Engendering Information & Communication Technologies

Challenges & Opportunities for Gender-Equitable Development

Information and communication technologies cover a wide range, from radio and television to telephones and the Internet. Although such technologies have delivered enormous benefits around the world, much of their potential remains untapped—particularly for groups facing severe time constraints, suffering from social isolation, or lacking access to knowledge and productive resources. Women in developing countries are among the most important of these groups.

Life is very different for women and men in developing countries, with women usually enjoying far fewer rights and resources. These inequalities limit women's abilities, opportunities, and achievements. But in today's knowledge-driven global economy, information and communication technology offers enormous potential for alleviating poverty and promoting sustainable, gender-equitable development.

How can developing countries exploit this potential? And what policies and approaches can the World Bank and other international organizations use to help?

Engendering information and communication technology involves identifying and eliminating gender disparities in access to and use of such technology. It also involves adapting technology to women's needs by taking advantage of their special knowledge and strong informal networks and support systems.

Information and communication technologies can be used to achieve gender equality by...

...Pursuing social and economic transformation

Information and communication technologies can transform how information is shared and production is organized, fostering social change and economic development. Women can use such technology to:

- Obtain information that enhances their productive, reproductive, and community roles.
- Run businesses and work in the information technology industry.
- Secure resources for themselves, their families, their careers, and their communities.
- Have a voice in their lives, communities, and governments.
- Gain the skills required for equal participation in the knowledge economy.

In many developing countries, girls' and women's access to information and communication technology is constrained by:

- Social and cultural bias.
- Inadequate technological infrastructure in rural areas.
- Women's lower education levels (especially in science and technology education) and fear of or lack of interest in technology.
- Women's lack of disposable income to purchase technology services.

...Expanding employment prospects and supporting female entrepreneurs

Although women account for nearly a third of information technology workers in developing countries, they are concentrated in lower-level jobs and paid smaller salaries than men. For example, many of these women work in call center, data entry, and programming positions—few are project managers. But this need not be the case: with supportive policies from employers, complemented by enlightened national labor laws, women can move up the professional ladder (Box 1).

Girls' and women's low enrollment in science and technology education is one of the main obstacles to higher-level employment in information technology. Another hindrance comes from the industry's promotion structures, which tend to fall along gender lines—with women less likely to advance to mid-level and managerial positions, especially in the private sector. Women's opportunities for information technology jobs are larger in countries with high gender equality and large information and communication technology sectors.

In many developing countries, female entrepreneurs increasingly dominate small and micro-enterprises. These women are often aware that increased connectivity, computerization, and communications could enhance their business activities. Yet it is harder for women to support their businesses with such technology because it is harder for them to secure the capital required to invest in it. Many female entrepreneurs are also losing out on the information and networking opportunities that come from information and communication technology. Women also face higher barriers to computer literacy.

Still, many female-owned small and micro-enterprises are finding ways to use information and communication technology. Mobile phones are especially vital for women who do not have fixed work locations. E-mail accounts, personal computers, Internet connections, websites, e-commerce and accounting software are also extremely useful and highly desired. Most female entrepreneurs are willing to adopt new technologies—but they require adequate support to do so.

> **Box 1** **Promoting female workers in information technology: Mongolia Telecom**
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> Mongolia Telecom started in 1992 as a public enterprise and was privatized in 1995. Its many services include Internet access, international phone calls, and television and radio broadcasting. Women account for more than half of the company's 4,500 employees.
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> In 1996 Mongolia Telecom adopted a plan to increase the share of managerial positions held by women from 9 percent to at least 20 percent. Measures were introduced to foster women's professional development and to help them balance their responsibilities at home and work. Training and management development programs have drawn extensive participation from female employees. The target has since been achieved.
>
> Mongolia Telecom's experience shows that supportive organizational policies—complemented by enlightened national labor laws—can help women acquire relevant skills and move up the professional ladder, breaking through the "glass ceiling" that limits women's advancement in many organizations, particularly in the information technology industry.
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> Purevsuren, Batsukh. 2001. "Women's Issues in ICT in Mongolia." Mongolia Telecom. Paper presented during Asia-Pacific Regional Workshop on Equal Access of Women in ICT (22-26 October 2001, Seoul, R.O.Korea). http://www.itu.int/ITU-D/gender/documents/Asia-PacificWrkshopKorea/ Doc5-4.pdf

...Increasing educational opportunities

Education is arguably the most important factor in improving women's ability to take advantage of the opportunities offered by information and communication technology (Box 2). Conversely, such technology helps women acquire education where they were previously unable to do so.

Women tend to be poorly placed to participate in and benefit from the knowledge economy because of their low education levels and limited access to science and technology education. Additionally, they often lack access to skills training that would enable them to gain information technology jobs, especially in information technology design and development. Although these gaps are narrowing in some developing countries, they remain wide in most.

Stronger efforts are needed to develop women's skills—when women have opportunities for high-level technical training, they tend to take advantage

Box 2 **Ensuring that African girls benefit from computers in schools: SchoolNet Africa**

SchoolNet Africa aims to improve education by increasing the use of computers in schools. However, a recent World Links study of schools in Ghana, Mauritania, Senegal, and Uganda found that most programs pay little attention to gender integration and that when few computers are available and their use is based on first-come, first-served policies, girls are at a disadvantage. Other factors limiting girls' access include household chores, early curfews, and lack of confidence in using computers. As a result of these findings, schools are encouraged to investigate fair use policies for computer labs to allow equal access to boys and girls.

The World Links study also found that when girls have access to computers, they often use them for research and to communicate with friends and family—increasing their knowledge, communication skills, and self-confidence. Girls are also using the Internet to access reproductive health information that they are not able to get from traditional sources. These findings led SchoolNet Uganda to increase the number of female, computer-literate teachers to provide role models for girls, because a gender divide among teachers is often transmitted to students.

Gadio, Coumba Mar. 2001. Exploring the Gender Impact of the World Links Program. World Links. Summary of the findings of an independent study conducted in four African countries. www.world-links.org/english/assets/ & SchoolNet Uganda

of them. Such efforts can be supported by reserving places for women in training programs and developing training programs aimed at women.

Distance learning, which offers instruction over the Internet, can also increase educational opportunities for women at all levels. Distance learning shows great promise, as it provides flexible access arrangements and study times—and offers the potential to reach women in rural areas. Women in several countries have responded enthusiastically to this approach.

But much more research and gender analysis are needed on the efficacy and benefits of distance learning. One of the biggest challenges is the high cost of Internet access in much of the developing world. Another obstacle to increasing women's education is the rising cost of higher education. Alternative access strategies might be needed to reach women at all socioeconomic levels.

...Promoting political empowerment

Information and communication technology can significantly increase women's voice and overcome inequities in and barriers to political participation. A small number of women have used this technology to empower themselves politically and raise awareness, develop networks, and increase advocacy for women's causes. Technology can be used to pressure policymakers to address women's perspectives and concerns, leading to more gender-equitable policies and social services.

...Improving social services

Information and communication technology can increase accessibility, transparency, and accountability in the delivery of social services. Delivering services at convenient locations can cut travel times, minimize the number of visits to delivery points, and shorten the time needed to receive them. In addition, technology-enhanced service delivery, including e-government, can reduce corruption. Poor women in developing countries could be among the first to benefit from such changes.

The basic gender issue is whether women and men benefit equally from technology-driven changes in service delivery. Changes must be designed and implemented in ways that take into account women's needs and preferences for service delivery times and locations. Because governments and nongovernmental organizations (NGOs) have only recently started using information and communication technologies to deliver services, it is too early to judge how such efforts affect gender equality.

...Focusing on gender in national technology policies

Although many national policies for information and communication technology refer to the situations facing rural areas and poor people, most say little or nothing about gender. As a result, gender issues will probably not be taken into account when such policies are implemented.

Engendered national policies for information and communication technology can help women by increasing their:

- Access to and use of such technology.
- Employment in information technology and related industries.
- Opportunities to use e-commerce in small and micro-enterprises.
- Access to health, education, and communication services.
- Political participation and economic empowerment.

Engendered technology policies should also consider the gender dimensions of legal issues and the attitudes of labor unions, as well as constraints on women's mobility, control over productive resources, and access to credit.

Policies in areas other than information and communication technology can also be significant. For example, industrial and labor policies affect women's employment in the information technology industry, while education policies can promote women's science and technology education and significantly influence their preparedness to enter the labor market.

Efforts to engender national technology policies should not only sensitize policymakers to gender issues, they should also sensitize gender advocates to technology issues. Because few policymakers are trained to think from a gender perspective, policies rarely reflect gender equality concerns. Similarly, gender advocates are unlikely to understand all the issues that affect information and communication technology policies, including infrastructure, regulation, labor and education policies, licensing procedures, and e-government arrangements.

World Bank efforts to address gender issues in information technology projects

Gender issues have been incorporated in several World Bank projects involving information and communication technologies, including:

- A training project in India that provides scholarships and housing to female students studying information technology (Box 3).
- A technology training program in the former Yugoslav Republic of Macedonia (part of a social cohesion project) aimed at at-risk girls and boys from various socio-cultural backgrounds and from ethnic groups that are underrepresented in the country's education system.
- A project in Mozambique that provides Internet access to colleges and universities and increases women's access to higher education by using information and communication technology to teach courses. The project has also increased capacity in using such technology and provided poor female high school students with scholarships for public and private universities. In addition, the project funds innovative proposals for improving girls' access to higher education, including the use of technology.

There are opportunities to include gender analysis in other projects and activities. For example, although distance learning has many features attractive to women, some distance learning projects have not incorporated social or gender analysis. And while many projects involving telecommunications policy and regulatory reform have indicated high awareness of the potential for social reform, few have mentioned gender issues.

| Box 3 | **Addressing gender issues in World Bank projects involving information and communication technologies** |

Supporting female farmers in Ghana

Despite the key role that women play in agriculture, traditions and customs often restrict their activities and limit their access to land, technology, training, and credit. Ghana has recognized this gender gap and is taking steps to narrow it. Through the World Bank's Agricultural Services Subsector Investment Project, the Directorate for Women in Agricultural Development (part of the Ministry of Food and Agriculture) has prepared a plan to address gender issues.

One of the project's main goals is to develop cost-effective, demand-driven information and communication technology systems that generate and disseminate knowledge among female farmers—increasing their participation in accelerating agricultural growth to promote food security, reduce poverty, and conserve natural resources. The project will also establish a sex-disaggregated database of food and agriculture statistics to support gender-responsive training. In addition, the project aims to raise female enrollments to increase the number of female extension agents and agricultural technicians in both the public and private sectors. To that end, the project is building housing for female students at agricultural colleges and providing remedial training to help them qualify for admission.

Improving technical education for female students in India

The Bank's Engineering and Technical Education Quality Improvement Project provides training to Indian workers in fields that are crucial to economic growth, with a focus on information technology. Women account for about 40 percent of students in participating technical institutions, as well as for a large share of the country's high-tech workforce. The project provides scholarships and housing to female students, enabling them to study in their home states.

Lessons and recommendations

Unless serious attention is paid to gender issues, information and communication technology will not achieve its potential for promoting equitable, sustainable development. In technology—as in other development areas—altering the distribution of resources requires applying gender analysis and ensuring gender-responsive project design, implementation, and evaluation.

A common misconception in information and communication technology projects is that by using technology to accelerate development, all people will benefit equally—without the need for special measures to reach disadvantaged groups. But all technology projects involve gender issues. Thus, projects seeking to involve both women and men should ensure that:

- Women are involved in project design and implementation.
- Projects target both women and men (establishing separate access and training strategies, if necessary).
- Account is taken of a social division of labor in which women are responsible for most household tasks.
- Content is locally appropriate and valuable to women as well as to men.

Moving beyond a technology focus
Information and communication technologies are not just about technology, they are also about the ability of men and women to make use of them. So, when designing gender-sensitive interventions, several questions should be asked: Do aspects of the technology affect women and men differently? Does the technology transmit the knowledge of both women and men? And do women and men have the same access, needs, and demands for the technology?

Including gender from the outset
Gender issues should be considered from the early stages of project design, not added in hindsight or as a midterm correction. A fully participatory process will most likely include input from gender experts and organizations that work on gender issues.

Applying appropriate solutions
Successful information and communication technology projects do not have to use high-end technology when addressing gender issues. Making judicious use of available, affordable technology—including intermediate technology—can have a much greater impact than using the latest technology for its own sake.

Raising awareness among project teams
Staff engaged in projects focused on or involving information and communication technology need to be aware of the gender issues raised by these projects.