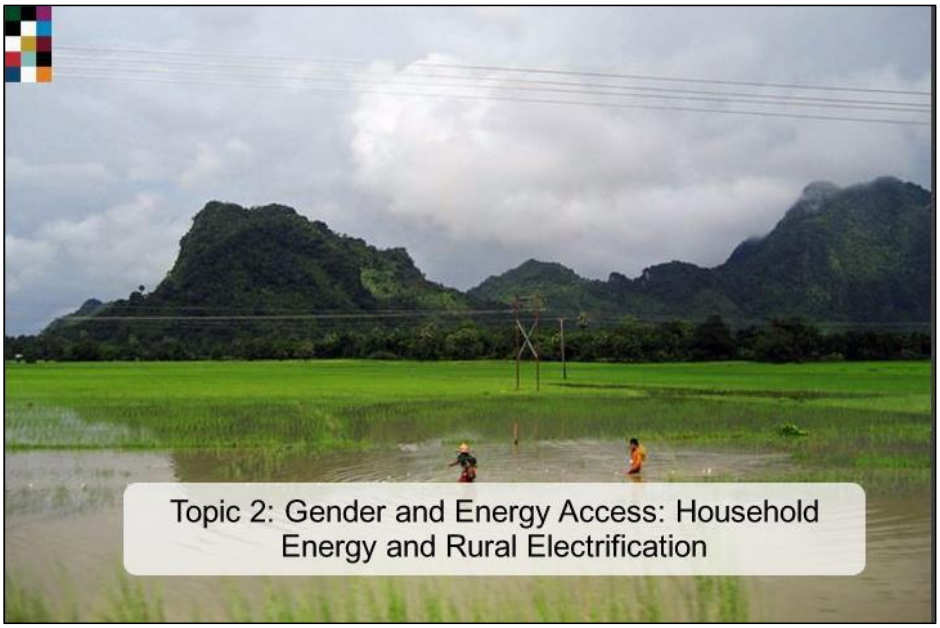
Overview

Welcome to Topic 2 of the e-module on Gender and Energy.

Now that we have discussed the basic issues in gender, energy and development, we will continue by analyzing their interactions in greater detail. In this topic we will discuss energy access, with emphasis on household energy and rural electrification.



Women's access to energy

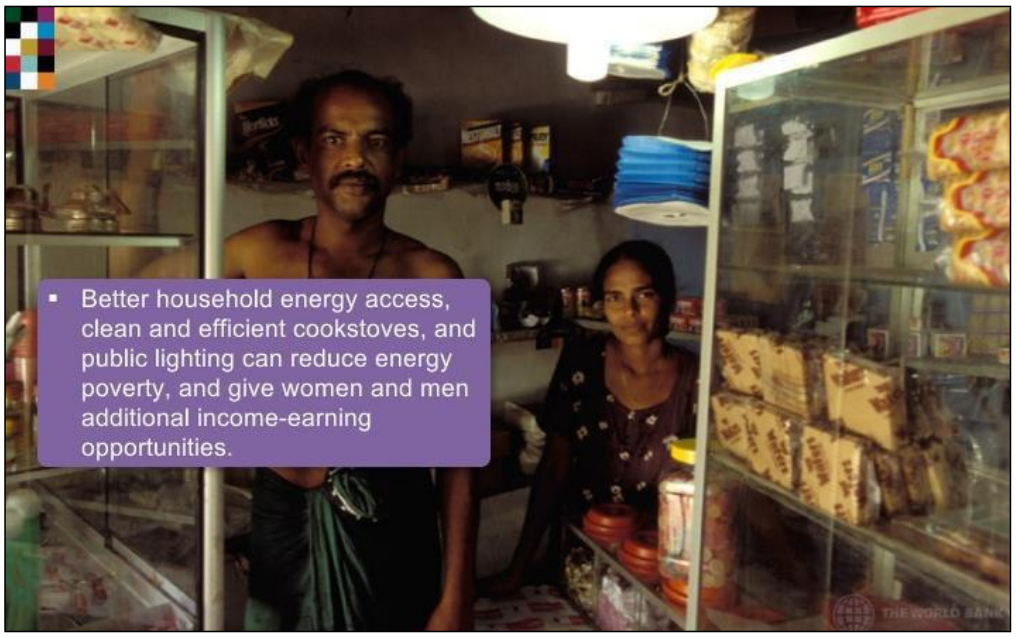
- In Topic 1, we discussed how poverty reduction, shared prosperity and growth cannot be achieved without reducing gender disparities, or without universal access to reliable modern energy, such as clean energy for cooking, and household access to electricity.

- Lack of energy limits opportunities, job creation, business development, and access to health and education.

- There are considerable gaps in energy access: worldwide, about 1.2 billion people are without access to electricity and around 3 billion lack access to modern cooking and heating solutions.

- Electricity also affects men and women differently. For example, electricity access can improve women's security and opportunities, for example through radio and TV programs and through public lighting for improved mobility at night.

- Programs that boost household energy access, modernize cookstoves, install public lighting and electrify public health centers can help women and men improve their quality of life and have better access to income-generating opportunities.

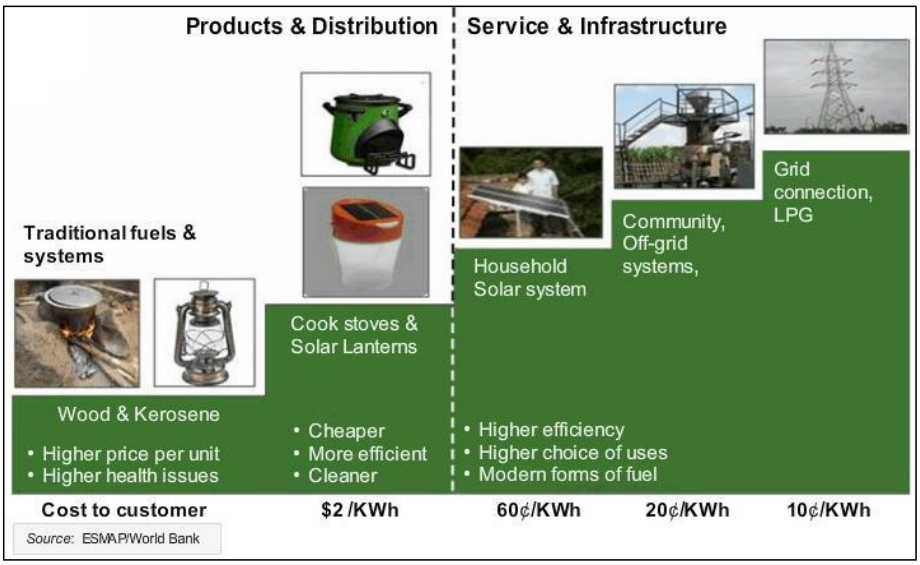


The energy access ladder

The energy ladder model is used in the energy sector to describe the way in which households switch to more sophisticated fuels as their incomes increase, with each step of the ladder representing a more sophisticated energy source.

The model is based on observations that as household incomes increase, consumers move from traditional fuels and systems, such as wood and kerosene, to improved cookstoves and solar lanterns, acquiring cheaper, cleaner, and more efficient energy. The cheapest energy can be obtained where grid connections are available. However, many remote and rural areas in developing countries lack access to grid connections. In order to provide these rural communities with electricity, there are alternatives such as household solar systems, which have been used very effectively in Bangladesh, and other off-grid systems based or renewable energy.

Many households use multiple fuels and the choice of fuel is affected by many factors other than income. The least attractive fuels are at the bottom of the ladder, and the more desirable fuels are on top. However, most of the fuels used by low income households in developing countries consist of traditional biomass, including dung, crop waste and wood. In general, women play a big role in collecting traditional fuels, although men and children can also be involved in such activities.

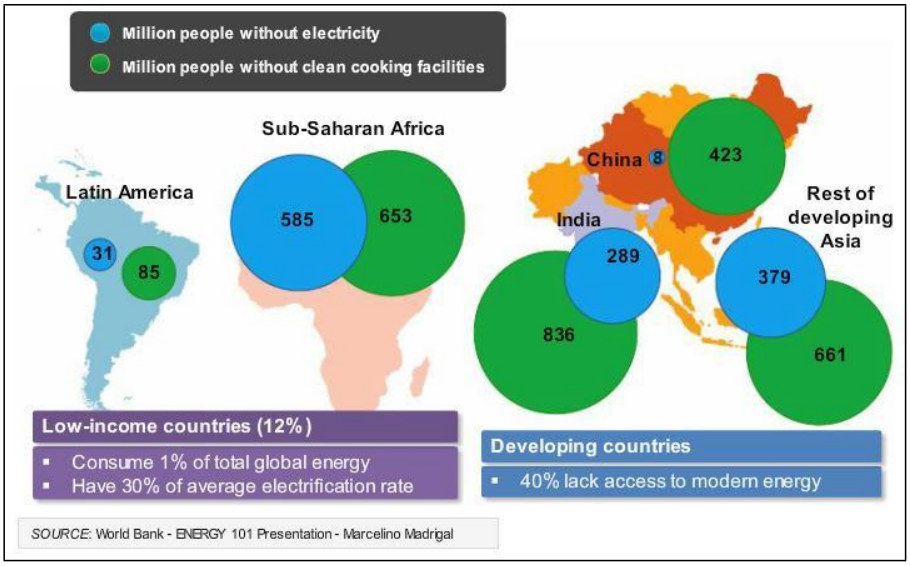


Lack of access to modern energy services by region

Unless the world addresses the problem of lack of access to modern energy services, other efforts at economic development will probably fall short.

The map shows the lack of access to modern energy services by region, defined as the number of people without electricity plus the number of people without access to clean cooking facilities. The region with the largest number of people without electricity is Africa, but the greatest deficiency, affecting about 3 billion people worldwide, consists of people without access to clean cooking and heating facilities, mostly concentrated in Africa, India, China, and the rest of developing Asia.

Low-income countries, which account for 12 percent of the world's population, consume a mere 1 percent of total global energy, and have an average electrification rate of about 30 percent. Many in the bottom 40 percent in developing countries lack access to modern energy.



Energy access is multi-dimensional

- We mentioned earlier that about 1.2 billion people are without access to electricity and that about 3 billion lack modern cooking and heating facilities. To date, energy access has typically been defined as having a household electrical connection, while access to modern cooking solutions has been measured as cooking with clean nonsolid fuels. This simple approach has provided useful starting points to measure progress toward universal energy access. However, it is a binary measure, classifying people as either having or not having access to energy.

- A new way of measuring, the multi-tier framework, measures energy access according to attributes such as quantity, quality and affordability. It goes beyond mere access to capture actual energy use, which is a more accurate way of capturing how energy affects the lives of women and men, sometimes in different ways.

- Using the multi-tier framework, tiers are defined by a combination of attributes that reflect the performance of the energy supply. For example, with regard to household electricity capacity, households with no electricity would be in Tier 0, while those with very low power, covering just basic lighting and phone charging, would be in Tier 1, while those with high power, covering heavy applications, would be in Tier 5.

- This approach allows for more relevant policy formulation, investment strategies and project design, including gender-informed projects and policies to improve energy access.

Poor households: high reliance on solid fuels

Low income households in developing countries use solid fuels, such as biomass, as their main energy source.

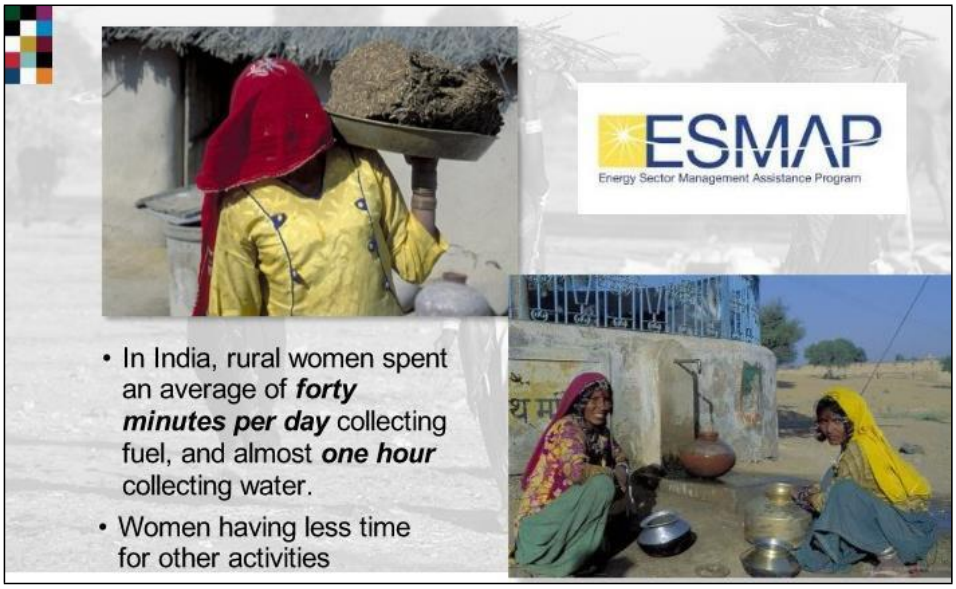
This affects women more than men:

- According to the WHO, about 4.3 million deaths in 2012 in the developing world were due to exposure to household air pollution. These deaths, which are due to lung disease, acute respiratory infections, lung cancer, and pneumonia, affect mostly women and young children who spend the most time near the domestic hearth.

- UN Women notes that illnesses from indoor pollution result in more deaths of women and children annually than HIV/AIDS, malaria, tuberculosis, and malnutrition combined.

- Other health hazards from cooking with solid fuels in poorly ventilated stoves and kitchens include asthma, burns from cooking with open fires, and cataracts, which are the leading cause of blindness in developing countries.

- As mentioned before, women generally play a big role in collecting traditional fuels, although men and children are sometimes involved as well. A study conducted by ESMAP in six states in India in 1996 found that rural women spent an average of forty minutes per day collecting fuel, and almost one hour collecting water. The more time spent collecting fuel wood and water, the less time women have available for other activities, including education, community participation, income-earning activities, and leisure.



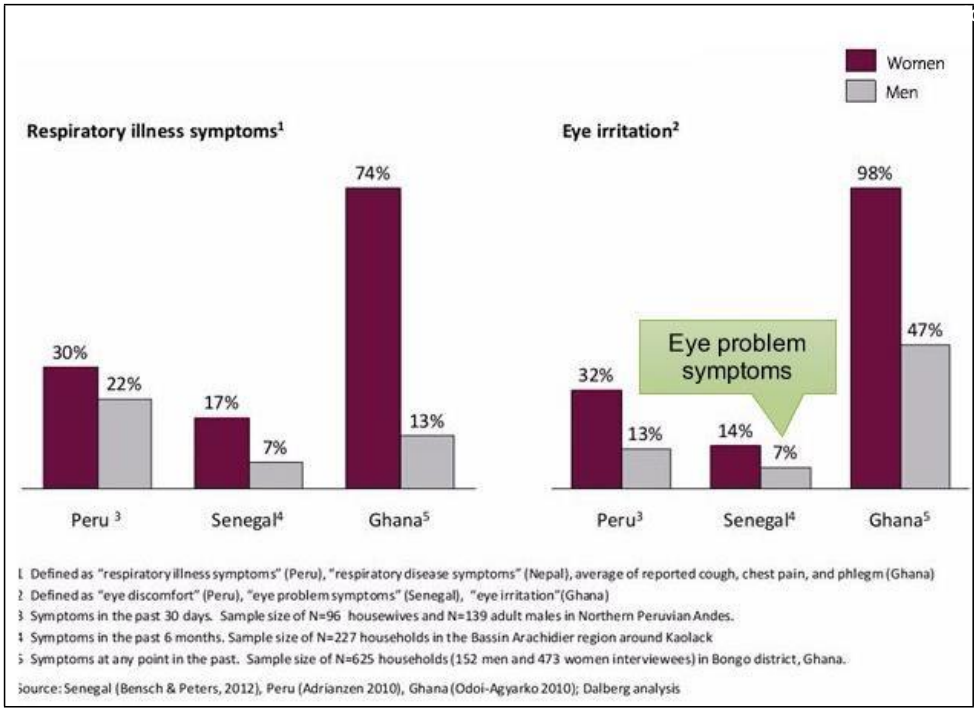
Gender–disaggregated health impacts – Peru, Senegal and Ghana

Solid fuel cooking has higher negative health impacts on women than on men. The graph shows the gender-disaggregated health impacts of biomass cooking in Peru, Senegal and Ghana.

Both respiratory illness symptoms and eye irritation are significantly higher for women than for men in all three countries, although the magnitude of symptoms is much higher in Ghana, where three out of every four women had respiratory illness symptoms, compared to 13 percent of men, and 98 percent of women suffered from eye irritation due to indoor air pollution, compared to 47 percent of men.

Much of the large difference between countries, however, may be due to the different definitions used in each country study: for example, eye irritation in Senegal is defined as ‘eye problem symptoms” while in Ghana it is defined simply as ‘eye irritation.”

The important point, however, is that, in each country, the negative health impacts of solid fuel cooking are consistently greater for women than for men.



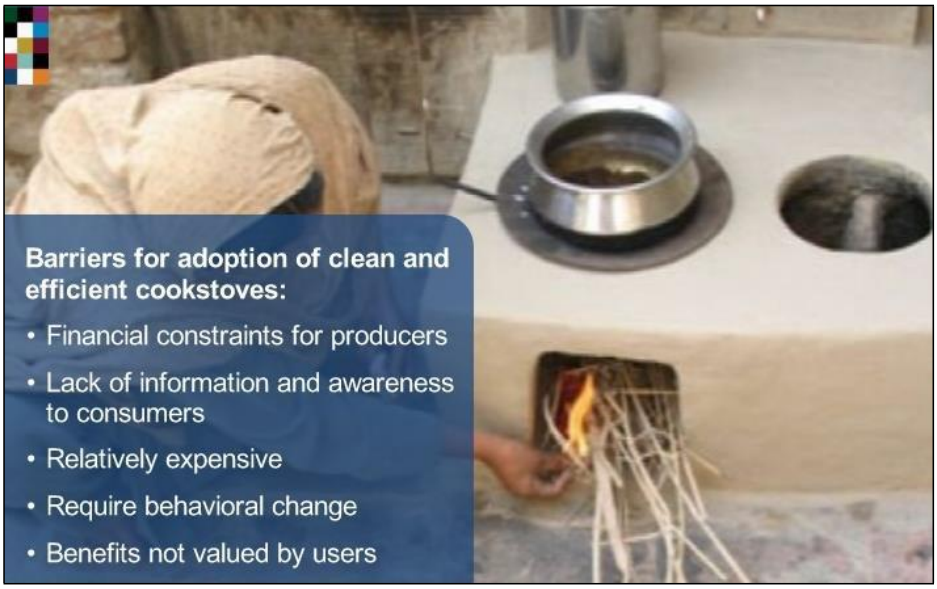
Benefits of clean and efficient cookstoves

Governments and development agencies have supported clean cooking solutions programs and projects throughout the world, recognizing that clean and efficient cookstoves benefit the poor, especially women.

1. Benefits of clean and efficient stoves come from:
2. Time savings from fuel collection;
3. Health improvements from reduced indoor air pollution and fuel wood carrying;
4. Status enhancements from improved household appliances; and
5. Economic gains due to potential job creation along the stove production chain, and financial savings on charcoal and fuels.

Despite their benefits, penetration remains very low everywhere except in China, so there is ample potential for development. In China, about 40 percent of households have adopted clean and efficient cookstoves, while adoption in the rest of the world generally has ranged between 5 and 10 percent. Large-scale adoption and sustained use of clean and efficient cookstoves is not materializing due to barriers to consumers and producers. Producers face constraints such as access to financing, while consumers face issues such as lack of information, awareness and cultural barriers.

Clean and efficient stoves face three additional challenges to widespread adoption: they are relatively expensive, require behavioral change, and may not be initially valued by users, despite very substantial health benefits, in places where wood is cheap or easy to come by.



Clean cooking solutions

- There are several ongoing initiatives to promote clean cooking solutions, such as the World Bank's regional efforts in Africa, East Asia and the Pacific, and Central America, and the United Nations' Global Alliance for Clean Cookstoves. Taking lessons from the past, these programs are trying to focus on market-driven approaches.

- Electricity and liquid petroleum gas are commercial fuels that are not readily available in many rural areas. Therefore, clean and efficient cookstoves, potentially a low-cost option, can offer time savings in biomass collection and health improvements from reduced indoor air pollution. However, the impact of interventions designed to promote the use of new cooking technology depends on household decision-making, and in particular, how women's preferences and their opportunity cost of time are reflected in those decisions.

- Women are the key beneficiaries of clean and efficient stoves due to their primary role in cooking. Therefore, women's input in design is critical. Women must like and want to adopt the clean cooking products for businesses in this area to be successful in the long term. Engaging women can help generate demand, create appropriate products, and increase adoption. A recent study in Bangladesh showed that the adoption of clean and efficient cookstoves was slow, even though women had a strong preference for them, because they lacked the authority to make the decision to purchase one. Therefore, men also need to be engaged, as their input is crucial in the decision to spend household income in purchasing a stove.

- In the short to medium term, the important issues for scaling up clean cooking solutions are availability and affordability. This implies securing the sustainability of the traditional biomass resource while introducing clean and efficient cookstoves with measures to control indoor air pollution, such as the use of chimneys, hoods, and better room ventilation.

Clean and efficient cookstoves and women's economic empowerment

Women can be economically empowered in the production of clean and efficient cookstoves. Production of cookstoves and fuels can take advantage of women's traditional skills in ceramics and other fields. As producers, women become experts in the products they use regularly and can help generate awareness and demand among consumers. They can also leverage their networks to expand distribution. Women can produce cookstove components locally or can assemble products if components are being imported as kits. Organizing women producers into cooperatives provides opportunities for support in overcoming challenges, sharing of best practices, and increasing access to finance.

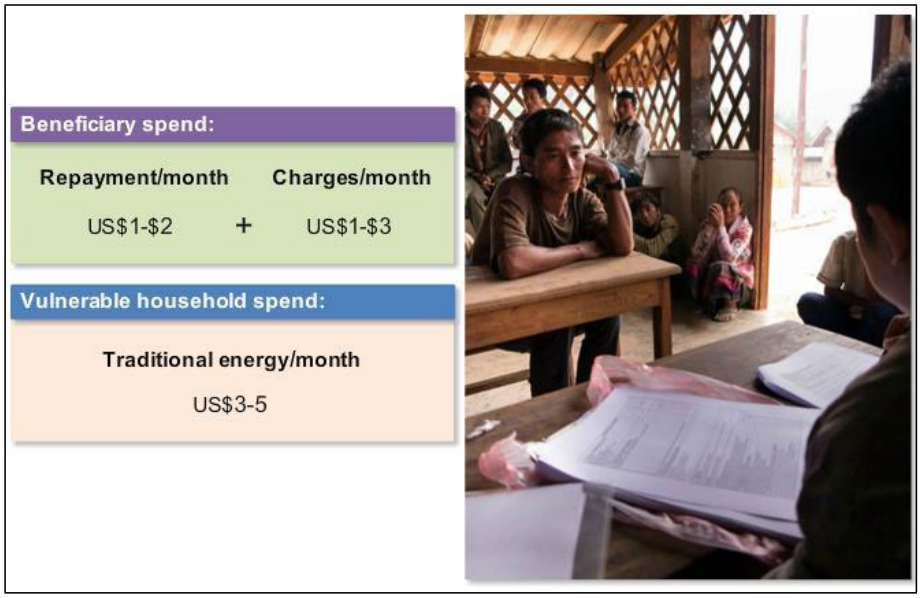
Women are also well positioned to ensure proper maintenance and care of improved cooking solutions, as users are not always aware of how to properly use and maintain their clean and efficient cooking technologies and fuels, shortening their product lifespans.
Women and men can be trained on customer service, product repairs, and warranties, enabling women and men to provide after-sales services, especially if they are equipped with mobile phones so customers can easily reach them with service requests.

Rural electrification

Electricity is still a luxury for most rural men and women, as about 1.2 billion people throughout the world do not have access to electricity. Many rural areas in developing countries are not reached by grid-based electrical power. Increased access to electricity I needed, and rural electrification is a policy goal in many countries. In rural remote or isolated areas, off-grid solutions could be the most rapid means of providing cost-effective energy services.

One successful example of rural electrification is the 'Power to the Poor' program in Lao PDR. It is a subsidized financing mechanism to provide affordable connection and indoor wiring to poor households. The project's effectiveness was increased by targeting female-headed poor households. Eligible households received sufficient voltage to use two light bulbs and a small electrical appliance such as a radio, and received an interest-free credit to cover the costs of installation and indoor wiring.

Once connected, a typical beneficiary's monthly repayment was US$1-$2, plus their electricity consumption charges of US$1-$3 per month. Without the subsidies and the connection, many female-headed and vulnerable households would spend about US$3-5 per month for vastly inferior traditional energy sources such as batteries, diesel lamps and candles, so the savings are sufficient to allow poor households to fully repay their connection costs in three years.



Gender impacts of lighting and TV

In general, lighting and TV are the first common uses of electricity, accounting for at least 80 percent of rural electricity consumption. Rural electrification has several important gender impacts, in addition to the reduction in time poverty discussed earlier, mainly through the provision of electric lighting and through the impact of radio and TV.

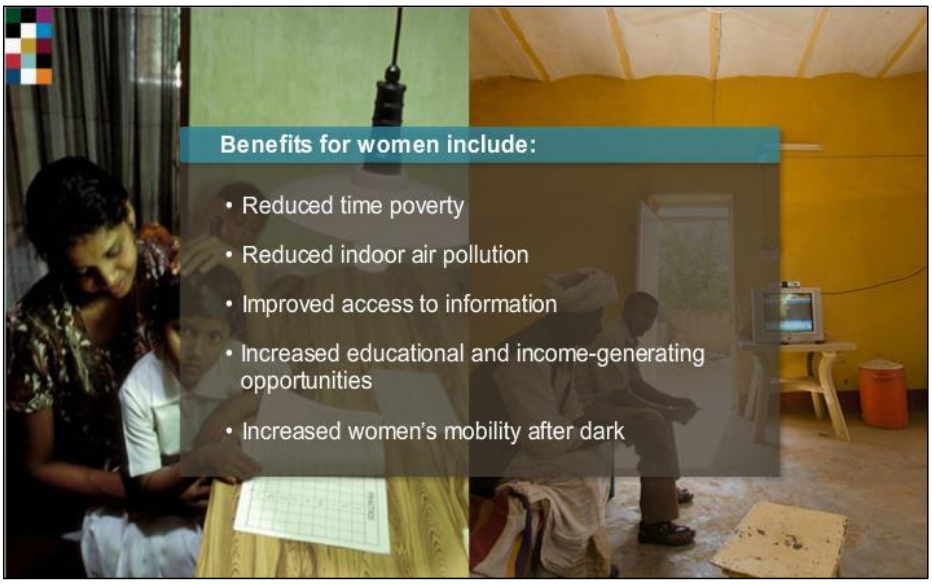
Some of the benefits for women are:

- Electricity displaces candles and kerosene lamps, reducing indoor air pollution and fire and burn risk, and providing higher quality light. This benefits women more than men, as women tend to spend more time at home.

- Lighting, radio and television help improve access to information, increase the ability to study, and extend the effective working day.

- Lighting also improves the productivity of many household activities, and has potential benefits for public safety and expanded income-generating opportunities.

- Rural electrification has increased women's work outside the home, especially for younger cohorts of women, probably by increasing the supply of women's time and boosting the demand for labor in small enterprises. For example, electrification of rural communities in South Africa and Guatemala resulted in a 9 percent increase in female employment, but no comparable increase in male employment, as electricity frees up women's time by increasing the efficiency of domestic chores.



Energy access and productive opportunities

Expanding access to modern energy can also promote local development, as the introduction of modern energy contributes to the creation of jobs and economic opportunities for both women and men.

There are many examples of women using a range of modern energy sources and its associated technology: liquefied petroleum gas in preparing food for sale in Indonesia, solar dryers to export quality dried fruits in Uganda, a diesel generator providing multiple services in Mali, and electric light for chicken breeding in women's cooperatives in Zanzibar.

- Women and men have also become producers of energy equipment, such as assembling and selling fluorescent lights in Bangladesh.

- Electricity often supports income generation for women and men through the extension of the working day, with less time needed for basic subsistence tasks. A study in Tanzania, Bolivia and Vietnam found that locating the enterprise in the household allows women to combine income-generating tasks with household duties.

- In addition, men's and women's business and retail enterprises can continue operating and keeping their stores open during the evening.

Mechanized community services and entrepreneurship

Significant saving of women's time comes from the provision of labor-saving devices to meet the practical needs of water-pumping and grain-grinding through mechanized community services.

For example,

- Electrified water-pumping to central places in villages in Zanzibar has led to women saving three hours a day.

- In Mali, women reported saving 2.5 hours a day on processing grains when traditional hand-milling was replaced by a diesel-driven mill.

- In Northern Tanzania, the time saved by women queuing for grain-milling when the mills switched from diesel to electricity was sufficient for the women to be able to set up their own small enterprises.

- In Sri Lanka, women gave income-generating activities a low priority, preferring to use the two extra hours of useful time electricity gave them for better housework and child care, resting, socializing and watching TV. In Tanzania, on the other hand, the need for cash in many low-income households made income generation a priority over other activities such as education.

Examples:

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- In Mali, diesel-driven mill saving 2.5 hours/day to women on processing grains.
- In Northern Tanzania, electrified grain-milling saved time for women to set up their own small enterprises.
- In Sri Lanka, electricity led to women gave a low priority to income-generating activities and preferring to spend two extra hours for housework and child care, resting, socializing and watching TV.

Energy and sexual violence

Increasing energy access, for example, through provision of clean and efficient cookstoves, or by rural electrification, can help reduce gender-based violence.

Where women and girls are responsible for gathering cooking fuel, they are vulnerable to gender-based violence during fuel collection and transport. Clean and efficient cookstoves reduce the time spent for biomass collection.

- Women living in war-torn areas such as the Democratic Republic of Congo and Somalia, and women in displaced-persons camps seem particularly vulnerable to sexual violence while they search for fuelwood in surrounding areas.
- In Northern Uganda, men and boys started collecting fuelwood to protect women's safety.

Rural electrification can reduce gender-based violence through:

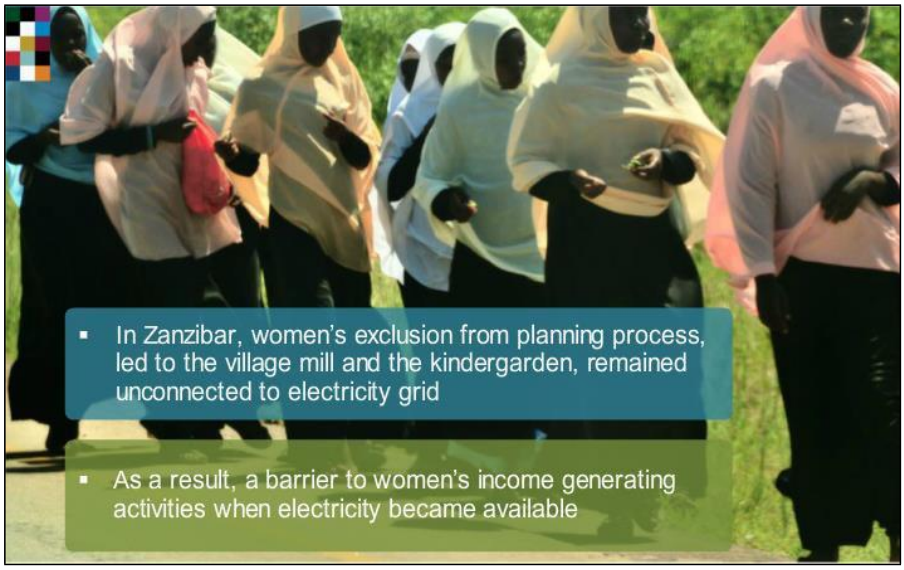
- Increased lighting, which grants women increased mobility at night, and increases their sense of security.
- Television, which may have an impact on household violence by changing women's and men's perceptions of gender roles and relations, and giving women a greater understanding of their legal rights.
- Further studies are needed to verify this correlation and understand the mechanisms through which household gender relations can be affected by access to radio and TV.

Community participation in energy sector interventions

Experience with rural electrification efforts suggests that community participation, with the involvement of local women, brings many benefits in terms of improving design, mobilizing contributions, and increasing local ownership and operational sustainability. When organizing community consultations, it is important to ensure that both men and women are able to attend and actively participate in the consultation, taking into consideration that women may need special arrangements such as childcare and transportation to enable them to attend. Women-only consultations may be needed if cultural norms discourage women from speaking openly with men.

Consulting women and educating affected communities about gender-specific issues in projects can strengthen project effectiveness, as long as the results of consultations informs the design of the interventions.

For example, when electricity arrived in rural Zanzibar, women were excluded from the planning process. As a consequence, in the village of Uroa, two institutions of importance to women, the village mill and the kindergarten, remained unconnected to the electricity grid. In comparison, male institutions, such as mosques and the fish market, were connected. Women's exclusion from the planning process led to an exclusion of their interests from the benefits of the project. The lack of attention to services which could save women's time, such as a village mill and a kindergarten, proved a barrier to women's income generating activities when electricity became available. These barriers would have been identified if women had been consulted.


In Zanzibar, women's exclusion from planning process, led to the village mill and the kindergarden, remained unconnected to electricity grid
As a result, a barrier to women's income generating activities when electricity became available

Check Your Understanding

1. The energy access ladder shows that as the household income increases, consumers move from cheap energy sources such as wood and kerosene to more expensive and sophisticated energy.

    A. True

    B. False

2. Why would health improvements from reduced indoor air pollution benefit women more than men?

    A. Women routinely spend more time indoors.

    B. The negative health impacts of solid fuel cooking are consistently greater for women than for men.

    C. Nowadays, the percentage of women smokers is consistently greater than the percentage of men smokers, so women suffer from more respiratory illnesses such as asthma and emphysema.

3. Rural electrification has negligible gender impacts, as the electricity provided per household is generally enough for only a couple of light bulbs and a radio or TV.

    A. True

    B. False