

glow

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- 
- A woman wearing a patterned headscarf is looking down at a large pile of biomass fuel, which consists of sticks and leaves. The background is slightly blurred, showing an outdoor setting.
- **Biomass Energy and Gender Issues in Southeast Asia**
 - **Gender Issues in Energy and Sustainable Livelihood in Cambodia**
 - **Gender in Kitchen Improvement : *The Case of Aanpghari, Baluwa Kavre Nepal***
 - **Implications of Biomass Energy System for Women in Sri Lanka**

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ARECOP

The Asia Regional Cookstove Program (ARECOP) is a forum for voicing the concerns of improved cookstove programs in the Asia Region. It influences and facilitates effective and efficient programs in improved cookstove issues.

Dear Readers

This edition of GLOW addresses Gender and Energy as its main theme. Ms. Soma Dutta from ENERGIA helped to put this edition together as our Guest Editor for Volume 34. Her extensive experience in the field significantly informed the selection of authors and helped to develop the topics they brought to the table. Their individual contributions are detailed below:

Biomass energy remains important in most of Southeast Asia, particularly with respect to the traditional use of wood fuels. The energy situation across the eleven countries varies because of differences in local energy resource endowment, varying living standards, the resulting differences and patterns of energy use in various sectors of the economy, and the level of socio-economic development. These issues are reviewed by Mr. Conrado S. Heruela in the article "Biomass Energy and Gender Issues in Southeast Asia."

Mr. Kayeswar Man Sulpya from CFSP, Cambodia, illuminates gender issues focusing on the aspect of sustainable livelihoods in Cambodia. He provides examples of how men are supportive of family businesses, especially when women work, and how ICS-related activities are providing sustainable

incomes and improved quality of life for certain communities. He relates these positive developments in the article "Gender Issues In Energy And Sustainable Livelihoods In Cambodia."

Mr. H.B. Khoju Shrestha discusses the results of a case study of kitchen improvement in Aanpghari, Baluwa, Nepal, which illustrates the various roles of gender in kitchen redesign. The case study is based on the results of the Indoor Air Pollution & Kitchen Improvement Workshop held by ARECOP in Dhulikhel in 1996. RUCODES, a field-based NGO, then implemented a local project called "Healthy Kitchen for Healthy Family." The process of kitchen improvement, impacts, benefits and potential for replication are discussed in "Gender in Kitchen Improvement."

Last, but certainly not least, Professor Anoja Wickramasinghe from University of Peradeniya discusses how women manage a larger proportion of energy and directly activate and functionalize the biomass energy system. This paper synthesizes the "Implications of the Biomass Energy System for Women in Sri Lanka" from a perspective of gender-centrism.

Happy Reading!

Guest Editor



Soma Dutta is an independent consultant on the fields of rural and renewable energy, rural development, including capacity building and training; strategic planning; project management; monitoring and evaluation; documentation and gender issues. She is also working as the Asia Regional Network Coordinator for ENERGIA. She has thirteen years of experience in the field of rural and renewable energy.

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BIOMASS ENERGY AND GENDER ISSUES IN SOUTHEAST ASIA



Figure 1. Map of Southeast Asia Region

The Southeast Asian Region is comprised of the following countries: Brunei Darrusalam, Cambodia, East Timor, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Singapore, Thailand and Viet Nam. Although these countries have recognized commonalities among them, there are also many differences. The energy situation across the eleven countries varies because of differences in local energy resource endowment, varying living standards, the resulting differences and patterns of energy use in various sectors of the economy, and the level of socio-economic development, particularly in the petroleum and electricity sectors. Biomass energy, however, remains important in most of the region, particularly with respect to the traditional use of wood fuels.

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THE ROLE OF TRADITIONAL BIOMASS ENERGY

The issue of use of biomass fuels, predominantly the use of woodfuels for cooking, and its impact on women remains relevant to the majority of the Southeast Asian countries. The use of biomass fuels has again gained prominence because of the recognition of its linkage with indoor air pollution and the subsequent adverse impact on people's health, especially that of women and children.

Biomass energy is most relevant in Cambodia, Lao PDR, Myanmar,

Philippines and Viet Nam where a significant number of the population still use fuelwood and biomass in traditional cooking stoves.

Cambodia relies on fuelwood for 82 % of its energy needs, on charcoal for 1.2%, on agricultural wastes for 1.7 % and on petroleum for the remaining 15%. The major energy use in Cambodia is for cooking. Fuelwood is used for cooking not only by households but also by large-scale cooking and other commercial heating applications in industries such as restaurants and other food-service enterprises. Many of these

industries and enterprises are in the expanding informal sector.

An important development is that the production of firewood and charcoal is becoming increasingly commercialized. This development applies particularly to urban areas and



Cambodian Woodfuel Depot

areas where there is a high demand for these fuels by industry and small enterprises. Commercialization provides a source of income and employment, often for rural people. The processing of woodfuels (i.e.: cutting and bundling of fuelwood, charcoal production, etc.), their trade, distribution and marketing contribute considerably to the earnings of rural people who otherwise have few alternatives for income generation.

In Indonesia, most rural households and to some extent, some of the urban households, are still using firewood or agricultural wastes for cooking. The efficiencies of stoves used for cooking are still low: 5% for the traditional three stone stove, and 27.9% for an improved wood stove such as the two-pot un-insulated metal stove. (1) In many households, cooking is done

indoors, using stoves without flues in poorly ventilated kitchens. The housing structure, influenced by culture and the socio-economic conditions of the household, is an important determinant of the ambient concentration of pollutants. Local climate and/or topographical conditions also influence the choice of domestic fuel and consequently, affect the severity of indoor air pollution.

Fuelwood dominates the energy supply mix for Lao PDR. Electricity and petroleum fuel account for only 11% of total energy use in the country and are confined to major urban centers. Thus, around 93% of households used fuelwood for cooking, 4% used charcoal, 2% used electricity and 1% used either LPG or kerosene. (2)

Despite economic growth and development and the transformation of socio-economic structures, fuelwood remains the major energy source in the Philippines. In 1989, the World Bank - Energy Sector Management Assistance Programme - Philippine Household Energy Strategy Study estimated that 67% of households used fuelwood: 86% of rural households and 38% of urban households. This pattern continues until today. (3)

In Viet Nam, biomass fuels such as wood and agricultural residues are the major source of energy used by the vast majority of the rural and semi-urban population and many industries. Biomass energy has a share of more than half of the total final energy consumption of the country.

Biomass energy for cooking is likely to remain relevant for Malaysia and Thailand as well, the countries with the third and fourth highest standards of living in the region, respectively. In spite of significant use of LPG and electricity for cooking in Malaysia, the country still has large rural areas, in which it will not be surprising to find fuelwood and other biomass sources being used as cooking fuels given their accessibility and the continued practice of a traditional way of life by many rural people. This is also the case for Thailand. The 1990's saw dramatic growth in Thailand's economy, rapid industrialization and urbanization. These changes ushered in remarkable increases in the use of petroleum products and electricity in the household sector. Despite these



Gathering Fuelwood in Indonesia

developments, the use of woodfuels has remained significant as can be seen in the country's energy statistics.

The results of past health surveys in the country (1980 and 1986) have identified Acute Respiratory Infection (ARI), bronchitis and asthma as the leading causes of mortality. Smoke is a major factor contributing to the contraction of acute respiratory infections, which kills more children under five than malaria or TB (WHO 2002).⁽⁴⁾ These are the diseases that have been identified in research as related to indoor air pollution resulting from the use of biomass for cooking fuel. Health researchers started to pay attention to the problem of indoor air quality and efforts to promote smokeless stoves have been initiated.



Agro-residue Collection in Vietnam

BIOMASS FUEL CYCLE AND WOMEN'S HEALTH

Present concerns about biomass, particularly fuelwood, and health focus primarily on the effects of emissions from burning fuel. However, the whole cycle of activities from production to harvesting or collection, processing, transportation and combustion of wood and other biomass fuels involves a variety of

other health hazards, which have not been well-documented and researched. These are summarized in Table 1.

Table 1 Health Hazards of Different Parts of the Biomass Fuel Cycle

| Stage in Biomass Fuel Cycle | Health Hazard |
|---|---|
| Fuelwood Production Processing/preparing of dung cakes | Fecal - oral - enteric and skin infections |
| Fuelwood Collection | Trauma, Reduced infant /child care, Bites from snakes, spiders, etc., Allergic reactions, Fungus infections, Severe fatigue |
| Fuelwood Combustion Effects of smoke Conjunctivitis | Upper respiratory irritation, Inflammation, ARI |
| Effects of toxic gases (CO) | Acute poisoning |
| Effects of smoke | COLD; Chronic bronchitis; Cor Pulmonale; Adverse reproductive outcomes; Cancer |
| Effects of heat | Acute Burns, Chronic Cataracts |
| Ergonomic effects of crouching over stove | Arthritis |

(Adopted from "Indoor Air Pollution from Biomass Fuel" - WHO, 1992)⁽⁵⁾

In Southeast Asian countries, women are actively involved in fuelwood harvesting and are thus exposed to the above-mentioned health hazards just as men are. Dung, however, is rarely used as fuel in Southeast Asian countries, in the way that it is used now in South Asia, and as such, people in this region are not exposed to the health hazards posed by the preparation of dung cake.

The incidence of the risks involved depends on the safety of specific tools and equipment used, for instance in harvesting and cutting fuelwood. Oversized tools and lack of protection in the form of boots and gloves are common. Unfortunately, prevailing conditions and equipment are often quite poor, not only for sawing and cutting wood in forest areas and around wood-processing centers, but also in activities such as charcoal production. This sometimes takes place inside sheds in a very dark, smoky and disorganized

environment.

Equally worrying is that women and children carry wood head-loads of up

to 20 kg over long distances, leading to severe fatigue and backache. Furthermore, arthritis can result from using domestic stoves and tending fires in the traditional way (squatting, sitting, bending over.) In an unknown but undoubtedly large number of cases, incidents caused by unsafe or unstable stoves are responsible for burns and fires.

Women are involved in the production and transportation of fuelwood and charcoal for commercial use in industries and in other urban commercial areas. These provide them job opportunities and cash income. Both men and women, however, are exposed to the above health hazards, as well as to harassment by local authorities, in the various activities involved in producing and transporting commercial woodfuels.

All these hazards are in addition to the widespread unhealthy effects of

smoke and other emissions from stoves, but they have not yet been systematically researched. A systematic documentation would put the risks in perspective, that is, compare the woodfuel cycle with accepted health and safety standards and with alternative fuel cycles.

At present, it is hard to say whether or not kerosene and gas stoves cause more fires than wood stoves and hence, where the priority should be for interventions aimed at improving public health. Similarly, common work in coalmines definitely generates serious health risks, but that does not justify simply accepting the health hazards of woodfuel production and processing as unchangeable.

ADDRESSING BIOMASS ENERGY USE AND WOMEN'S HEALTH ISSUES

In 1997 the Regional Wood Energy Development Programme (RWEDP) organized a Southeast Asian regional workshop-training course on "Wood Energy, Women And Health," bringing together actors from related sectors - energy, forestry, agriculture and women's development. The participants agreed that biomass fuels contribute substantially to energy needs for cooking in households, where women are the main actors; and to energy needs for heating by small enterprises, where many women are involved. They established that the use of biomass fuels would continue for the foreseeable future in their respective countries and would also continue to significantly affect

the lives of many women. During the workshop, the participants from the various countries were asked to draft their respective national action plans to address the adverse impacts of biomass fuel use on women's health.

In their recommendations, the workshop participants validated the need for the involvement of several sectors - energy, forestry, agriculture, health, rural development, gender/women's development, media and NGOs - in addressing the issue of wood/biomass energy and women's health in the countries in this region. Their recommendations also showed that the primary constraint to addressing the issue was the lack of awareness and clear understanding of the impacts of biomass energy use on women's health. Developing or increasing awareness and improving understanding of these issues were the common general objectives of the national action plans.

There were few follow-up efforts towards the realization of these proposed national action plans. (6) Thus, it can be safely assumed that today, lack of awareness of these issues still generally prevails in these countries. As a result, there have been very few concrete initiatives to address these issues and, these are initiated by the non-government sector, most of which are supported by ARECOP.

ARECOP has been providing technical and modest financial support to NGOs in member countries to conduct awareness building campaigns and training

activities on improved stove dissemination. No government or official initiative, either from the energy, forestry, rural development, health or gender/ women's development sectors has been undertaken to address specifically the improvement of traditional biomass energy systems to eliminate indoor air pollution and reduce adverse health effects on women.

EFFORTS IN THE BIOMASS ENERGY SECTOR

Improving traditional biomass energy, dominated today by the use of woodfuels, does not seem to be a major agenda item in most of the current national energy policies and programmes in the region. Even in cases where the national energy programmes do incorporate targets for improving traditional biomass energy, funding and other resources provided to achieve targets are minimal. This sector receives the lowest share of funds and in some countries has no allocation whatsoever. Projects in biomass energy have to compete for a portion of the budget allocated for renewable energy development. Currently, renewable energy budgets and financing are taken up by solar, wind and modern biomass projects. Available funding is low compared to budgets and investment in conventional power development projects, including government-backed loans and private financing. The renewable energy sector, like the conventional energy sector, is geared toward electricity generation as well. Heating applications, such as

household cooking and activities involving improving traditional biomass energy technologies, rarely have enough resources to implement programmes that will create a substantial impact. This is in spite of the fact that traditional biomass energy accounts for a major share of the national energy supply mix (the biggest in several countries) and is used by the majority of the population.

In addressing traditional biomass energy use, some governments in the region have promoted the use of petroleum fuels as a substitute for wood/biomass fuels. The objectives of most programmes were to address deforestation caused by woodfuel use, although some recognized the problem of “smoky kitchens.” The programmes have been constrained by lack of affordability and lack of access to petroleum fuels by users. Attempts to subsidize costs have led to significant financial and fiscal problems for the governments concerned. Another problem is that subsidies often do not reach the targeted beneficiaries, thus defeating the purpose. This situation holds true

especially with kerosene subsidies, where most energy users continued using wood and other biomass fuels in the traditional manner.

Biomass energy programmes should be geared towards improving conversion and utilization technologies for the application of wood/biomass fuels for cooking and other heating uses. These programmes will directly benefit women, as was mentioned earlier; women are the main users or are most keenly involved in the application of these technologies. Any adverse effects generated in the use of these traditional conversion (e.g., charcoal production) and utilization (e.g., stoves, kilns, ovens) technologies will affect women most (and in some cases, children also.) Any benefits to improve these technologies, including improvements to eliminate harmful air emissions, will be most valuable to women.

Unfortunately, there are really no stove programmes to speak of in the countries of this region today, except for local improved stove dissemination activities supported by ARECOP. If a comprehensive stove programme is to be launched, it will be useful to look at the factors that made similar undertakings a success or failure in other countries with national stove programmes, like China and India.

INITIATIVES IN THE FORESTRY SECTOR

In the forestry sector, improving woodfuels systems should be geared towards assuring the sustainable

production of resources for energy applications. Such policies and programmes have either become a minor component of national forestry programmes or have disappeared altogether. It is increasingly being recognized that a significant proportion of woodfuels are not coming from forests and that many woodfuel producers, including those that are producing wood for commercial and urban consumption, are trying to adopt sustainable tree production practices and many of them are in non-forest areas.

Nevertheless, poaching from forests continues and in order to satisfy commercial demand in urban areas, the threat of unsustainable wood harvesting practices remains. On the other hand, there are also opportunities for sustainable woodfuel production, given particularly the favorable agro-ecological setting that can be found in most Southeast Asian countries. With proper policies and programmes for the sustainable management of forestry resources, continued or expanded use of woodfuels as part of a “sustainable modern biomass energy programme” can be promoted.

If properly managed and with consideration for rural energy needs (recognizing that satisfying commercial energy demands does not have to be at the expense of rural energy needs), this sector can provide opportunities for income and employment generation for women. In fact, many women are involved in urban woodfuel markets. Their knowledge can be harnessed to



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improve the efficiency and sustainability of woodfuels and other biomass energy production systems (such as agricultural waste recycling, animal dung and energy crops). In the end, the interventions can be made to enhance the financial, economic and social benefits to women. Programme managers, however, have to pay close attention to the issue of women's access to and control over land and other resources needed for promoting sustainable tree production for fuelwood and other wood products.

HOW TO PROCEED FROM HERE

It is evident that the adverse impact on women's health is not limited to the effects of indoor air pollution; ill health effects result from production of biomass fuels, which have to be addressed as well. This is also important in the context of increasing and expanding commercialization of woodfuels, the main biomass energy source used in the region. Production of woodfuels, such as charcoal, has provided an alternative or additional income for the rural population. In addition, a significant number of women (and children) are involved in the harvesting, cutting, splitting, charcoal production, bundling and transporting of woodfuels.

Woodfuels and other biomass fuels will continue to be a major energy source, particularly for household cooking and other heating applications and in small-scale enterprises. Cooking is an entirely women's activity in many Southeast Asian countries and many women are involved in operating heating

equipment in those small-scale enterprises.

Improving stoves and other traditional biomass energy-using devices must take into account the extra benefit that such efforts contribute to protecting women's health, aside from the economic and environmental benefits that such initiatives will bring about. In addition, improving the biomass production and supply cycle - the harvesting, processing, conversion, transportation and marketing of woodfuels - will redound benefits equitably to both women and men.

Before any substantial policy and programme intervention can be undertaken in these countries, the policy makers, planners, project implementers, development organizations and other stakeholders will have to agree to act upon the following "prerequisites" of policies and programmes related to biomass fuels:

- Recognize that biomass fuels, particularly woodfuels, can be a modern option for rural economic development, which can benefit equally men and women.
- Continue and expand awareness-building and understanding of wood energy, particularly aspects of modernizing wood/biomass energy.
- Initiate local interventions to validate concepts and provide concrete examples that can be replicated elsewhere. At the same time, recognize that local



Cambodian Kitchen

conditions warrant adaptation to site-specific solutions, interventions and approaches. *It is important to acknowledge the role of women in formulating interventions. Women are a repository of knowledge of many indigenous practices that can be useful for enhancing production, supply and use of biomass fuels.*

- Show the potential social and environmental benefits, including positive externalities, that such interventions will create. This will involve analytical work, which will need support from research institutions and academe.
- Generate resources, such as funding and expert advice, to support small-scale, locally based interventions as well as policy innovations at the national level. Regional and international NGOs and development organizations should strengthen their capacities to assume this role more effectively.
- Demonstrate that efforts/projects/interventions/investments to improve traditional woodfuel/biomass energy systems can be competitive

“investment” areas compared to other renewable energy projects (including biomass-to-electricity projects.)

The imminent implementation of the Kyoto Protocol could provide new opportunities for improving traditional biomass energy. Although biomass energy projects may be small-scale compared to other renewable or energy efficiency projects, if it can be shown that they can be feasibly aggregated for potential investors

from developed countries, carbon financing could be one source of funding. The potential health and social impacts should be given equal emphasis, too and as such, development and investment funding can be more attractively channeled into the sector.

It remains the task of enlightened government agencies, committed NGOs (like ARECOP) and international development organizations (like FAO, which is

launching an integrated bio-energy programme) to initiate programmes outlined above to draw attention to the positive economic, social and environmental benefits of modernizing traditional woodfuels/biomass energy systems. In particular, such initiatives should highlight the uniqueness of this energy sub-sector - the positive social impact of improving the health, economic and social status of women in the developing world, such as those in Southeast Asian countries. *glow*

NOTE:

1. Regional Wood Energy Development Program (RWEDP) RM 46 - <http://www.rwedp.org/rm46.html>
2. Ibid
3. Ibid
4. WHO “Environmental hazards kill at least three million children aged under five every year,” Press Release, March 2002.
5. Ibid
6. None of these national action plans were subsequently implemented. It would be ARECOP or the Asia Regional Cookstove Program, which had collaborated with RWEDP in supporting dissemination programmes for improved cookstoves that later provided follow-up support activities to those countries when RWEDP ended in 2001.

GENDER ISSUES

In Energy and Sustainable Livelihood in Cambodia

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INTRODUCTION

As in other Asian countries, Cambodian rural women play an important role in non-commercial activities such as cooking and agro-processing, fuel wood, fodder and water collection. Men are supportive of family businesses, especially when women work. They also encourage gender equality by extending their support to collecting fodder and feeding cows.

The Cambodia Fuelwood Saving Project (CFSP) is a project focused on national wood energy policy implementation. CFSP is implemented by Renewable Energy and Environment Group (GERES), a French NGO with financial support from the European Union. GERES recognizes that women are not only the primary users of energy, but also the producers of biomass energy and energy-saving devices which help achieve sustainable wood-energy utilization in Cambodia.

This paper deals with how CFSP has successfully demonstrated energy interventions that empower women and increase their standard of living through energy enterprises. To achieve this, CFSP has been focusing on capacity building and providing hand-holding support to women entrepreneurs. Three specific technologies are discussed in this paper: improved cook stoves, charcoal production and biogas digesters.

CAPACITY BUILDING FOR LIVELIHOOD IMPROVEMENT

CFSP, in close cooperation with Development and Appropriate Technology (DATE), a local NGO, organized several training programmes for both women and men on the use of commercial stoves, sustainable charcoal production, biogas production, marketing these technologies and using various marketing tools. CFSP is supporting local NGOs in such activities so that they can take the lead in the future to develop their own capacity without

external technical support. The training programmes not only concentrate on infrastructural hardware but also on "software" aspects such as household energy management, energy and environmental education, use of micro-finance, interest calculation and payment, book keeping, etc for empowering women and promoting entrepreneurship among them.

IMPROVED COOKSTOVE PRODUCTION

Clay stove production is a traditional household business in many parts of

Cambodia and a clear-cut rural and urban linkage is observed as the stoves are produced in rural areas and then marketed in urban centers through existing commercial channels (retailers, middlemen, and whole sellers). In this business, women are involved in a variety of tasks ranging from tough jobs like clay mixing to artistic stove production, which was observed in Kompong Chhnang Province.

In the first phase of the CFSP, *Ms. Sim Pow* was the only female participant. She has since transformed her