The ability to scale up project activities and to enhance the sustainability of those activities will be essential to maximize the impacts of the pilot projects and learning events. The sustainability of project activities will depend on the steps that GENES takes to consolidate as a network, to follow up the project activities, and to expand to new areas of work. Work to disseminate the experience of the pilot projects is already underway: the Japanese International Cooperation Agency (JICA), for example, has held a workshop to disseminate information about the Panama stove prototype to JICA staff in Central America (see Section 3). In addition, in collaboration with the Gender Institutional Innovation Program for Central America (PROGENIAL) of the World Bank the experience of the pilots was shared with staff of all of the Bank-funded projects in Nicaragua and Panama. The Social Investment Fund in Nicaragua has shown

interest in adding PROLEÑA's stove to the list of projects being offered to communities, and staff from the Ministry of Education in Nicaragua have also expressed an interest in applying the prototype in rural schools. Several of the participants in the binational workshops additionally have replicated the training within their own organizations, or are teaching gender and energy courses at Central American universities (see Section 2).

6.5 Much thus has been achieved to serve the energy needs of poor men and women in Central America, but significant challenges remain. There is still much to be done in the policy sphere to mainstream gender issues and to realize policy designs that take into consideration the different needs and services that men and women require from the energy sector. For example, in Guatemala, a country that has pioneered the development of efficient stoves in Central America, the mitigation of IAP is not yet a main health priority. The low priority of IAP at the policymaking level contrasts sharply with the high valuation of the health benefits of clean energy sources expressed by women users, as shown in the two pilot projects. This would seem to indicate a disconnect between energy users and policymakers in Central America that deserves further inquiry and analysis.

6.6 Progress in the gender and energy agenda in Central America will need the concerted action of different institutions. The World Bank and ESMAP have an important role to play filling knowledge gaps and promoting dialogue with governments about the health consequences of IAP and about other energy-related policy issues. Entities such as the GENES network can play a role in promoting such policy changes and, through targeted projects, can help operationalize these policies. Networks such as GENES are difficult to sustain, however, and require a high level of commitment from members. Unless the regional coordination of the GENES network is in future managed by a permanent, fully funded secretariat, its impact will likely remain limited. The donor community could make an important contribution to development in Central America by supporting the GENES network in this area.

6.7 Overall, the project represents an immense source of knowledge and lessons for GENES members and for other stakeholders who want to learn from it. Some of the principal findings of the project are as follows:

- the importance of the exchange of experiences in fostering and accelerating the innovation process of intermediate technologies, through facilitating the marriage between technical excellence and practical application;
- the need to build the capacity of energy sector operators in social and economic approaches, such that development thinking rather than just energy thinking informs their work;
- the importance of seeking the input of users of the technology in ensuring a good design as well as reinforcing ownership and sustainability;

- the need to balance efficiency and affordability and to develop low-cost technological options for low-income groups—or to introduce financial mechanisms to lift the constraints on uptake due to high start-up costs; and
- the importance of a gender approach in energy projects to the proper tailoring of energy services to the needs of the poor, as realized through consultation with poor women users and through ensuring that their views are reflected in the design of projects.

Annex 1

Sample of GENES Network Bulletin

Annex 2

Members of the GENES Network

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Annex 3

GENES Network First Special Session

A3.1 PRIMERA REUNIÓN EXTRAORDINARIA GENES, Antigua, Guatemala, 13 a 15 de Agosto de 2001.

OBJETIVO GENERAL:

A3.2 Dar continuidad al proceso de integración y activación de GENES e implementar actividades con apoyo ESMAP.

OBJETIVOS ESPECÍFICOS:

- a) Informar del estatus operativo y actividades de GENES.
- b) Reafirmar los objetivos de GENES y validar las metas, alcances y limitaciones de ESMAP en su apoyo al lograr las metas de GENES.
- c) Impulsar la agenda regional por medio de consensos participativos y enmarcados en los alcances y limitaciones de la iniciativa.
- d) Llegar a un acuerdo sobre las acciones y los compromisos específicos para el próximo año.

AGENDA PRELIMINAR		
TIEMPO	TEMA	PARTICIPANTE
DOMINGO 12 de agosto		
17:00	BIENVENIDA E INTERCAMBIO INFORMAL: ACTUALIZACIÓN DE LAS ACTIVIDADES NACIONALES GENES DESDE EL AÑO PASADO	
18:00	CENA	
LUNES 13 de agosto		
8:30	INSCRIPCIÓN DE PARTICIPANTES	
9:00	BIENVENIDA Y PRESENTACIÓN DE PARTICIPANTES	
	I. INICIATIVA ESMAP EN APOYO A GENES	
9:30	Atecedentes, instituciones involucradas y personas contacto: la Red GENES y el apoyo ESMAP	Katja Winkler
	Breve reseña histórica	
	Instituciones/personas iniciales y actuales	

AGENDA PRELIMINAR		
<i>TIEMPO</i>	<i>TEMA</i>	<i>PARTICIPANTE</i>
	Actividades realizadas a la fecha y acuerdos	
	Descripción de Visión y Misión de GENES	
	Presentación de la nueva coordinadora regional de GENES	
10:15	Alcances y Limitaciones del Proyecto GENES-ESMAP	Lisa Büttner y Vivian Lanuza
	Antecedentes ESMAP apoyo para género y energía, y proyectos actuales	
	Objetivos del proyecto 2001-2002	
	Expectativas de GENES y alcances de ESMAP	
	Horizonte, espacio temporal	
10:45	R E C E S O	
11:15	– Repaso del “Plan de Implementación” y productos	Lisa Büttner
	– Intercambio y diseminación de información y experiencias	
	– Intercambios binacionales y regionales	
	– Talleres	
	– Incidencia política	
	– Reporte final de ESMAP sobre lecciones aprendidas, impactos y recomendaciones	
11:45	– Preguntas y Respuestas	
12:15	1.1 Validación del Concepto Presentado/Ajustes	Vivian Lanuza
	– Validación de las metas y objetivos presentados	
	– Discusión del plan de implementación	
	– Compromisos interinstitucionales	
	– Conclusiones	
13:00	ALMUERZO	
LUNES 13 de agosto		
	II. FORTELECIMIENTO DE LA RED	
15:00	2. 1 Renovación de liderazgo/representatividad y continuidad	Katja & Vivian
15:30	2.2. Roles dentro de la red	Vivian Lanuza
	2.3 Membresía actual y futura	
	2.4 Comunicaciones/manejo de expectativas (interna y externa a la red)	
17:00	RECESO	
17:30	2.6 Discusión	Plenaria
18:00	Resumen y Cierre del día	Lisa Büttner

AGENDA PRELIMINAR		
<i>TIEMPO</i>	<i>TEMA</i>	<i>PARTICIPANTE</i>
MARTES 14 de agosto		
	III. IDENTIFICAR METAS COMUNES, COMPROMISOS INSTITUCIONALES Y APORTES CONSENSUADOS	
8:30	PRESENTACIÓN OBJETIVOS DEL DIA	Mayka Puente
8:45	3.1 Validación del plan de acción	Vivian & Lisa
	– Seguimiento al crecimiento de la red, alcance de las comunicaciones y su impacto	
	– Criterios para los intercambios y el proceso de selección	
	– Criterios para los proyectos pilotos y el proceso de selección	
	– Objetivos y estructura de los talleres binacionales	
10:00	R E C E S O	
10:30	3.2 Planificación de los talleres (una sesión enfocada para discutir la(s) agenda(s) propuestas)	Vivian Lanuza
12:30	A L M U E R Z O	
	IV. IMPLICACIONES DEL ENFOQUE DE GENERO EN LA IMPLEMENTACIÓN DE PROYECTOS DE ENERGÍA	
14:30	Presentación de dos experiencias de Fundación Solar	
	– Impacto de la Energía Renovable en la Vida de Mujeres y Hombres de Cahabón, Alta Verapaz, Guatemala	Leontine van den Hooven
15:15	Preguntas y Respuestas	Plenaria
16:00	4.1 Presentación de dos experiencias de Fundación Solar	
	– Indicadores con Enfoque de Género – Asistencia técnica FS	Katja Winkler
16:45	4.2 Discusión	Mayka Puente
17:30	Resumen y Cierre del día	Vivian Lanuza
MIÉRCOLES 15 de agosto		
	IV. IMPLICACIONES DEL ENFOQUE DE GENERO EN LA IMPLEMENTACIÓN DE PROYECTOS DE ENERGÍA	
8:30	Repaso de las discusiones e implicaciones para GENES: ¿Cómo establecer otros casos en GENES?	Mayka Puente
	V. BREVE DISCUSIÓN SOBRE EL PAPEL DE LAS TÉCNICAS MEJORADAS DE COCCION DE ALIMENTOS (en anticipación del evento que sigue)	Vivian & Lisa
9:30	5.1 Mesa Redonda	
10:30	5.2 Recomendaciones	

AGENDA PRELIMINAR		
<i>TIEMPO</i>	<i>TEMA</i>	<i>PARTICIPANTE</i>
10:45	RECESO	
	VI. CIERRE DE LA PRIMERA REUNIÓN EXTRAORDINARIA GENES 2001	
11:00	Conclusiones: Acuerdos Próximos Pasos	Vivian Lanuza
11:30	Definición de Fecha y Agenda para Próxima Reunión GENES	
12:00	Entrega de Constancias de Participación	Katja Winkler
12:00	A C T I V I D A D D E C L A U S U R A	