Transforming Information & Communications Technologies for Gender Equality

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About the author

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About the series

The lives of women and men, the work they do, the income they receive, the roles they are given and the relationships that they share are all shaped by social norms and traditions which treat women and men differently. Truly, we live in a world where gender matters. Such norms and traditions, and the ideas that underpin them, are also manifested in laws, institutions and economic and social structures, such as the family and the job market. But the gendered responsibilities and rewards of participation in society are not only different for women and men, they are usually inequitable. The effect, as UNDP’s 1995 Human Development Report bears eloquent witness, is the continuing economic and political marginalisation of women. Understanding the ways in which gender differences are deployed to construct this reality of marginalisation is necessary if efforts to address inequity and inequality are to be successful. The Gender in Development Monograph Series is intended to contribute to this process of understanding.

In analysing the gendered realities of today’s world, the series draws on its authors’ research into the lives of women and men, linking these lived experiences with the macro-level political and economic structures from which they are often artificially severed in development theory and practice. The monographs reflect the complexity and diversity of global and national responses to key issues like poverty, housing, governance and technology but provide a common analysis of the ways in which gender determines the different ways that women and men act upon and are affected by these issues.

This analysis reveals the gendered bases of inequity and inequality to be powerful and pervasive. Yet, as the monographs make clear, the concept of gender can also provide a catalyst for social and economic change. If the differing roles and responsibilities ascribed to men and women are socially constructed, then, by definition, they may be changed by society, by us. Understanding the ways that gender is constructed can create a space within which women and men may envision different ways of being together.

Commissioned from leading researchers and practitioners working with gender and development issues, each monograph reflects the author’s particular perspective, shaped by their own expertise and experience. Such diversity is critical to any meaningful dialogue which the series hopes to stimulate. But the monographs’ plurality of voices all speak to the necessity of engendering human development and of recognising that the nature of women’s and men’s common existence is within our power to change.

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Executive Summary

Section One
RAPID DIFFUSION OF ICTS AND DIFFERENTIAL EFFECTS

Section One sets a context for the paper, presenting background information necessary for framing advocacy strategies for change. It shows that ICTs can contribute to human development through their effects on economic, social and political structures and processes.

An overview is given of how technological innovation and other facilitating factors combine to produce rapid rates of diffusion, which in turn effect society. These results are not standardised; they vary in direction and degree in different locations. Conditions that have facilitated an increase in the size and importance of the global ICT sector are inherent in the structures of OECD countries and the way they function. For example, technological innovation in ICT core technologies has required private investment in research and development; firm size in the global ICT industry is increasing and markets are becoming increasingly concentrated. These and other factors have created a “virtuous cycle” that has stimulated and supported rapid ICT diffusion in these richer nations over the past 20 years.

In the developing world, a number of inhibiting features must be overcome before ICTs can have a positive effect. Growth and expansion of the global ICT sector are not necessarily aligned with the needs of developing countries. Moreover, policy and programme interventions that attempt to replicate ICTs’ beneficial effects by artificially stimulating demand for standard ICT applications and infrastructure — or by making claims about improved welfare based on the experiences of a small, elite group of consumers - are not a useful guide for further development of the ICT sector in these countries. An approach that emphasises adaptation, synchronisation with local innovation systems and alignment with development objectives is much more likely to result in sustainable positive impacts on human development. Fostering such an approach to development policy and ICT development is closely linked to the goal of improving gender equality in the sector since women in developing countries are likely to be disadvantaged by strategies that favour an elitist orientation in growing the ICT sector.

Section Two
EFFECTS OF RAPID DIFFUSION OF ICTS: TOWARDS A GENDER ANALYSIS

Section Two illustrates how gender analysis based on a social-relations approach can contribute to an understanding of the effects produced by the rapid diffusion of ICTs. It builds and extends the argument of differential outcomes by focusing on gender relations within the sector and the effect of the diffusion of ICTs on gender relations.

The disturbing conclusion of Section Two is that, for many women in developing countries, the challenge is to overcome a double burden of marginalisation. As presently constituted the ICT sector is dominated by values traditionally associated with a power imbalance between men and women, and a lack of concern for SHD objectives. Within the firms, markets and institutional contexts through which ICTs are diffused, power relations do not
favour women and the few groups representing the interests of gender equality and SHD are marginalised, occupy low status and are seen to have little legitimacy. In addition, the dominant ideology that governs practices and attitudes in the ICT arena privileges profit over human well being, including that of women. Unless this changes, rapid diffusion of ICTs will contribute little to gender equality and SHD for the world’s majority.

The analysis in this section shows that conditions for decision-making in the ICT sector do not augur well for transformation. Participation in decision-making in production and regulation of the sector is limited and there is very little room for re-negotiation of power imbalances.

Section Three

TRANSFORMING GENDER RELATIONS IN THE ICT ARENA: PROGRESS AND CHALLENGES

Section Three reviews efforts to transform ICTs for SHD and gender justice. It reports that, so far, most progress has been made in using ICTs for furthering women’s empowerment, while other interventions have lagged behind. It argues that in addition to using ICTs as tools for achieving practical and strategic objectives, the gender and development community must become more active in putting forward a critique of the whole area of ICTs and development. This work would develop ideas, research and analysis on the links between ICTs, women’s empowerment and SHD. Studies that have been carried out by gender and development thinkers and practitioners are reported upon.

Interventions are also needed to change practice in the ICT industry, especially with regard to the redistribution of power, the alteration of existing gender relations and the lack of alignment of the goals of the sector with SHD objectives. Many individuals, women’s organizations, academic institutions and development agencies, in a variety of regions, have used ICTs as tools to further SHD, contributed ideas on ICTs and development and addressed practice within the ICT industry. However these efforts are still at an early stage. They need to be substantially strengthened, by the ICT industry itself, and by NGOs and international development organizations.

The monograph concludes with suggestions for action and a list of policy advocacy sources and references.
Introduction

**Gender and information and communication technologies: the link with sustainable human development**

The purpose of this monograph is to examine how information and communication technologies (ICTs) can contribute to sustainable human development (SHD), and specifically its gender equality and women’s empowerment goals. It shows that this outcome is neither automatic nor inevitable. On the contrary, factors inherent in the manner in which ICTs have been developed and used threaten the achievement of SHD and its gender equality objectives. It is therefore important for development thinkers and practitioners to understand the technological and institutional changes that are shaping the production, use and rapid diffusion of ICTS, whether they are working on specific gender or more general development issues. The monograph is intended to contribute to that understanding.

Like all technological innovation and change, the rapid diffusion of ICTs is influenced by factors in society. It can therefore best be understood by focusing on the ways in which these technologies are intertwined with social, political and economic forces. To comprehend what conditions give rise to and changes result from their diffusion, it is important to locate expected impacts within specific social, economic, institutional and cultural contexts. Such analysis fits comfortably with feminist analysis of science and technology systems but sits outside of the more deterministic positions usually taken vis-à-vis the spread of technologies.

There is no doubt that the diffusion of ICT artefacts and services has taken place at a heady pace. Along with this diffusion there has been an increase in supporting material, uncritically heralding the rise of the “Global Information Society” and predicting universal benefits if governments and citizens would just get on board digital information highways. Some of that hype is receding as thinkers and actors assist the process of reflection by studying the effects of change on specific communities, and in particular settings, and producing cautionary tales of differential impact. The tension between optimistic and more critical analyses of the diffusion of technologies is not restricted to ICTs. Often, the voice of countervailing opinion lags behind the pace of the diffusion of technologies and is less influential than positive assessment.

Many of the less critical analyses have not examined the diffusion of ICTs within a structural and institutional context, nor have they related technological processes to changes in the international economic structure and the way it functions. In the last decade of the 20th century, the process of globalization significantly altered the nature of economic, political and cultural relations among nations, economies and people. It is now widely accepted that the changes inherent in this process are not unequivocally positive. ICTs are more than casually implicated in an analysis of globalization, since in many ways shifts in the international economic structure and how it functions gave rise to a demand for ICTs and were in turn influenced by ICT innovations. Because of these links, it is important to include these broader considerations of structural change when studying the effects of the rapid diffusion of ICTs on gender relations and gender equality.
Gender justice in the ICT and development arena: participating to transform

The rapid diffusion of ICTs creates both risks and opportunities for SHD and gender equality, since the main forces implicated in that diffusion are not automatically orientated towards SHD, gender equality and women’s empowerment. Therefore, pro-active, sophisticated intervention is needed at many levels to swing the outcome in favour of gender justice.

This paper advocates an agenda that includes interventions on multiple fronts. Both actions to orient ICT production and use towards SHD objectives and interventions to ensure that a transformed ICT sector includes gender equality objectives are needed. The ultimate goals are to ensure that there is gender equality within the ICT sector; and to ensure that diffusion of ICTs contributes to positive change in gender relations. As will be seen, achieving these objectives will require transformation of the ICT sector, not just the integration of women into that sector, untransformed.

Jahan 1995 makes a useful distinction between gender mainstreaming efforts aimed at integrating gender equality concerns into an existing paradigm and set of rules, and those that aim to change the agenda itself and establish new objectives and rules of engagement. A new agenda that will bring about wholesale transformation of the ICT arena is required because the existing agenda favours neither SHD nor gender equality. Moreover, the gender justice agenda for the ICT sector must do more than merely increase the levels of women’s participation. Gender justice advocates working in the field must: (a) contribute to the transformation of the ICT world so that its agenda and practice support SHD objectives; and (b) ensure that gender equality and women’s empowerment are included as core objectives in the processes of ICT development, production and diffusion.

This is a daunting task for several reasons. The ICT environment is technologically intensive and requires specialised skills and knowledge. It is historically male-dominated and associated with fast-moving technology and fragmented decision-making structures. ICT technology is pervasive and growing in importance; the main producers are driven by profit motives rather than by public interest concerns and the other influential actors in the sector are formal public institutions that regulate the producers’ activities. In such an institutional setting, making effective strategic interventions is a long-term challenge. Its difficulty may explain why there has been some retreat — perhaps tactically sound — into instrumental activities.

Many difficult questions need to be answered in order to achieve gender justice within the ICT sector. This monograph discusses what led to the rapid growth of the sector, the effects produced by this rapid growth and why the effects are not the same in different parts of the world. This information is vitally important for accurately assessing how the growth of the sector has affected women, as well as for understanding the impact that ICTs have had on gender relations. It also gives evidence of steps so far taken to ensure that ICTs increasingly benefit women and make a greater contribution to SHD, indicating directions for further progress.

It is hoped that the paper will prove a useful tool, inspiring development practitioners working on gender and other SHD issues to examine the use and effects of ICTs in local contexts and suggesting paths for positive action.
Section One

RAPID DIFFUSION OF ICTS AND DIFFERENTIAL EFFECTS

Integrating gender equality concerns into the ICT and development arena is like catching hold of a speeding train. The speeding ICT train promises to take humanity to a destination where wealth and well being are enhanced and improved. Some women are already comfortably seated on that train, while many more are left waving at the station. We need to be sure that the promises are fulfilled for those women passengers, and if they are, to ensure that more women get onto the train. If the train is in fact speeding off in the wrong direction, we need a better driver, a different map or the courage to jump off!

This section sets a context for framing advocacy strategies for change in the ICT sector by giving background information on institutions and structures in the sector. It begins with a working definition of ICTs; summarises the main characteristics of the global ICT sector and features of the ICT technological innovation process; and presents data on the size and rate of growth of the ICT sector. It also provides empirical evidence to support the claim that the pace of diffusion of ICTs differs across and within regions of the world. It argues that these structural differences lead to differential impacts.

Information and communication technologies (ICTs) comprise a complex and heterogeneous set of goods, applications and services used to produce, distribute, process and transform information. They include the outputs of industries as diverse as telecommunications, television and radio broadcasting, computer hardware and software, computer services and electronic media (e.g., the Internet, electronic mail, electronic commerce and computer games.)

Characteristics of the ICT Sector

As a result of the rapid diffusion of ICTs, the sector has grown in size, scale and importance. Figures for one segment of the ICT sector, the telecommunications equipment and services industry, estimated its size at US$748 billion in the late 1990s and projected that it would grow to US$1 trillion by 2000. At this size, telecommunications is the world’s third largest industry, after healthcare and banking. The ICT sector forms part of what is referred to as the knowledge sector, which is the fastest growing area of the global economy. Between 1980 and 1994, the share of high technology products in international trade doubled, from 12% to 24%.

The pace at which the diffusion of ICT goods and services has taken place has set many records. Comparisons with other kinds of technologies show that, in wealthy countries, ICT goods and services have taken a much shorter time to reach a comparable percentage of the population. For example, the development division of the International Telecommunications Union (ITU) has reported that, over the period 1990-1998, average compound annual growth rates for fixed telephone lines was 6%, while it
was 52% for mobile subscribers and 81% for Internet hosts. When these growth rates are translated into numbers of users, the figures present an even more dramatic picture. At the growth rate reported, it took only eight years for the Internet to grow from a network consisting of 213 host computers, supporting only several thousand users, to its present estimated size of 56 million Internet hosts and 190 million users. The number of countries connected to the global network has also grown, from just over 20 in 1990 to more than 200 in July 1999. 7

Economies of scale in the production of ICT goods and services have led to increased concentration among suppliers. As a result, a few very large players who hold the power and set the rules dominate the sector. The Human Development Report 1999, commissioned by the United Nations Development Programme (UNDP), states that “by 1995 the world’s top 20 information and communications corporations had combined revenue of more than $1 trillion - equivalent to the GDP of the United Kingdom.” Ratios of concentration in the telecommunications and computer industries are extraordinarily high, even compared with other high technology sectors. In 1998 the top 10 corporations controlled 60% of total revenues in the computer industry, and a whopping 86% of the total in telecommunications.8

The large, dominant multinational ICT firms organize their production processes on a global basis, sourcing component manufacturing and labour in many countries, while centralising design, research and development (R&D) and other strategic and mission-critical aspects of production. The ICT sector is an intensive user of its own output, so firms in the sector are also leaders in computer-mediated production processes, information-intensive distribution and management systems and knowledge management systems, all of which rely on the use of sophisticated information technology goods and services. Organizational structures and innovations in the ICT sector are also setting the pace for other industries. As a result, the outsourcing practices, supplier management systems and lean organizational architectures of ICT firms are being heralded throughout many of the wealthy economies as models of best practices. Many ICT firms are leading proponents of globalization in terms of production processes and operations.

There is no doubt that the ICT sector, with its large global players and rapid rate of increase in revenues and stock-market valuations is an important part of the international capitalist structure. The sector has grown because its products and services are consumed and used for work and leisure by millions of individuals and organizations. However, as will now be shown, the pace and the effects of this growth are not the same in all parts of the world.

Vast differences
Despite the very rapid diffusion rates, the pace at which geographic expansion of the ICT sector has taken place has been slow and uneven. Much of the growth in ICT markets has come from rich countries, but even among the Organisation for Economic Cooperation for Development (OECD) countries, uneven growth rates exist. Figures for distribution of Internet hosts show that in July 1999, North America and Canada accounted for 65.3%, followed by Europe at 22.4%, and trailed by Australia, New Zealand and Japan at 6.4%. All other countries accounted for only 5.9% of Internet hosts. While these figures are only
for one ICT application, they are indicative of a broader trend: the concentration of the so-called *global information society* in the world’s wealthy countries.

Unevenness in the availability and use of ICTs is the starting point of this analysis of the transformation of ICTs for SHD. In wealthy countries, ICT infrastructure is widespread and ICT applications are widely used by businesses, governments and private citizens. The popular ICTs in the rich countries include telephones, electronic mail, Internet, e-commerce and cable TV. However statistics of ICT availability, presented in Table 1, show that across countries with varying levels of human development there are marked differences in the availability of ICTs.

**Table 1**

<table>
<thead>
<tr>
<th>Level of human development</th>
<th>Telephones per 1,000 people</th>
<th>Televisions per 1,000 people</th>
<th>Personal computers per 1,000 people</th>
<th>Internet hosts per 1,000 people</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>502</td>
<td>595</td>
<td>205</td>
<td>34.5</td>
</tr>
<tr>
<td>Medium</td>
<td>54</td>
<td>182</td>
<td>7.2</td>
<td>0.24</td>
</tr>
<tr>
<td>Low</td>
<td>4</td>
<td>36</td>
<td>Data not available</td>
<td>negligible</td>
</tr>
</tbody>
</table>

Source: adapted from UNDP *Human Development Report 1999*, Table A1.3 p. 53

<table>
<thead>
<tr>
<th>Income Level</th>
<th>Radios per 1,000 people</th>
<th>Televisions per 1,000 people</th>
<th>Telephone main lines per 1,000 people</th>
<th>Mobile telephones per 1,000 people</th>
<th>Personal computers per 1,000 people</th>
<th>Internet hosts per 1,000 people</th>
</tr>
</thead>
<tbody>
<tr>
<td>High income</td>
<td>1300</td>
<td>664</td>
<td>552</td>
<td>188</td>
<td>269.4</td>
<td>34.5</td>
</tr>
<tr>
<td>Middle income</td>
<td>383</td>
<td>272</td>
<td>136</td>
<td>24</td>
<td>32.4</td>
<td>10.15</td>
</tr>
<tr>
<td>Low income</td>
<td>147</td>
<td>162</td>
<td>32</td>
<td>5</td>
<td>4.4</td>
<td>470.12</td>
</tr>
</tbody>
</table>


Among developing countries, there is also unevenness in terms of the relative availability of different ICTs. As Table 1 shows, while rates of use for PCs are very low, in some developing countries as many as 20% of the people have access to some basic ITC services (e.g., television.) The penetration rate for radios in developing countries is even higher than for TVs.

A summary of recent empirical trends and data is presented in *Box 1*. These data confirm that diffusion rates have been slower in developing countries. They also show many other differences in patterns of ICT use and deployment across countries. These patterns are clear and unequivocal. But what explains the variations, and what impact do different rates of diffusion have on the effects produced by ICTs? These subjects are covered in the next two sections.
Virtuous cycles and positive effects

Several factors have stimulated the rapid diffusion of ICTs. These include technological innovation, economic restructuring in OECD countries, globalization, reorganization of production processes at the firm level, changes in the functioning of markets, and social and political changes. In wealthy countries the feedback from all of these changes has been positive. This has helped to create a cycle of change in which the diffusion of ICTs both produces and responds to change in the macro-environment.

Thus, in OECD countries, the cycle of change may be considered “virtuous.” The production, consumption and distribution of ICTs has responded to existing structural conditions by producing rapid growth, which has had positive effects on human development in those countries. Where the ICT sector has grown rapidly, there have been improved material benefits and the growth in the size and importance of the sector has contributed to shifts in social and political life. By increasing access to useful and relevant information and expanding communication opportunities, ICTs have also expanded opportunities for human well being in the cultural and private spheres. This virtuous cycle has taken place swiftly. It has also produced some early signs of the fundamental restructuring of economic, social and political life, leading to such labels as Information Age, Knowledge Age, and Global Information Society. More important than their symbolic value, however, is the fact that these changes have for the most part been welcomed and embraced by OECD governments and citizens. In that part of the world, the challenge has been harnessing and maximising the benefits of rapid diffusion.

In OECD countries, policy makers have been active in shaping and directing the production and use of ICTs so that the potential benefits of these technologies are maximised. Promotion of the ICT sector has focused on maximising the positive effects (e.g., producing wealth, creating jobs, increasing productivity and facilitating technological innovation.) Policy intervention has also increasingly turned to managing the negative social consequences of the use of ICTs, and to ensuring that there is equity with regard to access and distribution. For example, European policy makers have sought to understand how ICT development can produce social consequences that are undesirable and can reinforce existing social inequities, and to produce guidelines for ameliorating these negative effects.

Differences matter

The six facilitating conditions that have contributed to the rapid diffusion of ICTs and produced virtuous cycles of change in OECD countries do not produce the same effects in the rest of the world. Differences in rates of diffusion are mirrored by differences in effects and outcome.

To benefit from the rapid spread of these technologies, countries and/or groups within
them must be located within the virtuous cycle. The impact of the diffusion of ICTs has been very favourable in countries that host the global ICT production networks. These countries generate wealth and create value from service sector activities or ICT-intensive manufacturing. Effects have also been positive for groups that have the cultural orientation, skills and attitudes required for the use of ICT goods and services, as well as the time and income to access them for work and leisure. Producers of goods and services who extend their markets through access to broadband communication networks have likewise benefited.

The ICT sector itself sits within the virtuous cycle and reaps direct benefits from it. In fact, the sector is the fastest growing part of the global economy, and perhaps the most influential. Those participating in it as owners, managers, employees, subcontractors and shareholders have all reaped rewards. Technological innovation and change are taking place at an unprecedented rate within the field and this produces added benefits for active participants.

Section Two
EFFECTS OF RAPID DIFFUSION OF ICTS: TOWARDS A GENDER ANALYSIS

This section argues that the creation of a knowledge-based economy has not had homogenous effects across class, race and gender lines. It also points to an ever-widening gap between the groups that have the skills, competencies and resources to benefit from the knowledge economy and those that do not. Women are not all alike; there are those who are highly skilled, well endowed with resources and competencies, and whose incomes and work and leisure experiences have been improved by the knowledge-based economy. There is however, a much larger group of women who face barriers to participating fully and effectively in this economy.

Because there is very little dialogue between mainstream and alternative views in the ICT sector, there are “crowding out” effects when it comes to defining purposes and conceptual aims, as well as with regard to the design and operation of production systems and the regulatory contexts in which they operate. Favoured profits over public interest objectives, this trend produces negative effects on groups of women who are outside of or marginalised by market forces and have little opportunity for dialogue either with the powerful producers of ICTs or with the regulators of ICT firms. A transformed ICT sector will require that their voices be heard, and that they be given opportunities to assist in ensuring that ICTs benefit women and contribute to SHD.

Where do women fit into this virtuous cycle? First, the answer depends on the national origin of the woman; then on her class, race, age and position in society. As has been shown, only people in rich countries and members of the elite in poor countries have been entering the virtuous cycle.

Below is a detailed analysis of how and why the effects produced by the rapid diffu-
sion of ICTs are “gendered” (i.e., bound up with the characteristics and roles assigned to women and men by their societies.) As will be shown, the different outcomes for women in various societies arise from the gendered nature of the virtuous cycle itself, and as a result of gender relations within the ICT sector.

Claims made for ICTs’ positive contributions to SHD often do not take account of differences across countries. Often, too, these claims are based on erroneous assumptions that the diffusion of ICTs is gender neutral. Men’s and women’s experiences in the ICT sector are certainly not the same. Nor are the ways in which they relate to those conditions that lead to the rapid diffusion of ICTs, which can result in the creation of jobs and wealth, the improvement of skills, and enhanced welfare and well being.

Very few systematic studies of the effects and implications of ICT production and use have included a gender perspective. Therefore, the empirical foundation for understanding these phenomena is still being put into place. However there is a rich conceptual base upon which to draw in carrying out gender analysis of the ICT arena and recommending fruitful areas for research and analysis.

Applying a social relations framework to the diffusion of ICTs

The social relations framework (SRF) approach to gender analysis is associated with researchers and scholars at the Institute for Development Studies in the United Kingdom. It provides a useful basis for examining how ICTs might contribute to SHD and gender equality. The SRF focuses on the range of factors through which social institutions are constructed and reproduced and carries out gender analysis within specific institutional contexts. Gender is viewed as an aspect of social relations that is inherently a relationship of inequality between the sexes, derived from an unequal distribution of power.

Positioning itself as part of a project to understand and transform gender relations, the SRF has many similarities with other critical feminist approaches to gender analysis. As Miller and Razavi 1998 point out, in this approach gender is always understood as part of a broader social relations framework that includes class, ethnicity, age, religion, caste, etc. In addition, the SRF allows for intersection among these elements of social relations, acknowledging that they can override each other and thereby assume different levels of analytical importance. It goes further than other approaches to gender analysis in problematising gender-differentiated roles and responsibilities and gender divisions in access to and control over resources. These differences are seen as arising from power imbalances between men and women, with women in the subordinate position. The SRF thus views the process of changing gender divisions as one involving conflict, bargaining, negotiation and resistance. Concerned with changing gender relations as they now stand, it is critical of mainstream approaches to development that focus more on economic growth and privilege efficiency than on equity and human well being. It disputes the claim that development interventions are benign and implemented by technically neutral actors. Power differentials and their impacts are analysed at the organizational and institutional levels, within the family, community, market and state.

These underlying premises make the SRF approach particularly well suited to the task of determining how the ICT sector, and the effects of the rapid diffusion of its products and services, can serve SHD and gender equality. The conceptual tools and insights of
this approach are used below to show how gender relations in both the ICT sector and the rapid diffusion of ICTs disadvantage women, as well as what needs to be done to transform these relations.

**Effects of rapid diffusion of ICTs on gender relations**

The rapid diffusion of ICTs takes place through organizations and in institutional settings where there are socially embedded gender relations. A number of processes within the ICT sector, and inherent in how it interacts with society, contribute to a continued uneven distribution of power between women and men, as well as to their unequal access to resources. These processes may be found within the rules, routines and practices of ICT firms, the markets for ICT goods and services, individuals’ and groups’ consumption of ICT goods and services, and the macroeconomic environment in which diffusion of ICTs takes place.

**Distribution of power between men and women within ICT firms**

In technologically intensive industries such as ICTs, power and status are strongly correlated with capabilities for the creation of new knowledge or the application of knowledge to the production of new goods and services. In ICT firms, employees in some technological and professional categories are viewed as being central to the innovative performance of the company. Since in fast-changing industries a firm’s innovative performance determines its competitive position, people in the forefront of innovation are rewarded, given authority and status and enjoy other less tangible benefits such as improved self-esteem. In ICT firms, the innovative heartland is a male preserve, peopled by engineers, computer scientists, mathematicians and experts in other technology disciplines.

The gender biases limiting women’s access to and experience of science and technology (S&T) training result in women’s under representation in these high-status positions within ICT firms. There is considerable evidence on the biases that exist within the institutional settings, curricula and practices that produce these S&T professionals, and on the ways in which these gendered processes disadvantage women and contribute to an uneven distribution of power between women and men. Male and female graduates of technological educational processes carry this legacy of power imbalance into the workplace, where they occupy roles and behave in ways that perpetuate it. As a result of biases in the recruitment pool, in ICT firms women are underrepresented and are relegated to low-status jobs while men are disproportionately represented in positions of authority and high status.

In addition to these factors outside the technologically intensive industry itself, there may be processes at work within ICT firms that create environments that are not particularly well suited to women. The “flexible” employment practices common within the global ICT industry tend to affect women more adversely than men, increasing their job insecurity and reducing their income earning potential. Pay equity is less likely to be implemented in firms with flexible employment policies than in those with more formalised, regulated approaches to setting wage and remuneration levels. An absence of collective bargaining and individualised contracts is also common in these firms. With labour markets flexible, many more women are retrenched, particularly at times of economic crisis or recession.
Values found in ICT firms (i.e., the organizational culture) may also put women at a disadvantage. The corporate style of these firms is usually comprised of attitudes and behaviours that are considered “masculine.” People who are aggressive, take risks, are single-minded, make quick decisions and pay attention to the “bottom line” are accorded high value and status. The groups in ICT firms that enjoy high status and power are made up of men and women who exhibit these traits while other employees are marginalised. In this climate, women are particularly at risk: those who exhibit the behaviours that lead to success for men may be labelled deviant or unfeminine and still fail to reap the same benefits as their male counterparts.

Given the evidence that retention rates for women in S&T fields are low, and the studies which have shown that S&T employers do not provide suitable workplace environments for women, and that women do not enjoy pay equity, face many attitudinal problems on the job and may also experience sexual harassment, much more work is needed to examine the workplace conditions and organisational climate in 21st century ICT firms.

**ICT markets as carriers of gender bias**

In the SRF approach to gender analysis, and in the writings of critical feminist economists, markets are viewed not only as spaces for buying, selling and setting prices, but also as social constructs within which gender hierarchies operate. The rules governing ICT markets, the regulatory structures and policy objectives of the ICT industry, and the behaviours of ICT firms within the market (e.g., co-operation, competition, collusion) are all understood from a gendered perspective. What are the implications for the ICT market?

The majority of the trade and consumption of ICT goods and services takes place in competitive markets, in which large, privately owned transnational firms are the most important and influential actors. However, even at the most basic level of interaction with ICTs, as consumers, women are underrepresented, inasmuch as their use of ICTs is below their share in world population.

There are very few cogent explanations of this under representation of women with the ability to pay among ICT users. In developing countries, the small number of women users can be understood because the majority of women in poor countries cannot afford access to ICTs and their supporting infrastructure and frequently lack the skills required for their use.

As ICT markets become more liberalised they are increasingly controlled by firms intent on maximising profits, which set prices and standards, determine employment practices and control the choice of technology, as well as research and development (R&D). This market structure has many implications for gender equality and human development and these affect

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**Box 2**

**Signs of positive change?**

Mitter 1999 and Gothoskar 1999 provide recent evidence from India’s software service sector indicating that traditional attitudes that fail to hold women in high esteem may be less prevalent in this new sector of the economy. It would be useful to determine whether such attitudes are changing elsewhere, and if so identify causes.

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**Box 3**

**Women’s use of ICTs**

One set of figures on the use of ICT goods and services states, “Women accounted for 38% of users in the United States, 25% in Brazil, 17% in Japan and South Africa, 16% in Russia, only 7% in China and a mere 4% in the Arab States.” These different patterns of use start early. In the United States, boys are five times more likely to use home computers and parents spend twice as much on ICT products for their sons as they do for their daughters.

women in rich and poor countries differently.

Women in rich countries, with the ability to pay, may find that private firms seek them out as customers for a specialised market segment. There is already some evidence of this as, in wealthy countries, the fastest growing use of ICT services by women is for electronic shopping.

For women in poor countries, market forces produce impacts other than expanded “choices.” Pricing outputs in accordance with the determinants of the market, so as to maximise profits, means that goods and services are produced when they can be sold, not necessarily when they are needed. The market also relies on revealed preferences to determine what kinds of goods and services to produce. As a result, potential consumers who are unable to make their preferences known due to insufficient income, lack of skills, physical distance, or lack of awareness of what is currently available are unlikely to be provided with the goods and services they would most like to have. Market forces acting on their own cannot maximise social benefits and, by failing to serve the needs of potential consumers, the market is not optimising the impact of ICTs on SHD.

In privatised markets, private sector companies influence public policy imperatives. This is happening at both national and international levels as policy formulation and implementation processes are carried out by public entities in partnership and consultation with private sector firms. But are private sector firms benign actors? As shown above, ICT firms are gendered and their actions and values do little to reduce imbalances in power between men and women. Thus, in ICT markets, the trend toward letting the market and private sector firms determine public interest is likely to be disadvantageous to women, and to continue gender inequality, especially for poor women in developing countries.

In developing countries women face many barriers restricting their levels of ICT use, including lack of income, lack of time and lack of training. This means that most women in these countries do not enjoy the potential benefits of these technologies such as an extension of communication networks and access to a wider scope of information. Therefore, strategies to remove the barriers and increase women’s access to information and the media through which it is disseminated must be devised to respond to individual country conditions.

Policies and regulations for ICT markets are derived from a mix of formal and informal processes that take place within multilateral bodies, development organizations, private sector firms, national government structures, committees, working parties and professional bodies and industry associations. The regulatory requirements of policy objectives are expressed in various forms ranging from intergovernmental treaties to voluntary agreements between firms. The SRF approach to gender analysis convincingly argues that both the formal procedures in organizations and the informal processes elsewhere through which policy formulation and planning are carried out are gendered. It also shows that technical professionals working in organizations operate within gendered frameworks that ascribe value, status, legitimacy and priority to traditionally male preserves.

Box 4
Markets failing to deliver telephone services to rural women

A good example of how market failure can have a gendered impact may be seen in the failure of competitive African telecommunications markets to deliver services to rural communities. This situation has meant that women, who make up more than 70% of Africa’s rural population, are not well served by modern telecommunications services.

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These insights can be applied to the ICT market and its associated planning and policy processes to explain why gender perspectives are marginalised and undervalued in national and international policy making for the ICT sector. Both the production and the regulatory aspects of the ICT sector require transformation. The ACACIA initiative, run by the International Development Research Centre (IDRC), is a good example of a programme that attempts to increase the participation of representatives of marginalised communities in policy-making processes for the ICT sector.

The organizations that collect data on ICTs and development, such as the ITU, rely heavily on quantitative rather than qualitative indicators and do not produce gender-disaggregated data. Data series and investigations using qualitative methodologies are needed to more accurately represent the effects of private markets on women’s access to ICTs.

Interaction of ICTs with existing barriers to gender equality

Use of ICTs in different types of economic activity has led to the reorganization of production systems, which has had a dramatic impact on the composition of input requirements. There is a move towards greater relative use — and an increase in the importance of — skilled human resources and knowledge inputs. These changes make it imperative for societies to produce personnel with new skills and knowledge, adopt and cope with a rapid pace of skills acquisition, and effectively apply new skills and knowledge in reorganised production processes.

ICT-facilitated changes in production processes do not automatically increase opportunities for women. The effects are indirect and work through women’s access to education, training and literacy skills. The impact is favourable for women who have the skills and knowledge required, or access to the resources needed to acquire them. Not benefiting are women who are members of those excluded, marginalised groups of citizens who have neither the requisite capacities nor opportunities to prepare themselves to meet the new needs. Since these women usually encounter structural and legal barriers which prevent them from gaining new knowledge and skills they are likely to remain within those marginalised groups.

What are these barriers? First of all, training and education systems are not organized to produce equality of opportunity. Secondly, biases according low value to women’s existing skills and experience prevent them from being given opportunities for training that could help them to move into new jobs created by changes in the workplace. Unless women gain increased access to training in scientific and technological fields it is likely that even greater numbers of them will be disadvantaged by ICT-facilitated changes yet to come.

The macroeconomic dimension: globalization

Section One of this paper concluded that the effects of ICTs on the functioning of markets are not equally beneficial to countries at different levels of development. In the same way,
it will now be shown that globalization, the macroeconomic context in which ICTs have been diffused, does not necessarily favour gender equality, and that it is responsible for different impacts on various groups of women.

Rapid diffusion of ICTs has contributed to and benefited from globalization. This has led to firms effectively increasing the size of their market reach; greater market transparency; an increase in the commercialisation of traditionally unpaid work; a larger volume of information being transmitted; rates of market transactions moving at a faster pace; and diversification of sources of information. While all this has produced some gains in efficiency, the results have not been unequivocally positive.

The success of the rich countries in promoting growth of the knowledge sectors, and in achieving high GDP growth rates through expansion of the knowledge economy, has diverted attention from the uneven track record across and within countries. The rapid diff-

**Box 6**

**Women’s barriers in ICT training**

Data on gender discrimination in education and training do not offer bright prospects for equal opportunities for women in disciplines associated with the ICT sector. In all developing country regions, rates for female adult literacy, secondary school enrolment and enrolment in science classes are less than rates for males. For example, UNESCO data reported in the UNDP *Human Development Report 1999*, Table 25 229-232 show the following:

**Gender Gaps in Education**

<table>
<thead>
<tr>
<th>Region</th>
<th>Female Adult literacy</th>
<th>Female net</th>
<th>secondary enrolment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>As % Male</td>
<td>As % Male</td>
<td>As % Male</td>
</tr>
<tr>
<td>Sub Saharan Africa</td>
<td>49.6</td>
<td>75</td>
<td>35.8</td>
</tr>
<tr>
<td>East Asia</td>
<td>75.4</td>
<td>83</td>
<td>66.4</td>
</tr>
<tr>
<td>south-east Asia &amp; Pacific</td>
<td>84.4</td>
<td>91</td>
<td>56.9</td>
</tr>
<tr>
<td>South Asia</td>
<td>38.6</td>
<td>60</td>
<td>46.0</td>
</tr>
<tr>
<td>Latin America &amp; Caribbean</td>
<td>86.2</td>
<td>98</td>
<td>65.8</td>
</tr>
</tbody>
</table>

Regional studies carried out by the Commonwealth of Learning have shown that the barriers faced in access to education and training militate against women having access to training in ICT related skills and disciplines. The existing structural, attitudinal barriers threaten to further marginalise women from a fast moving technological field where high-level skills, continuous learning and skill upgrading are required.20
fusion of ICTs has been achieved and facilitated by globalization processes that have produced several negative outcomes: significant increases in income inequality, job insecurity, skill shortages and privatisation of knowledge creation. Women, more than men, have suffered from these unfortunate effects of globalization. Therefore, any interpretation that sees rapid diffusion of ICTs as having a positive impact on gender equality needs to be qualified.

Within the framework of globalization, the purpose of development is assumed to be the geographic expansion of private markets, which is believed to produce expanded opportunities for economic growth and productivity. An improvement in human well being is seen as a by-product rather than as a goal of development. But globalization has often failed to produce this by-product, even when it has led to improvements in material well being. Shifting priority away from well being as the primary goal of development is disadvantageous to women, since they are less likely to participate in the expansion of private markets. Changing the focus to economic growth also entrenches approaches to development that do little to promote gender equality and social justice. Rapid diffusion of ICTs within the context of globalization has achieved just this result.

The UNDP-commissioned *Human Development Report 1999* provides an excellent summary of the effects of globalization (which for our purposes is seen as an ICT-mediated process) on the provision of care in societies. As that analysis shows, the reorganization of commercial processes, orienting them towards global markets and market-based transactions, can produce fundamental changes in the way care-related services are provided, including those for the care of children, the sick and the elderly, and reproductive and community management services. This can have deleterious effects on human well being.

For most women, globalization has meant more work. For while women have begun to participate more actively in formal labour markets and the globalized marketplace, the burden of their unpaid work in domestic and private settings has not lessened. The *Human Development Report 1995* estimated that women spend two-thirds of their working hours providing services for which they receive no income. This unpaid work is not market-based, and the increasing efficiency and globalization of markets may result in an ever-widening gap between women’s non-market-based and commercial activities. Also, as the provision of personal services moves increasingly towards the electronic marketplace, it will be important to determine how women’s position as providers of these services is affected.

Globalization has also led to increased volatility in international capital markets as these markets have become more transparent and acquired faster transaction processing capabilities. This, too, may not be beneficial for most women. (See box 7.)

Globalization produces stresses and strains that impair the functioning of families and communities. This has adverse effects on women in poor countries and also changes the ways in which women in all societies contribute to human well being. Since globalization has contributed to rapid diffusion of

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**Box 7**

**How do volatile financial markets affect women?**

One example of how “improvements” in global financial markets, with their increasing risk of volatility, have not benefited women comes from the Republic of Korea (ROK). During the Asian financial crisis of the late 1990s, employment declined by 7.1% for women between April 1997 and April 1998, compared with 3.1% for men. During this same period, the number of ROK women suffering domestic violence rose.

ICTs, a gender analysis should include consideration of the potentially negative as well as the positive effects.

Of course all women are not in the same position. Women who are commercial producers and distributors of goods and services may, under certain conditions, be able to benefit from the changing basis of competition brought about by the electronic mediation of commerce. Women producers may survive and compete effectively if they have access to information, and the skills to effectively integrate ICTs into production and distribution processes. Acquiring these skills and competencies is just as important for these women producers as it is for the workers who are employed in ICT-intensive production processes.

Globalization produces winners and losers. When women’s businesses are among the winners, the effects of globalization on gender equality may be positive. Conversely, if women’s businesses are among the losers, the impact on gender justice may be negative. Women are most likely to benefit when the changes produced by ICTs and globalization do not support or reinforce existing barriers to their economic participation in global markets, and when they contribute to more equity in the rules of international engagement.

**Individual, household and community level effects**

The impact that the rapid diffusion of ICTs can have on social relations at the household and community level may be both direct and indirect. Since there are cultural values associated with the consumption of ICT goods and services, this consumption may affect gender stereotypes and thereby has the potential to alter gender relations. Because they are closely related to processes of identity formation, information and communication can have direct impacts on gender relations, changing perceptions, status and roles. Whether the use of computer mediated communication has had a positive or a negative impact on gender relations can be ascertained by determining its effect on gender roles.

It is often the content or substance of what is communicated through ICTs (i.e., the “message”) that produces the effect on identity formation. For example, ICTs have been praised as attractive tools for women’s political organizations as it is said that the messages they communicate can raise women’s confidence and self-esteem. Civil society and other organizations have argued that providing more “women’s” content on ICT networks could help to enhance women’s status. But while there are numerous projects aimed at increasing the volume of progressive messages distributed through these media, few systematic studies have been carried out on the effects of women’s content in new media on gender stereotyping and gender roles.

Women consumers may or may not affect gender relations by using more ICTs. To understand the effects of consumption, more information is needed on the impact that use of these technologies has on the particular concerns of women consumers, and on the extent to which their use produces harmful consequences such as on-line pornography and harassment.

Many of the accounts given by civil society organizations and development agencies suggest that use of ICTs produces benefits for gender relations by providing efficiency gains for women’s organizations, and by helping women to communicate with their constituents and disseminate their objectives and ideas. (See Section Three on Uses of ICTs for women’s empowerment.)

As more women use ICTs for electronic shopping and other forms of consumerism the
increases in women’s participation in the global information society will be embedded in particular sets of values and practices. This will have implications for the goal of transforming the ICT sector. If the aim were only to integrate women into an un-transformed sector, the propensity of the ICT sector to inculcate values of materialism and elitism would not be a concern. Since these values are not conducive to SHD, transforming them must remain on the agenda.

Political negotiation of gender relations
Gender relations in the ICT sector need to be replaced by forms of social relations that further gender equality. This will require political negotiation between groups and individuals that have power and those that do not. The next paragraphs will assess how far that power redistribution process has gone and consider what kinds of processes would assist in speeding its progress. A failure to transform social relations in the ICT sector will mean a continuation of the status quo with regard to the rapid diffusion of these technologies: many women will not benefit and gender equitable human development will not result.

Limited participation of women in decision-making
Decision-making in the ICT world affects what the sector produces, how it organizes production and the ways in which it interacts with society. The most important decision-making structures are boards and senior managers of private ICT companies; senior managers and advisors of policy and regulatory organizations such as the International Telecommunications Union (ITU), the World Trade Organization and the World Intellectual Property Organization; technical standards-setting organizations; industry and professional organizations such as the Internet Society; national policy and regulatory organizations; line ministries responsible for the ICT sector; and international development organizations and agencies. As has been shown, existing systems of production and organization negatively affect women and perpetuate traditional systems of gender relations. The fact that women are under represented at all of the sector’s top levels does not augur well for the redistribution of power. Advocates of gender equality have little access to the decision-making structures.

In other sectors, empirical evidence indicates that as the number of women in senior decision-making positions increases, so does the attention paid by organizations to gender equality concerns. Thus, the under representation of women in the ICT sector is worrisome because many more women than men are concerned with furthering gender equality objectives.

However, women who hold senior decision-making and politically influential positions in the ICT sector are effective entry points for gender mainstreaming and, since women’s representation at senior levels is the ICT sector is abysmally low,
pursuing strategies to gain entry for women is a laudable intermediate objective. Still, increasing the number of women who effectively participate in decision-making in the ICT sector will, at best, be only a proxy measure for putting gender equality on the agendas of those structures. It will not in itself be sufficient for transforming the objectives and practices of the sector. Success in integrating gender equality will also require commitment of financial and human resources, top leadership support and a change of practices and attitudes at all functional levels, even among women. Just being a woman is not enough. Women in decision-making structures also need to be accountable and to act as agents of transformation and change.

To improve the present situation it will be necessary to periodically collect data on women’s participation in ICT decision-making processes, track and closely monitor trends over time, and lobby for the recruitment of women to senior positions. It will also be essential to ensure that women in these positions are accountable to a broad constituency concerned with human development and gender equality.

**Crowding out effects**

ICT firms and the formal institutions that set policies, standards and regulations for them are regarded as technical and professional bodies that give little thought to social considerations and political processes. However these organizations are actually infused with politics inasmuch as they exist in male-dominated environments that value masculine characteristics and behaviours.

The sector’s decision-makers tend to hold technologically deterministic views of development. They see the diffusion of their products and services as automatically leading to outcomes that are benign and universally beneficial and fail to incorporate in their operations, processes for evaluation, assessment and reviews of purposes, meanings and results. Their policies and practices are defined by a single interest group and there are few opportunities for other standpoints to compensate for that group’s blind spots and shortcomings.

This “crowding out” of alternative views in the ICT sector is not accidental. The history of technology is rife with examples of powerful and influential interest groups directing change for their own benefit. Women’s interests and SHD objectives are outside mainstream thinking in the ICT arena. The under representation of women and the lack of openness and democratic participation in decision-making structures has the effect of reducing the power and influence of alternative views. Thus, the groups putting forward these countervailing opinions fail to command attention because they lack power and their legitimacy is questioned. There are quiet and persistent voices calling for reorientation of the ICT world

**Box 9**

**Gender equality in telecommunications regulation and policy**

Member states have not done much better than the ITU. In Appendix One, data on women’s participation in regulatory bodies for those countries that responded to the 1999 ITU Regulatory Survey show under representation of women at senior decision-making levels in bodies which should draw on persons from a variety of backgrounds. These data also show a trend for countries to regard telecommunications regulation and policy as “gender neutral,” and as such, requiring no special interventions.

South Africa was an exception to this rule. Its Telecommunications Act 1996 includes provisions for the government to take steps to encourage the participation of women in all aspects of the industry. Other countries, while not having legalisation affirmative action provisions, have good track records on promoting gender equality in telecommunications (e.g., Canada through Industry Canada, CIDA and IDRC.)
towards human well being, but these interventions are pitted against the loud clamour of the “more gadgets and faster speed” interest group.

If technology innovation, production, policy making and operation are seen to be socially constructed processes, then the nature (or absence) of dialogue between users and producers is significant in determining how these processes function and the effects they have on society. In fact, there is not even any consensus on what “putting ICTs to use in the service of human well being” means. When systems that will enable consumers to order pizzas from hand-held multimedia gadgets occupy the R&D budgets of major ICT corporations, and when this problem is considered worthy of the informatics industry’s “best and brightest,” it is clear that alternative voices hold little sway.

Crowding out can also mean that “modern” devices replace indigenous technologies and local knowledge systems under terms and conditions that are disadvantageous to the producers of indigenous knowledge. To realise its full potential for SHD, a transformed ICT sector will need to determine the effects of ICT mediated production, consumption and distribution on local knowledge systems. Given the concern for gender justice, it will be essential to know whether the growth of the knowledge economy recognises and attributes value to women’s knowledge. It is also important to ascertain whether or not women face any disadvantages in creating and distributing their knowledge through the new channels of knowledge dissemination.

As has been shown, women face barriers in acquiring the skills and competencies necessary for functioning in ICT mediated production, consumption and distribution processes. These ICT-based processes are becoming the dominant means of organizing work, leisure and the provision of social services in wealthy countries, replacing other methods of organization. But while women’s knowledge has contributed to the design and operation of many of the systems that are being replaced, women have very little power or influence in determining the nature of the transition from non-ICT intensive to ICT-intensive modes of production, consumption and distribution. They are thus losing opportunities to direct the transition process and this implies that they are at significant risk of being among the losers in that transition.

If societies and economies are going to be radically and fundamentally transformed, the direction of change should not be determined by a single constituency, no matter how powerful, enlightened or well endowed. Processes of negotiation are required and transitional mechanisms and problem solving approaches need to be designed to handle difficult and intractable ethical dilemmas. The process of transition should be based on a set of values that sets securing improvements in human well being as its overarching objective. The ICT sector is currently organized along patriarchal, non-democratic and elitist lines, wherein human well being is made subordinate to the profit motive. Reform of the sector requires a reorientation of purposes and practices. Efforts to include and value voices of alternative vision — among them, those of women’s interest groups — can only benefit the reform process.

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**Box 10**

**R&D for the world’s needs**

The *Human Development Report 1999* notes that the trend towards the privatization of R&D is inimical to the creation of knowledge in the public interest. It calls for institutional innovation to ensure that research once again turns towards serving the needs of the world, not just those of the well-endowed elite. For the communications sector, the report recommends R&D efforts to develop “personal computers powered by solar strips and wind-up or dynamo drives, resistant to humidity; software for touch screens and prepaid card software for electronic commerce without credit cards.”

Section Three
TRANSFORMING GENDER RELATIONS IN THE ICT ARENA: PROGRESS, CHALLENGES AND STRATEGIES

This section reviews efforts underway to transform the ICT arena. It examines:

a) how women and women’s organizations are using ICTs as tools for achieving practical and strategic objectives;
b) ideas put forward by gender and development thinkers and practitioners with regard to ICTs, women’s empowerment and SHD; and
c) the extent to which change has already occurred in practice in the ICT sector with regard to the redistribution of power and the alteration of existing gender relations.

The reference list and selected list of resources cite many individuals, women’s organizations, academic institutions and development agencies, in a variety of regions, that have used ICTs as tools to further SHD, contributed ideas on ICTs and development and addressed practice within the ICT industry.

As has been shown, transforming gender relations in the ICT sector and reorienting it towards SHD goals will require more than integrating women into the sector as it now exists. Action must also go beyond ensuring that more women gain facility (and even expertise) with present ICT tools and applications. Women and men active in the sector will need to direct their energy and creativity towards producing and distributing ICT goods and services that deliver benefits for meeting human development objectives. A significant redistribution of power relations in the ICT sector must also take place.

Advocates of women’s empowerment are already engaged in many different types of activities that can contribute to a transformation of the ICT sector. Nevertheless, there are many gaps in the existing range and scope of efforts aimed at orientating the sector towards SHD and gender equality. Therein lies a serious challenge.

ICTs as tools for the advancement of women

Organizing in the global women’s movement

Despite unevenness in the growth and spread of ICTs, groups within the global women’s movement have been able to make good use of ICTs for practical and strategic objectives. Many accounts produced by the movement, and particularly by women’s media and communications for development professionals bear witness to this fact. Civil society organizations have made intensive use of ICTs in carrying out a range of functions and those working for gender justice have reaped many benefits through organizational efficiency and cost savings. Organizations in the women’s movement have also used ICTs to expand their access to information sources, improve the effectiveness of their lobbying, widen the reach of their information dissemination activities and increase the extent to which they are internationally integrated. All of these benefits accrue from even very basic use of ICTs. They increase by several orders of magnitude when civil society organizations
become expert users of the Internet and other related networking applications such as electronic conferencing, E-mail, etc.

**Collection and dissemination of gender-related information**

Many organizations in the women’s movement, and working in SHD, rely on ICTs to collect, organize and disseminate development-related information that is used to move towards SHD objectives. Information and media organizations that produce “women and development” content for distribution across ICT networks have also seized opportunities provided by expanding media channels. A growing number of specialist information providers are ensuring that rapidly exploding new media include material addressing women’s empowerment and SHD issues.

**Monitoring and protection of women’s human rights**

The Internet is being used as a tool for the monitoring and protection of women’s human rights through an interesting collaborative project, *Women’s Human Rights Net*. This is an electronic network linking over 50 international women’s human rights organizations for information sharing, campaigning and capacity building.

**Providing an affordable means of private and professional communication**

Also noteworthy are projects that use existing ICT applications and networks in new combinations to provide women with affordable information and communication services. These projects include telecentres, which make special provisions to afford women equitable access to discounted facilities, and multipurpose community centres, which offer applications that specifically benefit or are targeted to women. Examples include women-run projects such as telephone kiosks and telecentres in Cameroon, Senegal and Ukraine, and the Grameen Phone project in Bangladesh. These projects are able to offer affordable communication services to women through co-operative arrangements, the extension of micro credit or entrepreneurship.

**Integrating women producers within global production systems**

Few programmes have succeeded in shielding women’s productive efforts from the ravages caused by changes in global production systems. However there has been limited success as a result of increased subcontracting and the globalization of production processes in many Asian countries. Teleworking at home as a mode of integration into globalized production systems offers opportunities for women to acquire skills, earn income and combine paid employment with unpaid household work. Policy challenges surrounding teleworking are related to health and safety provisions, job insecurity, discriminatory terms and conditions of employment, and unfair terms of access to capabilities and technology.

Despite progress, projects and programmes that use ICTs as tools face many problems. Civil society initiatives in particular are threatened by lack of funding, inadequate technical resources, the rapid pace of technological change, under-investment in training and lack of continuity. The combined budgets of all efforts that use ICTs as tools to demonstrate their positive impacts on gender equality and SHD probably total less than US$100
Helping women take advantage of global markets
Many small-scale pilot projects on women and electronic commerce aim to ensure that women producers have access to larger markets for the distribution of their goods and services. However, there are very few systematic studies of the effects of the globalization of markets on the commercial fortunes of women producers. It is not possible to draw general conclusions from the limited data available from the pilot projects. What the evidence does show is that e-commerce can provide opportunities for entrepreneurs with the right capabilities, working under particular conditions, to expand the reach of their distribution.

Ideas on gender, ICTs and SHD
Many different intellectual contributions have dealt with the transformation of ICTs. Very early literature in this field endeavoured to persuade national governments that investment in ICTs was worthwhile and beneficial. Initial writings also showed that systems of distribution and the availability of ICTs were skewed in favour of wealthy countries (and within them, their urban and well-heeled classes) and sought to establish the legitimacy of rural populations’ right to access ICTs. The celebrated Maitland Report and a series of related papers were prepared in this vein and very much set the intellectual stage. However, none of that early work made a distinction between the experiences of men and women as intended beneficiaries of the expansion in access to ICTs.

Other studies have examined the tendency for technological change to be strongly biased in favour of particular groups and to exclude other groups. The United Nations University (UNU-INTECH), the International Development Research Centre (IDRC) and the European Union (EU) have all produced analyses of social exclusion.

A UN Commission on Science and Technology for Development (UNCSTD) study has tackled the question by focusing on institutional and technical capabilities, pointing to the need to build national strategies for development of the ICT sector. The UNDP’s Information & Development Programme, the regional contribution of the UN-Economic Commission for Africa and the World Bank Knowledge for Development Programme can likewise be read as efforts to provide guidance to developing countries on how they should develop their ICT sectors, assuming that this will produce benefits.

As a contribution to the Fourth World Conference on Women in Beijing in 1995, UNCSTD undertook a comprehensive study of the relationship between gender, science & technology (S&T) and development. The individual contributions and the synthesis report and recommendations established that there are gender-specific aspects of the ways in which S&T systems interact with societies and their developmental processes. These studies of gender, S&T and development conclusively showed that in a wide range of technological developments there are significant aspects of differentiation in levels of access to, control of and benefits resulting to men and women. The barriers facing women in S&T fields as diverse as environment, health, energy, education and agriculture included unequal access to education and training, unfair distribution of financial and technical resources, limited participation in decision-making and control, socialisation pressures and
the devaluation of women’s knowledge.

The UNCSTD project included specific components on the ICT sector (e.g., the examination of trends and impacts of ICTs on women’s employment in Mitter and Rathgeber’s study of barriers in education and training.) The contribution of IDRC’s Information group to that volume documented some of the early progress women and women’s organizations made in using ICTs as tools.

The UNCSTD Gender Working Group (GWG) studies concluded that women, particularly those in developing countries, face gender-specific barriers (socialisation, labour market segmentation, unequal access to education and training, etc.) in harnessing ICTs for their benefit. But these studies also found that there were potentials for ICTs to provide women with opportunities for expansion of their economic enterprises, as well as for positive social, political and cultural change. This early work addressed neither gender relations within firms in the ICT sector, nor how the organization of the ICT sector reinforced existing gender inequality.26

More recent work that has taken up the theme of orienting ICTs to development aims can be found in Marcelle. 27 In these pieces the emphasis is squarely on policy reform within the ICT sector to include SHD as a core rather than a secondary objective. Using empirical case material from the African region, this author has argued that unless the purposes of the ICT sector are redirected away from purely private-sector interests, the sector will continue to under perform in its contribution to development aims. A singular focus on maximisation of profit and reliance on market mechanisms leads to classic market failure with under investment in social and institutional capital, restrictions on growth of supply and lack of creativity in stimulation of demand. This has resulted in the global information society being the preserve of a minute percentage of the world’s citizens, as illustrated by the dismal statistics shown earlier. Contesting promotion of the ICT sector as it now exists, as a means of enhancing private sector interests, is a very timely idea, given current reflection on the growing inequity caused by globalization and laissez faire economic policies.

Two recently completed UNU-INTECH research projects have delivered empirical evidence of the effects of rapid diffusion of ICTs on gender relations within firms and markets. The results from those studies, while not particularly encouraging, provide evidence that rapid diffusion of ICTs has produced beneficial impacts for women as a result of actions by trade unions, women’s co-operatives, enlightened private sector firms and the state. 28

**Practice in the global ICT sector**

Work is under way to use ICTs as tools, and to change the thinking behind the purposes of the ICT sector. But as will now be shown, these efforts have not yet had a major impact on practices within the sector globally.

The ITU Task Force on Gender Issues has the potential to be an influential body in terms of changing practices within firms in the telecommunications and information technology sector, and within the global regulatory framework for telecommunications policy. The Task Force was set up in 1998 as a quasi-advisory body affiliated with the Director of the Bureau for Telecommunications Development (BTD) of the ITU. Since its inception it has worked to fulfil its ambitious mandate of “ensuring that all programmes, projects of the ITU Bureau for Telecommunications Development take into account a gender per-
spective.” The current work plan of the Task Force goes further, stating that its activities are designed to achieve the following strategic objectives:

➤ Ensure that women have equitable access to the benefits of telecommunications and are not disadvantaged by sector reform and industry changes;
➤ Design and provide telecommunications technologies and services which take account of women’s needs and requirements;
➤ Increase women’s participation in all levels of the telecommunications sector.

A mid-term evaluation of the work of the Task Force would show that it has been effective in raising the profile of gender inequality in telecommunications policy. As result of Task Force activities, the BTD has now included gender issues in all of the main messages concerning its development activities. Thus, gender has certainly found its place in the work of the ITU at the rhetorical level. However the pace at which the BTD’s work programme has produced deliverables with significant positive outcomes for gender equality has been slow. There are plans for projects that specifically target women, studies that aim to produce a better understanding of the impact of existing interventions on women, and a project to build capability in reorienting telecoms policy so that it produces results which do not disadvantage women. As with the efforts to use ICTs as tools, even these modest improvements have been won through the valiant efforts of external and internal change agents, working under difficult conditions with little institutional support.

Like so many important efforts for gender mainstreaming, the ITU Task Force on Gender Issues has had to struggle with a host of problems. These include lack of authority, inadequate financial resources and budgetary insecurity, co-option of its mandate, fragmentation of effort, lack of integration with ITU staff functions, voluntarism and lack of formal decision-making and governance arrangements. All of these are common problems faced by new organizations and often associated with civil society. They may be seen as barriers erected as forms of resistance by an institution that is reluctant to transform. This example of great potential on the one hand, and a combination of inertia and active resistance slowing down the rate of progress on the other, can be multiplied many times over in other policy setting institutions, and in the firms that produce ICT applications and infrastructure.

The global ICT sector is facing a crisis of human resources. As the pace of technological change has accelerated, requirements for skilled human resources have also increased dramatically and supply has not kept pace with demand. Firms where conditions of work and remuneration are disadvantageous for women are not able to attract and retain talent. Therefore, even at an instrumental level, the private sector should be interested in updating and reforming employment practices in line with principles of gender equity.

Much more work is needed to increase knowledge of how gender relations are constituted in the ICT sector, and to design strategies for change that build on a deeper understanding of change management in settings where conflict, resistance and unequal power relations are part of the organizational context.

One strategy for change would be to undertake transformation of the ICT arena through horizontal coalitions of like-minded groups that have the potential to generate rewards. The international women’s movement has particular strengths for taking on such a project and these could be combined with the strengths of other knowledge creators and practitioners to bring about change in the ICT arena. Development agencies such as UNDP should support and create fora that bring a wide cross section of reform-minded interest
groups together to work on transformation of the ICT sector. There are additional benefits for development agencies, since animating horizontal coalitions will also challenge internal bottlenecks. Building horizontal coalitions to bring about transformation of the ICT and development arena will provide an opportunity for cross-fertilisation in terms of knowledge, skills and understanding and this should have a good chance of increasing the influence wielded by people with alternative viewpoints.\(^29\)

At both national and international levels, participation of the international women’s movement in the policy-making aspects of the ICT sector has been limited. The same sort of lag experienced by the movement in beginning lobbying and advocacy at the macro-economic policy level presently exists in the ICT arena. Much of the activity is still focused on promoting the use of ICTs as tools rather than on lobbying, policy formulation and other forms of critical engagement. The under representation of women at the decision-making level partially accounts for this gap, but there are also subtle ways in which internalisation of subordination is at play. The women’s movement has not expressed its claims to policy making and decision making in this important area and this is reflected in the relatively low priority given to advocacy and lobbying. This, too, is beginning to shift, through analysis and support for NGOs that wish to build capacity in this area.\(^30\)

An early mover in this respect was the organization, ABANTU for Development. Drawing on its experience in lobbying and advocacy in macroeconomics, ABANTU for Development organized a post-Beijing meeting in South Africa in November 1995 that focused on policy questions for the ICT sector.\(^31\) The on-going reviews and evaluation of the Beijing Platform for Action have galvanised civil society action around advocacy in the information and communications arena and this should also produce advances.

**RECOMMENDATIONS FOR ACTION**

The key actors in the ICT policy-making and implementation process are national governments, multilateral agencies including bodies in the United Nations system, donor agencies, civil society organizations and the private sector.

**National governments**

Integrating gender considerations into national ICT policy and implementation will not be achieved without strong, effective leadership from the state. Governments should play a leadership role in articulating a clear vision and strategy for ICT development that takes account of local contexts and legitimate demands for gender justice. Relevant organizations in the public sector, such as line ministries or regulatory bodies, should develop the vision, design the strategy and implement the tasks, working in partnership with other key agents. It is very important that the state plays a pro-active role in ensuring that development of the ICT sector and application of ICTs proceeds in the national interest. Improving the social and economic environment for girls and women so that they can harness these technologies is an important and pressing social and economic challenge. The process is not automatic. The state’s role in setting the direction for production and use of ICTs is therefore crucial.
Governments should take steps in five key areas:

1) **Define and specify measurable goals and objectives for the ICT sector and ICT applications.** These goals should include ICTs’ contributions to achieving poverty alleviation, improvements in health care, food security, environmental security, technological advances and human resource development. The potential beneficiaries of policies in these areas should be clearly identified and should include girls and women as an explicitly defined category. Governments should also recognise that the “female” category is not homogeneous and ensure that policies benefit girls and women of different social, ethnic and racial backgrounds and with different levels of education. In poor countries with agriculturally based economies, it is particularly important that rural women and their needs as potential beneficiaries of ICTs be taken into account. Success in achieving the vision of using ICTs for development requires an impetus that goes beyond sectoral concerns — responsibility for ICTs and SHD should involve a cross-section of ministries. Malaysia and Senegal are examples of developing countries that have implemented this approach.

2) **Create the necessary institutional structure to develop and steer a vision of ICTs and development, and to achieve the goals set out in that vision.** A variety of organizations are required to undertake the tasks of analysis, goal definition, negotiation with other stakeholders, project planning, evaluation and monitoring, and to manage all the elements of the national ICT strategy. These organizations will need the right staff teams, adequate resources and empowering authority and decision-making structures. Women’s organizations, experts in gender and development issues, and advocates of SHD should be actively involved in those policy formulation processes.

3) **Secure advice and strengthen technical expertise in ICT related fields.** Policy makers should use research findings and insights drawn from rigorous analysis to develop policy tools that can assist with the realisation of their policy objectives. For example, policy innovation is needed to ensure that when technical decisions are made regarding network modernisation, industry structure, tariff policy, licensing decisions, incentives for R&D and innovation, and systems for training and learning, their criteria include socio-economic objectives.

4) **Develop consultative mechanisms to ensure that all key actors are actively involved in the process of policy formulation, implementation and review.** Communication between national governments and some key actors, such as multilateral development agencies and the ITU, are well developed and regular. However, as noted previously, these communications have tended to develop along traditional lines — for example, the Ministry of Communications interacts regularly with the ITU but not with the World Bank or UNCTAD. In addition, at the national level there are few organizational structures that permit negotiation and debate among a number of line ministries.

   The AISI Framework and the UN-ECA Acacia programme are particularly strong in arguing for and demonstrating the potential benefits of this approach to undertaking ICT policy planning and implementation. There is clear evidence from Senegal, South Africa and Uganda that greater participation from a wide range of interest groups improves the policy-making process. It is still too early to assess the
impact on particular groups of intended beneficiaries but the approach taken in the
Acacia programme has provided an entry for marginalised and disadvantaged
groups. Given the influence of the AISI framework, it is important that the action
programme call for an open, participatory policy process.

Women’s organizations and gender and development specialists must be repre-
sented in these consultative processes. The problem of identifying women and men
with the required skills and experience to represent the interests of girls and women
in these fora, and to assist with development of the necessary policy instruments, is
not intractable. More creative approaches for identifying these resources need to be
employed; there are women who are experienced with ICTs in universities and the
private sector and there are female gender and development experts who can be
given the opportunity to learn about ICT policy issues. This is a human resource
development challenge that must be squarely faced. For example, South Africa and
Uganda are making great strides in ensuring that gender considerations are incor-
porated in a number of social development programmes. Their experiences should
be brought to bear on the issue of inculcating gender in ICT policy in Africa.

5) Develop improved capacities to review policy objectives, monitor and evaluate
programmes and respond to changes in the technological and socio-economic
environment. ICTs are a fast changing set of technologies. The impacts produced
through the production and use of these technologies change at a very rapid pace,
producing unexpected consequences in the local environment. Policy in the ICT
sector needs to be adaptive and responsive if it is to be effective.

Multilateral development agencies and donors
Multilateral bodies, including the UN system and specialised agencies, should assist
national governments in the above areas by providing a variety of supporting resources.
These should include — but not be limited to — technical expertise for design of policy
tools, financial support and institutional capability building.

Specific activities include32
1) Policy Dialogue and Advocacy. Multi- and bi-lateral agencies are well-placed to
advocate the relevance of including a gender dimension in ICT planning and regu-
lation, both for instrumental reasons to ensure expanded markets and sources of
labour, and as a dimension of human development. Such advocacy would be
strengthened by outreach to all potential partners, and interventions to facilitate the
development of shared perspectives and priorities between government, civil soci-
ety and the private sector.

It will be important to ensure that organisations representing women’s interests
are deliberately included in consultations on all issues related to ICTs, and that
women are specifically consulted regarding their needs and contributions in the
process of ICT expansion. There are many high-level women in the ICT sector at
the national, regional and global levels who can be involved in such dialogue, who
can be contacted through the Development Branch of ICT.

2) Leverage Resources. Identify opportunities for collaboration with the private sec-
tor in resource mobilisation. This could include provision of matching funds and
equipment to develop the technical skills of women and girls as well as men and boys in community organizations, schools and training institutions, provision of scholarships, study tours and internships for girls, establishment of incubators and tax credits for firms owned by women or employing significant numbers of women.

3) **Institutional Strengthening.** Ensure that the Government and national regulatory and other entities involved in governance of the ICT sector have the capacity to analyse the impact of the sector on gender equality, and to include this analysis in policy making and planning processes. Take steps to ensure that female government staff are included in the consultation.

Strengthen the capacity of civil society through building the connectivity of community groups, and the technical skills of group members, with special attention to women’s capacity. Such initiatives could be aimed at using technology to improve programme and operational effectiveness, strengthen community outreach, staff development and the consolidation of community concerns for action. Also important would be building ability to access and share information at the community level, and link communities with international sources of information. Establish goals, perhaps on an inter-agency basis, for levels of connectivity in particular communities, and programmes to ensure that this knowledge is applied to community activities. Identify teams of volunteers to work on technical capacity in low-income communities, with a mandate and the ability to include women in their activities.

**Private sector organizations**

Suppliers of ICT equipment and services have an important role to play in integrating the use of ICTs with development goals. The private sector is an important and powerful interest group whose demands exert considerable influence on the direction of ICT policy. Unfortunately, private companies have tended to emphasise profitability over all other social corporate objectives. Since the private sector lobby is very powerful and often has more experience with ICTs than central government agencies, the short-term commercial goals carry considerable weight in the overall definition of ICT policy objectives.

The major challenge for private sector organizations in developing countries is to reorient their strategies to long-term market development, rather than short-term profitability. Private sector companies should therefore lend their support and resources to efforts to develop and expand networks through telecentres and other community-owned facilities. Firms operating in poor countries should also invest more in R&D that is geared to producing tools and applications which meet the needs of potential local consumers. Women as a group of potential consumers of ICTs have specific requirements, to which private sector organizations should make efforts to be more responsive. The companies that succeed at doing this will both achieve their commercial objectives and contribute to SHD.

To play an active role in integrating gender concerns with ICT development, private sector organizations can also adopt pro-active employment policies that encourage and facilitate the participation of women in a wide spectrum of ICT-related fields. Private sector organizations in the ICT sector include large companies, such as telecommunications carriers, suppliers of ICT equipment and services, Internet service providers, computer hardware and software companies, and IT service companies. There are job opportunities...
for women in all of these settings at various levels of responsibility. Given the serious shortage of female technologists, private sector organizations should also demonstrate their commitment to achieving the goals of gender equity in the ICT sector by providing and supporting training programmes specifically designed for girls and women.

Civil society organizations

Civil society organizations, and particularly women’s organizations, have been among those at the forefront in advocating for the integration of ICTs with sustainable development goals and programmes. The electronic communication programmes for women have emphasised that ICTs can be of tremendous service in human rights campaigns, in environmental management, and in improving information exchange between Africa and the rest of the world. Many of these programmes face inadequate funding and are not well articulated with public policy institutions.

When there are opportunities, civil society organizations should participate fully in ICT policy-making consultative processes. Women’s ICT programmes have tended to focus on service delivery rather than policy making and advocacy; this is changing slowly and these trends should be encouraged and supported. Multilateral agencies, national governments and the private sector can support these attempts by including civil society organizations in capability building exercises. For example, if the ITU or other UN agencies start programmes to improve the capacity of national governments to take gender into account in ICT policy making, civil society organizations should be given the opportunity to participate in these training programmes. Since the lines of communication between multilateral agencies and civil society organizations concerned with ICTs are not always open, achieving this goal will require special attention and effort.
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REFERENCES


Voices for Change, Special Issue, “Telephone for All — Privilege or Basic Right,” Vol. No.3, 1997


## Resources

**Organizations Promoting transformation of ICTs for SHD & use of ICTs for Gender Justice**

<table>
<thead>
<tr>
<th>Organization</th>
<th>Website Addresses</th>
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<tr>
<td>African Information Society Gender Working Group (AISGWG)</td>
<td><a href="http://www.impactafrica.org">http://www.impactafrica.org</a></td>
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<td>APC Women’s Programme</td>
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<td>Asia Pacific Women’s Information Network Centre (APWINC)</td>
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<td>Fundredes</td>
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<td>UNDP</td>
<td><a href="http://www.undp.org/info21">http://www.undp.org/info21</a></td>
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<td>Ukraine telecentre for women farmers (UNDP)</td>
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<td>Women Watch</td>
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<td>WomensNet (South Africa)</td>
<td><a href="http://womensnet.org.za">http://womensnet.org.za</a></td>
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Appendix One

Extracts from the 1999 ITU Regulatory Survey

Legislative provisions to facilitate the employment of women in the telecommunications field.

South Africa: One of the objects of the Telecommunications Act of 1996 is to promote the empowerment and advancement of women in the telecommunications industry.

Policies put in place to ensure that recruitment, employment, training and advancement of men and women in the regulatory authority are undertaken on a fair and equitable basis.

Singapore: Employment is based solely on merit, educational and professional experience, not gender.

Total number of members of the separate regulator’s collegial body and percentage of total staff of that body which are women.

Nineteen countries provided responses. Of those, 12 had no women in the regulator’s collegial body. However there were countries with a fairly high representation of women (e.g., Canada where 7 out of 12 members were women; Sweden, with 4 out of 7; and South Africa where 2 out of 6 members of the national regulatory body were women.) In Columbia, Costa Rica, Paraguay and Uganda, the highest national telecommunications regulatory bodies also included female members.

Policies put in place to ensure fair and equitable access for both men and women to national information infrastructure.

United Kingdom: All UK policy initiatives are open without discrimination to men and women.
Appendix Two

Statistical Tables 1 and 2 illustrate the need to discuss [strategies to increase] women’s participation.

### Table 1

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<th>Study Groups &amp; Advisory Body</th>
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<th>Number of Rapporteurs</th>
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<td>TSAG (advisory body)</td>
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| Women as % of Men           | 4%                          | 7%                     | 8%                     |
### Table 2

Number of men and women, Chairpersons and Rapporteurs in Radio Communications BR meetings for the period November 1997-June 2000

<table>
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<th></th>
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Endnotes

1. MacKenzie and Wajcman 1985
5. Hammelink 1997
6. Newsweek 1999
7. ITU 1999
9. OECD 1996
11. See United Nations University-INTECH 1999 for research outputs from projects that conducted empirical studies of the effects of technological change on employment in selected Asian countries and did incorporate gender analysis.
15. Rathgeber 1995 and gstageway:work & careers
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21. See Banerjee 1999 and Mittner 1999 for further discussion.
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25. UNCSTD 1995
26. See how the GWG is making use of ICTs to disseminate its findings and to continue advocacy and research on these questions at gstageway
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31. ABANTU for Development 1996
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