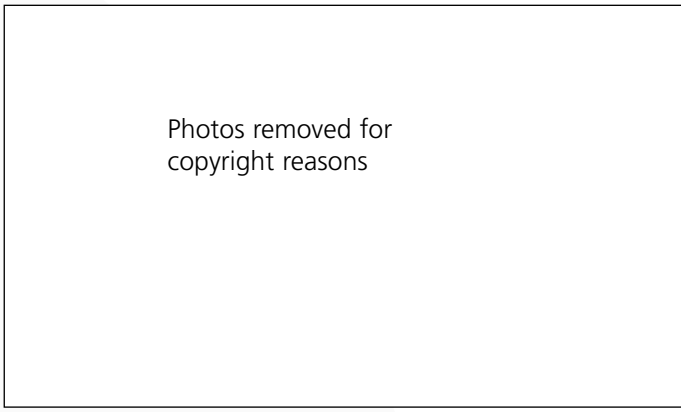
WOMEN, MEN, AND ENVIRONMENTAL CHANGE:
The Gender Dimensions of Environmental Policies and Programs

In Thailand, foresters invited a group of village men to a meeting to plan a community forestry project. The men told the foresters that they needed hardwood tree species to make furniture and woodcarvings to sell. But when 3,000 hardwood seedlings were provided, they all died. Why? Because in that location, women care for the seedlings, and they prefer softwood tree species for fuelwood and fodder. No one had told them that the trees were coming. Women were included in the next meeting, allowing the foresters to learn about women's and men's roles and preferences. Eventually, the project delivered seedlings of both types, satisfying both the men and women of the village.[1]

Women and men have different gender-based roles and responsibilities in their own lives, families, households, and communities. They have different knowledge of, access to, and control over natural resources, and different opportunities to participate in decisions regarding natural resource use. Understanding women's and men's relationships to the environment plays an important role in developing solutions for more sustainable use of natural resources. Ignoring gender distorts the understanding of human impacts on the environment.

This brief, part of PRB's series **Emerging Policy Issues in Population, Health, and the Environment**, examines how gender differences play a part in natural resource use, how resource depletion affects women and men differently, and what has been done worldwide to integrate gender concerns in environmental planning.



Women's and men's roles and responsibilities affect how they use and manage natural resources.

How Gender Influences Natural Resource Use

Gender refers to the different social roles that women and men play, and the power relations between them. Gender relations influence how communities, households, and institutions are organized, how decisions are made, and how resources are used. To understand how gender shapes activities that affect the environment, it is necessary to examine women's and men's roles and responsibilities, access to and control over resources, knowledge of resources, and authority to make decisions about resource use.

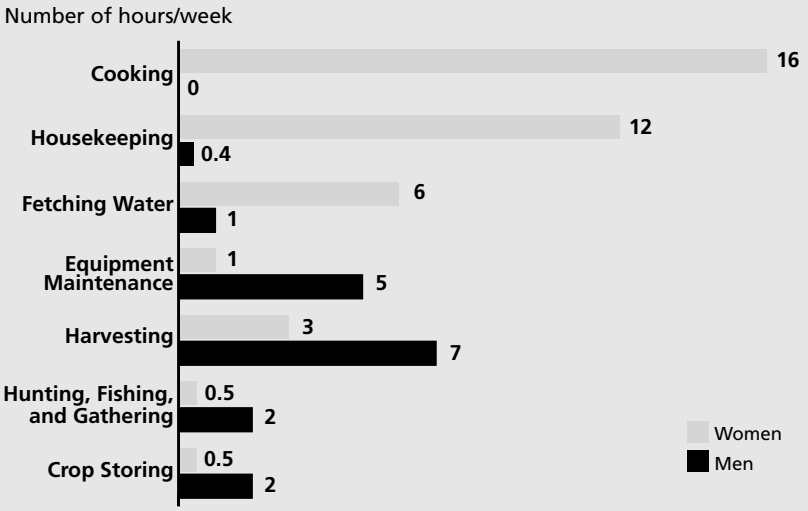
Roles and Responsibilities

In most regions of the world, men play a greater role than women in the exploitation of natural resources for commercial purposes—logging, grazing livestock, fishing, mining, and extracting various tree products.

While both women and men are involved in economic activities such as farming, women have additional domestic responsibilities such as food preparation, water and fuelwood collection, child care, and maintaining family health. Men's domestic responsibilities may be limited.

An important indication of the differences in these roles is how women and men spend their time. Figure 1 (page 2) presents data from a study in Côte d'Ivoire that illustrates time spent on men's and women's different roles and responsibilities. The study found that while women work both inside and outside the home, men work almost exclusively outside the home. Women's responsibilities include housekeeping, cooking, and fetching water and wood. Men have primary responsibility for harvesting and storing crops; maintaining equipment; and hunting, fishing, and

Figure 1
Women's and Men's Time Spent in Various Activities, Côte d'Ivoire



SOURCE: James A. Levine, Robert Weisell, Simon Chevassus, Claudio D. Martinez, B. Burlingame, and W. Andrew Coward, "The Work Burden of Women," *Science* 294 (2001): 812.

gathering. Both work in agriculture to sustain food production.

Migration is one factor that influences women's workload. High rates of male out-migration from rural areas in search of employment have exacerbated women's work burdens. In Nepal, for example, a study undertaken in three villages by the Asian Institute of Technology in 1999 found that male migration doubled women's physical work burden, particularly for women with no grown sons. Women heads of farm households also had difficulty when male labor was not available for traditional male tasks such as plowing, which was reported to be taboo for women.[2]

Male migration to urban areas not only influences gender roles, but also can affect the environment. In Ghana, the lack of male labor for clearing thick bush led to longer cropping rotations on land that should have been left fallow after one or two years. As a result, land fertility and yields declined, and soil erosion increased.[3]

Access To and Control Over Resources

Economic, social, institutional, and legal constraints affect women's and men's right to own land and control resources. In 2001, over 1.2 billion people were living on less than one U.S. dollar a day. The majority of those in poverty are women. Globally, 70 percent of the poor depend on land, water, and forest for subsistence and income.[4] They exploit natural resources to provide fuelwood and timber for energy and shelter, and wildlife flora and fauna for food and livelihood. Most lack secure access to and control over these resources. For example, forests may be owned by the government or laws may prohibit fishing in estuaries.

Women's social status, especially in developing countries, limits their secure and independent access to land. In many countries, rights are linked to women's marital status; women often lose these rights if they are divorced or widowed. Even in countries where the law guarantees women and men equal access to land, women may not be aware of their rights, or customs may exclude women from de-facto ownership. In Zimbabwe, Burkina Faso, and Cameroon, for example, women have the legal right to own land and trees but, in practice, men control nearly all of the property.[5]

Such insecure land tenure influences how different groups use natural resources. Women, the poor, and other marginalized groups are less likely to invest time and resources or adopt environmentally sustainable farming practices on land they do not own. In the eastern Democratic Republic of Congo, researchers found that men usually plant permanent tree crops, such as coffee, on household land where they have secure tenure. Women's food crops are relegated to rented, steeply sloped land with erosive soils. Because tenure is not secure, women have little incentive to invest in soil conservation.[6] In Zimbabwe, researchers found that women are also significantly less likely to plant trees for food, medicine, and fuelwood in areas where future access is uncertain.[7]

These restrictions on women's land rights hinder their ability to access other resources and information. Unable to use land as collateral to obtain loans, women have difficulty in adopting new technology and hiring labor when needed. In addition, women may not be able to access other supportive services, such as extension programs and training on innovative land management approaches. Studies from many countries show that agricultural extension agents have traditionally focused on male farmers, even where men are working off the farm and women are the primary cultivators.[8]

Knowledge Base
Women and men are both sources of knowledge about sustainable resource management practices, but they may know about different species and practices according to their activities. In Brazil, ethno-botanical surveys conducted in the Jaú National Park found that midwives were knowledgeable about certain plants, while traditional medicine men knew about others.[9]

Gendered knowledge also varies by class, age, and ethnicity, underscoring its complexity. An older man from an indigenous group may have different ways of working with land and forests than a young man living outside his native community; the same applies for women.[10] Understanding the different knowledge of women and men in different socioeconomic circumstances helps to determine appropriate and sustainable interventions.

Public Participation in Decisionmaking
Public participation in environmental management is increasingly seen as a vital component of environmental policies. Several major United Nations conferences in the 1990s, including the Conference on Environment and Development (Rio de Janeiro, 1992) and the Fourth World Conference on Women (Beijing, 1995), acknowledged women's contributions to environmental management and proposed actions to strengthen women's role in decisionmaking (see Box 1). Yet women's involvement in the formulation, planning, and execution of environmental policy remains low at all levels, from local positions to the ranks where national and international environmental policies are determined.

When women do contribute to environmental management, it is often at the local level. Women in many countries, for example, in the Ukraine, Bangladesh, Russia, and Mexico, have been involved in planning the management of fresh water resources. They have come together in women's groups and cooperatives to mobilize communities and resources to highlight urgent problems in industrial areas, as well as to help conserve and protect their supplies of clean, accessible water.[11]

This limited participation in decisionmaking means that women's perspectives, needs, knowledge, and proposed solutions are often ignored. In addition, failure to take account of women's and men's activities and to include both in the decisionmaking process can lead to policies that criminalize women's activities without changing their behavior. For example, in El Salvador, community leaders placed restrictions on collecting timber in coastal areas and fishing in estuaries in an effort to conserve the fragile mangrove system. In this area, most men fish in the open seas, while women collect fuelwood and fish in the estuaries and along the shoreline. Women were not consulted when the ban was discussed, yet they were most affected by the restrictions. Valuing household survival over possible penalties, women continued to fish and gather fuelwood secretly.[12]

Box 1

Fourth World Conference on Women Platform for Action, Chapter 4: Women and the Environment

The Beijing Platform for Action recommends strengthening women's participation and leadership as part of a holistic, multidisciplinary, and intersectoral approach to sound environmental management. Among actions to be taken, the Platform for Action proposes that governments

- Ensure opportunities for women, including indigenous women, to participate in environmental decisionmaking at all levels.
- Facilitate and increase women's access to information and education, thus enhancing their knowledge, skills, and opportunities for participation in environmental decisions.
- Take measures to integrate a gender perspective in the design and implementation of, among other things, environmentally sound and sustainable resource management mechanisms, production techniques, and infrastructure development in rural and urban areas.

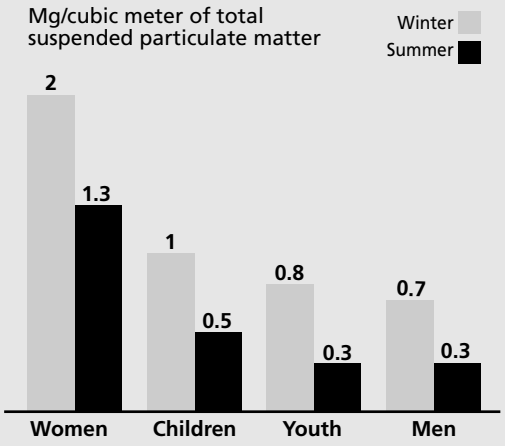
The Impacts of Environmental Degradation on Women and Men

Not only do women and men differ in the ways they use and manage environmental resources, they are also differentially affected by the degradation of natural resources. Deforestation, water scarcity, soil degradation, and exposure to agricultural and industrial chemicals and organic pollutants affect women and men in varying ways.

More Time and Energy for Tasks
The amount of time individuals spend on household duties may dramatically increase with the depletion of resources. In the Limbang district of Malaysia, commercial logging affects men, who must travel longer distances in the forest to collect

Figure 2

Average Daily Exposure to Indoor Pollutants From Biofuel Combustion in Rural India



NOTE: In this study, daily exposure levels of indoor pollutants from biofuel combustion in rural India exceeded both Indian and international standards. (The Indian standard for residential areas is 0.10 mg/cubic meter, and the WHO guideline is 0.10 to 0.15 mg/cubic meter.) Women and children are exposed to the pollutants more than youth and men, due to greater exposure to biofuel combustion during cooking.

SOURCE: S. Saksena, R. Prasad, R.C. Pal, and V. Joshi, "Patterns of Daily Exposure to TSP and CO in the Garhwal Himalaya," *Atmospheric Environment* (26A, 1992): 2125-34.

household construction materials. For women, forest degradation makes it more difficult to collect wild herbs, fruits, and natural medicines.[13] Given the variety of women's daily interactions with the environment to meet household needs, they are often most keenly affected by its degradation. In the Sudan, deforestation in the last decade has led to a quadrupling of women's time spent gathering fuelwood.[14] Because girls are often responsible for collecting water and fuelwood, water scarcity and deforestation also contribute to higher school dropout rates for girls.

As women and men travel longer distances for fuelwood, fodder, and water, they expend larger amounts of energy. The World Health Organization estimates that the energy used to carry water may consume one-third of a woman's daily calorie intake. In areas where water is in particularly short supply, calorie use may be even greater, compounding the risk of malnutrition in resource-poor settings.[15]

Higher Exposure to Indoor Pollutants

Soot from burning biomass fuels such as wood, charcoal, or agricultural residues for cooking and heating primarily affects women and children because they spend more time indoors than men (see Figure 2). Epidemiological studies in developing countries have linked exposure to indoor air pollution from traditional fuels with acute respiratory infections in children, chronic bronchitis and asthma, lung cancer, and pregnancy-related problems. It is estimated that exposure to indoor pollutants kills more than 2.2 million people each year, over 98 percent of them in developing countries.[16] A study in Gambia found that infants exposed to smoky stoves are six times more likely to have acute respiratory infections than those who were not exposed. Studies in India, Nepal, and Papua New Guinea show that nonsmoking women who have cooked on biomass stoves for many years exhibit a higher prevalence of chronic lung disease (asthma and chronic bronchitis). Exposure to high levels of indoor smoke is also associated with pregnancy-related problems such as stillbirths and low birth weight infants.[17]

Decreased Nutrition for Families

Women and men often are forced to change their families' dietary practices when soil fertility has been drastically reduced due to overcropping, overgrazing, or erosion, or where there is a lack of fuelwood and potable water. Nutrition suffers when fuelwood shortages force households to economize on fuel by shifting to less nutritious foods that can be eaten raw or partially cooked, by eating partially cooked food that could prove toxic, by eating leftovers that could rot in a tropical climate, or by skipping meals altogether.[18] Although these nutritional changes affect all household members to some degree, women and female children bear the greatest burden in places where they eat last and least.

Increased Reproductive Risks

Exposure to certain agricultural and industrial chemicals and organic pollutants increases women's vulnerability in pregnancy and childbirth, and can lead to childhood illness and mortality. In a study in central Sudan, researchers found that pesticide exposure was linked to 22 percent of hospital stillbirths. The effect of pesticide exposure on perinatal

deaths was particularly high for women farmers (35 percent).[19] There also is evidence of increased risk of birth defects from parental exposure to pesticides.[20] Men face reproductive health risks as well. Exposure to pesticides has been linked to testicular cancers and lower sperm counts.[21]

Gender-Responsive Environmental Policies and Programs

Gender-responsive environmental policies and programs are those that seek to achieve environmental outcomes while explicitly taking into account both men's and women's opinions, needs, and interests. Such policies derive from social, health, and ecological research that provides a more comprehensive picture of the impact of humans on the environment, and the impacts of environmental change on people. A number of countries have taken initiatives to incorporate a gender perspective into environmental policies and programs by taking the following actions:

Collecting and Analyzing Sex-Disaggregated Information

Collecting sex-disaggregated information is a first step toward developing gender-responsive policies and programs. Data that provide information on women's and men's resource use, access to resources, and participation in environmental decisionmaking contributes to sound policies. Currently, sex-disaggregated information is rarely used in national environmental policies or programs. However, some agencies have begun collecting disaggregated information at the local level.

In Brazil, a conservation organization, the Fundação Vitória Amazônica, used a "stakeholder assessment" to identify people's needs, design appropriate interventions, and later evaluate the effect of policies and programs in the Jaú National Park. Interviewers used separate questionnaires for women and men, along with other instruments, including a 24-hour recall questionnaire and activities profile, to better understand residents' interactions with the environment in the park.[22] The government of Tunisia also combined data gathered at the local level with more standard survey information to design a plan of action for integrating women into the country's ninth Five-Year Plan.[23]

"Advancing gender equality, through reversing the various social and economic handicaps that make women voiceless and powerless, may also be one of the best ways of saving the environment." [24]

—Amartya Sen, 1998 Nobel Laureate in Economics

Strengthening Women's Involvement in Environmental Decisionmaking

Worldwide, women are poorly represented in governments and decisionmaking bodies. This lack of representation limits women's influence over public policies and programs. Women need official channels to reflect their needs and to have a voice in environmental policy decisions. Several countries have done this by setting aside seats to ensure women's participation in environmental management and decisionmaking bodies. In the 1990s, a number of countries, including India, Uganda, Brazil, and the Philippines, formally set aside a percentage of seats on national and local bodies for women. In Jamaica, changes in recruitment strategies have led to an increase in women's leadership in natural resource and environmental management. As a result, women make up more than a third of the Forestry Department's technical staff. In Tunisia, women hold 19 percent of senior management positions in the Ministry of Environment.[25]

Issuing Gender Policy Declarations

Commitment to addressing gender concerns must be reflected at the highest level. Several governments around the world have taken steps to incorporate a gender perspective into their national environmental policies. Gender policy declarations are important because they demonstrate a government's intent to address gender concerns; provide a reference document for technical staff that are working on national policies and programs; and provide the basis for action to develop the capacity of both women and men to address gender concerns (see Box 2, page 6). Uganda's National Environment Plan, adopted in 1995, supports using participatory approaches and gender analysis for environmental planning. A section of the Malawi National Environmental Policy calls for integration of gender, youth, and child concerns

Box 2

Regional Statements on Gender and the Environment

Policy and institutional changes in Meso-America (Mexico and the countries of Central America—Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, and Panama) have brought about greater high-level policy attention to gender issues. The World Conservation Union (IUCN) worked with governments in these countries to develop a policy declaration that pledges to incorporate gender into their environmental policies at the national level. These declarations outline each ministry's commitment to gender-sensitive environmental policies and provide the basis for more concrete action plans with specific goals and strategies. For example, three countries (El Salvador, Costa Rica, and Mexico) have created gender units within their environmental ministries to monitor and evaluate gender-sensitive programming. These efforts led the countries of Meso-America to issue a joint statement about the importance of incorporating gender into environmental projects and policies to achieve sustainable development.[26]

into environmental planning and decisions at all levels.[27] In the Philippines, a Gender and Development Focal Point was set up in the Division of Environment and Natural Resources to serve as a catalyst for gender-responsive planning and programming.[28]

Signing International Agreements

Building on the momentum of the UN conferences in the 1990s will be key to translating international commitments into concrete action. UN conference documents—often called a platform, program, or plan of action—represent a common policy statement among all of the nations that participate in the process (see Box 2, page 3). Conference agreements can be a catalyst for national action: They can influence government policies through international "peer pressure"; advocates can use the documents to put pressure on governments to fund or approve actions that support the agreements; and the goals and benchmarks in the documents can serve as tools for monitoring national progress and encouraging action.[29] The five-year review of the Fourth World Conference on Women in 2000 in New York found that while significant progress had been made in carrying out the 1995 accord, major obstacles remain to achieving greater economic opportunities and autonomy for women. The 2002 World Summit on Sustainable Development, in Johannesburg, South Africa, provides an important opportunity to review progress and lessons learned in translating the 1992 UN Conference on Environment and Development's Platform of Action into equitable and sustainable solutions.

Conclusions

The different roles and responsibilities of women and men are closely linked to environmental change. This is true both for how women and men affect the environment through their economic and household activities and how the resulting environmental changes affect people's well-being. Understanding these gender differences is an essential part of developing policies aimed at both better environmental outcomes and improved health and well-being. Experience and research suggest a number of actions policymakers and planners can take to improve the integration of gender concerns into environmental planning:

- Improve data collection on women's and men's resource use, knowledge of, access to and control over resources, and opportunities to be involved in decisionmaking.
- Train staff and management on the relevance of gender issues to environmental outcomes.
- Establish procedures for incorporating a gender perspective in planning, monitoring, and evaluating environmental projects.
- Ensure opportunities for women to participate in decisions about environmental policies and programs at all levels, including roles as designers, planners, implementers, and evaluators.
- Foster commitment at all levels—local, national, and international—that the integration of gender concerns into policies and programs leads to more equitable and sustainable development.

Continued commitment and increased capacity at all levels of society are essential for achieving these goals.

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1875 Connecticut Ave., NW, Suite 520, Washington, DC 20009 USA
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