United Nations International Research and Training Institute for the Advancement of Women (INSTRAW)

Overcoming the Gender Digital Divide: Understanding ICTs and their Potential for the Empowerment of Women

Synthesis Paper

Virtual Seminar Series on Gender and ICTs

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I. Introduction: ICTs and their Empowering Potential

1. ICTs for development

> *"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" (Marcelle 2000:8).*

Given the capacity of ICTs to access, transfer and apply knowledge and information to almost every aspect of human engagement, they are increasingly being recognized for their potential to carry the new global knowledge-based economy. ICTs may reshape, re-organize and restructure working methods. They offer generic advantages of: efficiency and productivity gains; information-sharing, storage, and communication; faster knowledge-accumulation, dissemination and application; in support of the specific purposes for which they are used. ICTs also permit new, collaborative work methods, enabling rapid and continuous transfer of commercial, financial and political information crucial to the development process. Yet, ICTs are neither a panacea for development nor a replacement for real world processes. ICTs could ensure efficient and rapid transfer of development related knowledge and information only if real world processes were not flawed, deficient or absent, and not convoluted and subject to delays. Furthermore, if controls over financial systems are inadequate or missing, for example, making systems electronic will not make them effective (UNCTAD 2003).

The continuous development of new technologies and their application to economic, political and social processes is creating new opportunities that could enhance the quality of human life. New types of economic and employment opportunities i.e., e-commerce; new types of education modalities, such as distance learning and on-line training; possibilities to access institutions of governance using on-line access to information; are just few of the opportunities emerging as a result of the use and application of ICTs in development.

Unfortunately, it is becoming apparent that the benefits of these developments are not evenly distributed between and within countries. The reasons for this are mainly to be found in the unequal access to ICTs due to an unequal infrastructure base and existing differences in the knowledge base among developed and developing countries. According to the Human Development Report 1999, 25 per cent of all countries in the world have penetration levels for fixed telephone lines of less than 1 telephone for every 100 persons. The developed, industrial countries that are home to 15 per cent of all people account for 88 per cent of all Internet users. The United States of America, for example, has more computers than the rest of the world combined and more computers per capita than any other country. In addition, of all spending in the world on information technology, just 55 countries account for 99 per cent. And it is only 2 per cent of the world's population that has access to ICTs and their most popular tools, such as computers, Internet, e-mail, and so on (UNDP:1999).

Different factors influence this disparity, such as income, education and literacy levels, race, ethnicity and gender. UNDP Human Development Report 1999 data on gender aspects of use of ICTs and ICT-related services suggests that "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" (UNDP 1999:62). By now, it has become clear that many persistent gender-specific structural inequalities constitute barriers to women's access, such as education, traditional cultural beliefs and practices, economic inequality, etc. In fact, ICTs are designed and created within male-dominated environments and as a result, they do not necessarily correspond to the specific needs of women. ICTs are also regulated by decision-makers, the majority of which are men. This phenomenon embracing the disparities in access and use of ICTs by women and men has been named the "gender digital divide".

Box No. 1

INSTRAW Collaborative Research Project on Gender and ICTs

Objectives:

- **a)** determine the constituents of enabling/disabling environments for access and use of ICTs by women;
- **b)** gain a better understanding of how women and men are involved in ICTs, particularly in the developing countries and to promote adequate policies and regulation of the ICT sector;
- **c)** propose ways in which ICTs can better serve as an important tool for women's empowerment.

Methodology:

1. On-line Virtual Seminars. Four seminars held over an eight-week period from June to September 2002, organized as an email-based discussion [ICTNet]. Three hundred and twenty five (325) participants from more than 50 countries around the world subscribed to the seminar discussions, with a total of 184 contributions.

2. Background Papers for each seminar (may be accessed through INSTRAW's website www.un-instraw.org/en/research/gender_and_ict/virtual_seminars.html:

- **a)** "Are ICTs Gender Neutral? A Gender Analysis of Six Case Studies of Multi-Donor ICT Projects" by Nancy Hafkin;
- **b)** "Cyberfeminist Technological Practices: Exploring Possibilities for a Woman-Centred Design of Technological Environments" by Radhika Gajjala;
- **c)** "Engendering Management and Regulation of ICTs" by Anita Anand and Mahesh Uppal;
- **d)** "Empowering Women for Public Policy Advocacy: Looking Behind the Internet to Enable Citizen Information Systems" by Juliana Martínez and Katherine Reilly;
- **e)** "The Use of Information and Communication Technologies as a Tool to Bridge the Gender Digital Gap: A Case on the Use of a Locally-developed CD-ROM by Rural Women in Uganda" by Rita Mijumbi

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A better understanding of all aspects and manifestations of the gender digital divide is essential in order to be able to prevent the adverse impact of the current trends of access and use on women worldwide, as well as to enhance the potential of ICTs to become an effective tool for women's empowerment. In order to address this need, the Fourth World Conference on Women (Beijing, 1995) outlined a strategy to promote greater access by women to communication and information. Likewise, the Beijing+5 Conference (New York, 2000) called upon development cooperation to strengthen the capacity of women to use new technologies for their empowerment and for achieving gender equality and thus, sustainable development.

In response to these mandates, INSTRAW implemented a collaborative research project exploring the potential of ICTs for the empowerment of women (see Box No. 1). But prior to elaborating on the major elements of this research and its most important conclusions and recommendations, a brief discussion on INSTRAW's understanding and approach to "empowerment" will set the background for understanding the scope and focus of the underlying research objectives aimed at exploring the potential of ICTs for women's empowerment.

2. Empowerment of Women: the concept

Women's empowerment, as argued by Oxaal and Baden (1997) has been viewed either as a process through which women gain power over men or as a process that enables women to gain access to decision-making processes and instances of power. Increasingly though, empowerment tends to be viewed as a process that leads women to perceive themselves as capable of undertaking decisions and making choices about their lives, which in turn requires sufficient levels of self-confidence and assertiveness. Empowerment, therefore, necessarily embodies challenging patriarchy at all its levels of expression: social structures and relationships, moral and cultural values and norms, and institutions and power structures.

Change in patriarchy and patriarchal structures has been viewed either as a top-down or a bottom-up process, depending upon which approach to women's position within the patriarchy has been adopted. Some consider that women are powerless; these are likely to promote the idea of "empowering" women, implying a top-down approach. Whereas, some argue that despite patriarchal subordination, women have power; these perceive empowerment as inherently a bottom-up process. The approach underlying INSTRAW's research on ICTs and their potential for women's empowerment draws a distinction between empowerment as *capacity building to cope with* the requirements of life more efficiently versus *capacity building to transform* the conditions of life and assert alternative gender roles[1]. Drawing such conceptual and analytical distinctions between capacity building to cope and capacity building to transform is necessary and significant, since each requires a considerably different policy and advocacy approach. As it will be seen later in this paper, this has heavily influenced the conclusions and policy and action recommendations emanating from this research as they pay substantial attention to those policies and practices that enable ICTs to become a tool for the *transformatory empowerment of women*[2].

Recently, the value of ICTs in achieving the empowerment of women has added a new dimension to these conceptual and methodological discussions. Many argue that ICTs are an important tool for women's empowerment. However, debate remains on the value of ICTs for development in general, and for women's empowerment in particular. Critics of ICTs point to the more pressing needs of women in developing countries for safe water, adequate food, improved health, and better education rather than the provision of access to ICTs. The counter-argument is that health, water, food, education and ICTs are not in opposition to each other. ICTs can be a tool to provide information on health and food, as well as a carrier of education for women and girls, within the context of "equitable and affordable access".[3]

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[1] This distinction has been widely applied in development theory and practice by Caroline Moser (1993). She views empowerment in the context of addressing women's "strategic gender needs", that is to say transforming structures, institutions and beliefs that embody "women's subordinate position to men in the society." She argues that meeting these needs helps women to achieve greater equality. Strategic gender needs include broader social, political and economic issues such as the gender division of labour, legal rights, domestic violence, equal wages and control of their bodies. "Practical gender needs" are those which women identify as part of their socially-accepted roles in society, such as housing and education. Addressing these needs does not tend to result in a challenge to social roles. However, in meeting their practical gender needs women can become aware of and join advocacy around the strategic or political aspects of gender rights and relations.

[2] "Transformatory empowerment involves a process whereby women acquire the capacity to transform unequal power structures based on male dominance towards those that would lead to women's emancipation and gender equality. Reshaping the balance of power between women and men involves changes in institutions, discourses and people's ideological and mental constructs" (Sikoska and Kardam 2000:5)

[3] For more on the concept of "equitable and affordable access" to information and education, see UNESCO, 2001.

Defenders of the potential of ICTs for women's empowerment argue that women no longer have the luxury to ignore ICTs and the globalization of information and economies, which are carried by ICTs. As Fatma Alloo of the Tanzania Media Women's Association argues "We must recognise that information is here to stay…What we have to decide is we either play the game and turn it to our advantage or lose out completely" (Society for International Development and UNESCO 1998:14). Other African voices have concurred, voicing concerns that if African women do not take advantage of the opportunity offered by ICTs to "catch up" technologically, they will find themselves further marginalized (Knight et al 1995).

Some emerging studies support these arguments and indicate that ICTs could be tools for women's active participation in improving their situations; simple access to information and improved communications can end the isolation of women and promote improved health, access to reproductive services, economic growth as well as alleviate poverty. There is evidence to indicate that the poor are willing to spend a portion of their income on ICTs if they can see economic benefits.[4] As argued by Martinez and Reilly (2002), other studies are also focusing on the role that ICTs play in enabling women and their organizations to access and manage information for the purposes of lobbying, advocacy and organizing for change in both the way governance is institutionalized and in its transparency and accountability.

This paper provides a synthesis of the major research findings contained in five background papers commissioned by INSTRAW on the potential of ICTs for women's transformatory empowerment that were presented and discussed at a series of Virtual Seminars conducted during 2002. It also draws upon the subsequent discussions and recommendations emanating from the Virtual Seminars. This synthesis paper begins by exploring the prevailing approaches to the potential of ICTs for women's empowerment. It then examines the social context of technology and women's relationship with it. Next, it identifies the main structural barriers to women's access and use of ICTs and finally, it explores possible strategies and policies to address these structural barriers and enable women to use the potential of ICTs for their empowerment and to change unequal gender relations.

II. SUMMARY OF VIRTUAL SEMINAR DISCUSSIONS

1. ICTs as a Tool for Women's Empowerment

Shirley Malcom of the American Association for the Advancement of Sciences argues that ICTs have given us remarkable tools to achieve an enhanced vision of inclusive development strategies, which, along with an expanded understanding of the power of knowledge, have the potential to transform our rhetoric into reality, our pilot projects into large-scale but locally-responsive campaigns. Yet for this to happen, we must ensure full access of women to these tools of development, information and connectivity (Malcom 1997).

Likewise, contributions to the INSTRAW Virtual Seminars emphasized the fact that providing women with equitable access to ICTs is sine qua non for development. Yet two major approaches to women's empowerment through ICTs prevailed during the discussion: one based on the empowerment of individual women; and the other on the empowerment of organized groups of women. Although these approaches can be perceived as different, the conclusion of

[4] Carr and Huyer, 2002; and Kenney et al, 2000. See also Prahalad and Hammond, 2002 as discussed in the section on Regulation below.

the Virtual Seminar discussion was that they are complementary and not mutually exclusive, and as argued by Rubinoff[5], women's activities often involve a combination of both approaches.

1.1. ICTs as a tool for the empowerment of individual women

During the Virtual Seminar discussions, several examples supporting the so-called "individually-based empowerment approach" were presented, the most prominent of which is the Uganda CD-ROM project based at the Nakaseke and Buwama telecentres. As explained by Mijumbi (2002), this project developed a package of ICT-based learning materials about micro enterprise responding to the self-identified needs of rural women in Africa aiming to: a) increase women's access to information utilizing new ICTs; b) motivate women to use telecentres when looking for information; c) increase collaboration and networking opportunities among women and NGOs in Africa; d) involve community groups and technical teams in Uganda in the development of the materials; and e) develop a simple, highly visual, audio package of learning materials using local languages for use by rural women in Uganda with low literacy skills.

Mijumbi indicates that the impact of the CD-ROM on the empowerment of women was mixed. Some women found its content to be useful while others did not understand its focus and relevance. A few responses from women who participated in the project indicated that by accessing information through ICTs women can improve their situation because of the knowledge acquired and the information received. Many direct benefits to women were identified. Learning how to save money – resulting in the fact that some women even decided to open up bank accounts – as well as learning how to manage their resources more efficiently, are just two. In addition, women became trainers of other women in ICTs; they experienced improved reading skills, productivity and crop yield; they developed ideas for new businesses; and they experienced greater awareness and interest in use of ICTs and other communication tools (such as mobile phones). The women who used the CD-ROM have become more confident, more knowledgeable, prepared to experiment with new approaches, and more willing to compare situations for joint solutions to reduce poverty. For example, the women's desk, which was set up at the telecentre and provides a forum for exchange as well as mutual support.[6] However, Mijumbi clearly points out that the use of ICTs could increase when women are motivated and mobilized to do so. Otherwise, women may not opt to access and use the ICT tools available at the Telecentres due to lack of time.

Hafkin (2002) in her research and analysis of selected *info*Dev projects found that women experienced empowering effects at the individual level, although not necessarily direct economic benefits from these ICT-based development projects. As she argues, in those instances where they gained benefits from those projects, they "emerged not only with greater knowledge but also with enhanced self-esteem". In addition to increased confidence, the women gained career and professional possibilities. Other examples provided in Hafkin's paper include: the women trained in a project in Ethiopia who gained knowledge in Internet networking, management, and gender and development issues; the Auxiliary Nurse Midwives in India, who were trained and

[5] Donna Rubinoff, [ICTNet] "Articles by Prof. Aphek and Other Things," 9 September 2002. The complete text of all contributions from participants can be found in the ICTNet archives, which can be indexed by author or date. See http://server778.dnslive.net/pipermail/ictnet_un-instraw.org/. All subsequent email references are made to the [ICTNet] listserv.

[6] For more findings on the impact of the CD-ROM on women's empowerment, see the background paper prepared by Rita Mijumbi (2002) for the Virtual Seminars.

provided with personal data assistants (PDAs)[7] to support their data-gathering activities in the field. Both of these examples indicate that women gained knowledge, self-esteem and status in their community and profession.

A particularly interesting example of how ICTs can serve as a powerful tool for the empowerment of individual women is also evident in Rubinoff's research on the documentation of women's life histories[8]. Rubinoff remarked on the value of electronic life history writing/gathering as a tool for the empowerment of women in itself. Many of the women interviewed experienced enormous value in being asked about and in thinking about their lives, in putting their experiences on paper (or into a tape recorder) and then seeing in print their record of growth and accomplishment.

Rubinoff also found that women were linked to the Internet by a complex web of development workers, academics, NGOs, and other people with access, who collected or inspired the writing of life histories. So, although none of the 'authors' were directly connected, their stories found their way into cyberspace. In her view, this highlights the importance of thinking about connectivity in broader terms, to investigate the 'social spaces' of networking that surround women and link them and their personal, household, community, and other networks to ICTs. Indeed, these informal and community-level, non-technological networks extend beyond cyberspace in many directions, and include electronic, social, visible and invisible networks. A deeper understanding of these connections, including the role of women's informal non-technological networks, will lead to a more sophisticated analysis of the links between people, technology, institutions, and places, which in turn, can lead to more effective and powerful uses of technology.

1.2 ICTs as a tool for the collective empowerment of women: use and management of information

The focus of ICTs as a tool for the collective empowerment of women was discussed and presented by Martinez and Reilly (2002) in their background paper "Empowering Women for Public Policy Advocacy: Looking Behind the Internet to Enable Citizen Information Systems", prepared for the INSTRAW Virtual Seminar Series. This paper is based on an assessment of an on-going project on "Public Information for Public Policy Advocacy: Action Research with Women's Organizations in Costa Rica and Nicaragua" managed by Fundación Acceso. In their paper, Martinez and Reilly argue that on-going research on the potential of ICTs for e-government initiatives in Costa Rica and Nicaragua is based on the notion that "the dominant approach to gender and ICTs mirrors the dominant approach to e-government in which women are viewed as individual recipients and users rather than organized actors". Martinez and Reilly argue that access to public information through ICTs is a key ingredient for e-democracy and women's empowerment; yet, individual "access" to ICTs alone does not necessarily ensure that the technology will be used by women for their empowerment. Rather, the possibility of "access" can only become advantageous for women if they are organized and as such are capable of determining: a) the type of information they need, b) the way that information is presented and c) the concrete means required for that information to be accessed and used.

[7] Personal Data Assistants (PDAs) are highly portable technology tools for data entry and linkage to primary health centres. For more details, see the background paper prepared by Nancy Hafkin (2002) for the Virtual Seminars.
[8] Rubinoff, [ICTNet] "Articles by Prof. Aphek and Other Things," *op. cit.*

"An implication of this focus [collective empowerment of women] is that women are not just users, recipients, consumers, or individuals making use of ICTs or receiving information, but are *organized (i.e., collective) political actors* (*as opposed to individual users)* [italics added] seeking to participate in policy and decision-making processes. Thus, the focus is not on women at large, but on organized women who can use public information as an input to their agendas, and put it to the service of women at large" (Martinez and Reilly 2002:2).

Arguing along these lines, the authors presented major research findings to the participants of the Virtual Seminars showing the persistent obstacles to women's access, use and appropriation of public information in Costa Rica and Nicaragua, and how they impede the prospects for women's empowerment, despite the fact that women's organizations have adequate access to ICTs. They pointed out that among the key obstacles to access to public information are the following: a) access to public information is not framed as a human right for all citizens; b) access is a power resource; and c) state officials handle information as if it were their own.

Furthermore, Martinez and Reilly argued that even when public information is available and women's organizations can access it through ICTs, there are obstacles that impede the efficient "use" of that information by women's organizations. The "use" of public information refers to the capacity of these organizations to manipulate and interpret information in an efficient and effective manner for their own purposes.

Among the key obstacles to the use of public information identified by Martinez and Reilly are language and use of specialized terminology, and the length of the available information. Similarly, Martinez and Reilly also argue that the research findings show that the appropriation of public information, that is, turning public information into policy advocacy by women's organizations, was made difficult due to the lack of skills, knowledge and methodologies at hand that enable women's organizations to use and translate the available public information into a lobbying asset and a tool for policy change.

The importance of these findings was reiterated by Reilly[9] during the seminar discussions, who stressed that the notion of the collective, organized woman actor whose use of public information to advocate for policy changes at the national or regional level is considered to be a primary, or "first generation" empowerment issue, rather than the actual access to ICTs. It is important to understand how women can use ICTs to better understand their world and to make political changes. In order for ICTs to empower women, we must think about policy formation – including the various actors participating in policymaking, their interests and agendas, argued Reilly.

2. The Social Context of Technology and its Relationship with Women

One major issue addressed by INSTRAW's research project, both in one of its background papers and during the Virtual Seminar discussions is the relationship between gender, women and technology and how this relationship is influenced by the very nature and the environment of technology itself. Technological environments, as Gajjala (2002) used the term in her paper "Cyberfeminist Technological Practices", are social environments shaped around the use of any type of "technology". Such social environments are place-based and their structuring is shaped by local histories, geographical conditions, and everyday cultural practices within

[9] Katherine Reilly, [ICTNet] "ICTs, Public Information, Policy and Organized Women" 10 September 2002.

which specific technologies are put to use. Gajjala argued that it is important to emphasize the unequal power relations within which all the factors that shape such environments, including gender, co-exist.

2.1. The social context of technology

Seminar discussions pointed to the need to understand the social context of technology as it was argued that in order for a tool to become a "technology", it must fit into its social context. Montgomery[10] suggested that technologies are tools and/or methods designed to accomplish a certain task. Tasks are taken on to accomplish goals defined within a social context, which gives the task and goal their meanings. Hence, to be a "technology" a tool must fit into its social context. Otherwise it is simply an inanimate object. It is important to note here that the major implication of such a view of technologies, including ICTs, is that a technology project should be seen as a component of the social context in which it is placed, and not the other way around. Concomitantly, to understand the value of (and power relations around) a technology, the social divisions that exist within a community based on gender, ethnicity, race, class, and age must be identified. Distinct groups within any of these divisions will be affected differently by any given technology, will have differing abilities to use the technology, and, more importantly, will value the technology differently. Montgomery concluded by emphasizing that it is insufficient to talk about integrating a social component into a technology project; by not seeing the project as a component of the social context in which it is placed, we run the risk of losing sight of the ultimate goal of the development projects -- improving the quality of life.

Similarly, Gajjala (2002) argued for the use of gender as a crucial concept in understanding technological environments and their social contexts. According to her, a gendered understanding of ICTs and technological environments is necessary as gender is an important determining factor of the social context and its structures. As both gender and technology are determined by the particular social context in which they are constructed, they should be seen as *processes* which evolve and change, rather than rigid absolutes. This allows us to view gender and technology in a dynamic and context-specific way. Consequently, we should understand that technologies are not shaped by any social context but by a gendered one. This line of thinking has important analytical implications as it allows us to, first, understand how gender perceptions shape technology designs; and second, understand how the environments in which the technologies are being placed determine the way men and women would access and use these technologies.

2.2. Gender, women and technology

Technologies, including ICTs, are not gender-neutral, rather, the use of ICTs and other technologies by women and men reflects to a large extent the wider socio-cultural and economic context within which the technologies are produced and used. As argued above, gender and technology should be viewed as evolving and changeable. Such views, however, go against the prevailing view of ICTs as being neutral and rigid; and until very recently, there was resistance to accept such views. The mainstream perception holds that ICTs are socially-neutral and that ICTs are tools that are useful and are being used regardless of the social, economic or political contexts. By extension, they have also been considered to be "gender-neutral," in that it is expected that women will naturally and automatically benefit equally from them (Stamp 1989).

[10] Layton Montgomery, [ICTNet] "ICTs and their 'Gender Neutrality'", 10 July 2002.

Seminar discussions, however, showed that it is very difficult to talk about gender and gendered aspects of access and use of technology, probably because there is very little research and analysis based on the "concept of gender"; rather, they are based on the analysis of women and their relationship with ICTs. Such interchangeable use of the terms gender and women, as argued by Gansmo,[11] detracts from the richness of the term gender, from possibilities for engaging in more productive dialogues, and from the possibility of developing more effective approaches for analyzing the relationships among women, men and technology.

Due to this situation, Seminar discussions reiterated the importance of understanding the gendered aspects of the social context within which technologies are both produced and placed for use, yet they also indicated that it is equally important to continue to study, document and analyse the situation of women in ICTs.

In order to understand the relationship of women with technologies including ICTs, it is important to understand the lack of visibility of women in the ICT industry and as users of ICTs. Multiple reasons for this occurrence were identified during the Seminars. First, there is the problem of perception: mainstream media strengthen social preconceptions that women are less suited to or interested in working with technology. Then, there is the problem of reality; the actual number of women in the ICT industry is substantially smaller than that of men.

However, it was argued by seminar participants that women's lack of engagement in the technology industry is due to gender inequality rather than "women's lack of compatibility with technology". In support of this argument, seminar discussions pointed out that unequal access to education by women; glass ceilings in industry and research; lack of financial resources, either on the part of women themselves, or resulting from choices made by their families concerning women and girls' education; are just some of the structural gender inequalities that represent important barriers to stronger engagement of women in and with technology[12].

Although, as argued by both Mueller and Hafkin[13], women are beginning to make their mark in science and technology professions, there is, nevertheless, a worrying decrease in the enrolment of young women in computer science courses in the Canada and the United States of America. Conversely, in several developing countries the numbers of women seem to be increasing. For example, as Kandaswamy noted, in India there is a comparatively strong participation of women in the IT and software industry as well as in other technology careers. The enrolment of women in technical institutions has increased in the last 20 years from just 5 to 45 per cent. Each year, 90,000 women engineers graduate in ICT fields from colleges in the 4 southern states of India and in fact, it is seen as a more feminine field than other engineering disciplines.[14]

Notwithstanding the increasing the profile and participation of women in science and technology, in many other countries there are few opportunities for women to engage in technology and be seen as role models. As Gajjala (2002) argued, even when the number of

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[11] Helen Gansmo, [ICTNet] "Essentialism/Gender in Policy/Spanish Reference", 12 July 2002.

[12] The most important barrier to women's access and use of ICTS emphasized during the seminars is education and in this regard it is important to note that in many parts of the world parents continue to favour the education of boys over girls. For more on this see UNESCO (2001).

[13] Sigrid Mueller, "[ICT Net] Are ICTs Gender Neutral?" 2 July 2002; Nancy Hafkin, [ICTNet] "Two Points," 5 July 2002.

[14] Deepa Kandaswamy, [ICTNet] "Woman in Tech -- 2 Issues", 5 July 2002.

women increases, as in India, women's relationship with technology is not necessarily equal to that of men. She further clarified that the important issue is not a lack of women with expertise in these areas, but rather the persistence of barriers that women face due to disabling socio-cultural and managerial environments at work and at home. Therefore, Gajjala argued that understanding the relationship between women and/in technology, it is important to bear in mind that creating environments conducive to women IT workers' upward mobility is more than a question of access to ICTs or IT-related education and training.

Based on the analysis of the individual empowerment of women and men IT workers in India, Gajjala further argued that individual empowerment of women through ICT-related work is shaped by gendering processes mediated on at least two obvious levels: a) the level of personal familial expectations based on socio-cultural and economic structures within their geographical location; and b) work-place expectations of what it means to be a productive worker within the global corporate environment that shapes software production processes and organizational cultures all over the world. She concluded that these factors contribute to the creation of a work environment that is often disabling for women.

The issue of enabling/disabling environments for women to access and use ICTs for their individual and group empowerment appeared to be of crucial interest to Seminar participants. Some of the discussions made reference to Gajjala's analysis of the experiences of male and female students in Canada in using the Internet in the classroom as a means for knowledge production and management which clearly pointed to the fact that the Internet, in its present state, is not necessarily an enabling environment for women. Participants argued that many women do not feel comfortable with the Internet content, either substantive or visual, a fact that leads us to believe that **access to ICTs is important, but is not in itself sufficient condition for women's appropriation of technology.**

Based upon this understanding, Seminar participants pointed out that, apart from understanding the relationship of women with technology, it is also important to identify the factors and barriers that have contributed towards such relationship between women and technology.

3. Barriers to Women's Access to and Use of ICTs and Ways to Overcome Them

3.1. Main barriers to women's access to and use of ICTs

Before summarizing the main threads of the discussions on barriers to women's access to and use of ICTs held during the Virtual Seminars, let us begin by stating that several recent reviews and studies[15] have identified the following major barriers:

- Lower levels of literacy and education, including training in languages which are predominantly used in ICT platforms and the Internet;
- Less time due to women's triple role of domestic, productive and community management responsibilities leading to a much longer workday than men's;
- Less access to financial resources to cover the cost of equipment and access;
- Geographical location: in developing countries women tend to live in rural areas

[15] See for example, Hafkin and Taggart (2001), and Huyer (1997).

more than men, where infrastructure is less dependable, and travel to ICT centres is more difficult due to cost, time, and cultural reasons.

The INSTRAW Virtual Seminars confirmed the persistence of these barriers to women's access to and use of ICTs. There was a general agreement that these barriers are actually deeply embedded within the wider socio-economic and cultural contexts. For example, Treiki[16], referring to data contained in the Arab Human Development Report (2002) stated that: a) half of the women in the Arab region are illiterate; b) the percentage of women's participation in parliaments is among the lowest in the world; and c) scientific expenditures in the region are very low compared to other regions. She further added that during the Second Arab Women's Summit held in November 2002 in Jordan, delegates agreed that the Arab world has the largest percentage of women who are illiterate in the field of information technology.[17]

The situation in rural Canadian communities demonstrates that women in industrialized countries also experience difficulty in using ICTs for reasons of cost, availability, travel and time restrictions - factors all related to structural barriers stemming from women's double load of domestic and productive activities and their disadvantaged economic and social position in societies[18]. Referring to the Canadian experience, participants agreed that in fact, differences in women's use of technologies/ICTs are affected by class, economic level, national situation, access to resources, and infrastructure, rather than by geographic location alone i.e., the North-South digital divide. [19]

Many seminar participants noted the importance of addressing the issue of use of ICTs and the barriers impeding effective and efficient use by women rather than focusing only on the issue of access to and availability of ICTS. Different examples of persistent barriers to women's use of ICTs were provided. Reference was made to the ICT-enabled knowledge networks facilitated through ICT tools such as listservs, bulletin boards and chats, and their potential to be used by women for greater participation in national governance processes. But as noted by Nath,[20] such networks have the potential to empower women, but not many e-governance strategies are currently structured to encourage women's participation. According to this participant, several reasons influence such situations, including women's lower access to resources; their absence from meetings and network planning; as well as the fact that knowledge possessed by women is not recognized or valued equally with that of men.

Similarly, Landschulze[21] observed that ensuring the availability of appropriate content through ICTs is a prerequisite for women's participation in ICT-based networks. The example of the telecentre in El Limon, Dominican Republic, confirmed that it was not frequently used by women in the community because: a) only a few women could afford the time to attend courses or practice their newly-acquired skills; b) literacy skills were low; and c) locally-specific and relevant information in Spanish on day-to-day issues (such healthcare, nutrition, agriculture) is scarce on the Internet, especially for a non-academic audience. She further concluded that useful

[16] Hadeel Treiki, [ICTNet] "ICT and Gender Equality," 4 July 2002.
[17] For more information on the deliberations of this Summit, see Arab Women Connect (2002).
[18] Nythalah Baker, [ICTNet] "Gender Based Analysis", 8 July 2002.
[19] See also Rural Womyn Zone at http://www.ruralwomyn.net for perspectives on the lives and concerns of rural women in North America.
[20] Vikas Nath, [ICTNet] "ICT Enabled Empowerment-Governance Loop," 11 September 2002.
[21] Maren Landschulze, [ICTNet] "Relevant Content" 13 September 2002.

ICT-based communication networks and locally-specific, relevant and easy-to-scan web site content are crucial if women are to develop a stronger relationship with ICTs.

This was also confirmed through the CD-ROM experience in Uganda presented by Mijumbi (2002), which shows that the CD Rom contained simple, useful information on how to set up and run a small enterprise and that was attractive to women. Moreover, the information was made available in both written and oral form so literacy levels did not restrict access and use as well as it was available in the local language (Luganda), as well as in English.

Of all the barriers to women's access to and use of ICTs identified at the Seminars, language and literacy should be considered among the most important, argued Osborn[22]. Based on his experience in working in Niger with Bisharat (an NGO which engages in research, advocacy and networking relating to use of African languages in software and web content) the lack of education impeded women in engaging effectively with ICTs. He also argued that it is not enough to rely on few more educated people to act as intermediaries between the technology and the larger group of uneducated people; rather, more efforts are needed to ensure "soft access" to less educated and illiterate people by developing appropriate software applications and content. From his experience, Osborn argued that failure to adequately address "soft access" and multilingual content disfavours women more than men.

Furthermore, participants agreed that ICTs also require varying kinds of literacy. The ability to read and write is certainly a major barrier for women's access to ICTs, but scientific and technological literacy are also necessary and required. This includes the kind of literacy required to grasp the operation of a cell phone or Internet connection, in addition to understanding the implications of its use. Formal scientific and technological literacy, as taught at schools and universities, is another kind of literacy which presents an obstacle to women who, in general, are less educated at the secondary and tertiary levels, and in particular, are less educated in science and technology subjects.[23]

And finally, discussions pointed to the important fact that women should be convinced that the information available through ICTs is useful to them. That is to say that, due to the lack of appropriate content available through ICTs, not many women are convinced that it is worth taking the time and making an effort to use ICTs for improving their conditions. As argued by the Gender and Information Working Group of the International Development Research Centre (IDRC), there had been little research done or attention paid to women's information needs in developing countries or in supporting their access to appropriate information (IDRC 1995). Seminar participants argued that nowadays, there is little evidence to indicate that this situation has changed substantially since then. Many participants also felt that women are reluctant to invest either their scarce time in learning how to use the technology or the financial resources needed for access (even if priced affordably); until they experience the value of the information they can obtain by using ICTs. This barrier needs to be seriously addressed by research, training and development cooperation.

Addressing barriers to women's access to and use of ICTs is essential. The question of whether these barriers should be addressed within the system i.e., by getting more women into advanced training, education and employment through lobbying policy makers and the private

[22] Don Osborn, [ICTNet], "Gender and ICT in Africa: the Language Dimension" 5 July 2002. Note: this message was actually posted by Jeannie Ash de Pou who forwarded the original message from Don Osborn.
[23] For example, Radhika Gajjala, [ICT Net] "It just occurred to me :)" 18 July 2002.

sector, or in creating separate technological environments and spaces for women; remains and is discussed in the following sections.

3.2 Ways to overcome barriers to women's access to and use of ICTs

Among the most important approaches to and strategies for overcoming the barriers to women's access and use of ICTs identified during the Seminar are: a) ensuring a gender perspective in ICT-based projects; b) ensuring adequate and sustainable technology transfer; c) designing technologies appropriate to women's needs; and d) ensuring gender-sensitive ICTs policy and regulation.

a) Ensuring a gender perspective in ICT-based development projects

In order to facilitate discussions on this issue, participants at the Seminars were provided with the findings from the analysis of ICT-based projects aimed at improving access to and use of ICTs in developing countries, conducted by Nancy Hafkin. She presented the analysis of multi-donor projects in the paper entitled "Are ICTs Gender Neutral? A Gender Analysis of Six Case Studies of Multi-Donor ICT Projects".

A major conclusion of this research paper is that **ICTs are not necessarily gender neutral, and that given the persistent gender inequalities and unequal power relations within societies, substantial disparities in access, use, production and management and regulation of ICTs continue to exist and that development projects do not necessarily address these disparities efficiently** (Hafkin 2002). According to Hafkin, every one of the case study projects in her review experienced gendered effects, but gender concerns were rarely articulated in project design and implementation. Her analysis points to the fact that women do not benefit equitably from development projects unless special efforts are made to identify their situation and needs and effective action is taken to incorporate their participation. She argues that this is essentially the outcome of the socio-cultural context, in which women are frequently disadvantaged by culture and concomitantly by inequitable access to all kinds of resources. As women do not enter projects on an equal basis, it is very important that special efforts are made both to ensure their entry and the possibility of their receiving equitable benefits.

In order to ensure that ICT-based development projects benefit women equally as they do men, inclusion of a gender perspective in the very design and methodology of the project is crucial. For this, Hafkin argued that we need to use a 'gender lens'--something to change the perspectives on a project, somewhat like changing a camera lens-- to look at whether or not gender was considered in project design and implementation, or whether a project impacts women and men differently.

There was an overwhelming agreement by Seminar participants that there is a need to integrate a gender perspective in the overall project cycle as a means of ensuring that structural barriers to women's access to and use of ICTs are diminished if not completely removed.

b) Ensuring adequate and sustainable technology transfer

Technology transfer is a context-sensitive issue. As argued by Bridges[24] "the use to which a technology is put depends on history, existing social arrangements and the particular needs of the population." One of the most widespread practices aimed at transferring technologies to developing countries is that of building-up of community-based telecentres. Yet,

[24] Connie Bridges, [ICTNet] "Modes of Communication", 24 July 2002.

based on their experiences and research and analysis of the use of telecentres, many Seminars participants argued that without explicitly addressing the needs of women users, telecentres do not necessarily serve their needs. In addition, some participants brought attention to the fact that many telecentres do not achieve their objectives of providing access to technology to communities and women in particular, as they are not sustainable in the long run.

Based on her research, Jorge[25] indicated that the telecentres which have been sustainable (that is, not dependent on donor funds) tend to be those which operate on the basis of a careful needs assessment or feasibility study and follow a well-developed project plan (business plan) to address the specific needs and demands of the community they serve. Some of these also obtained funds to develop new programmes to address the needs of the local population as they were further identified (e.g., the CD-ROM prepared by IWTC for Uganda telecentres), which in turn, guaranteed increased interest in telecentre services.

In addition, it was also argued that if telecentres are to be efficient means for technology transfer, they have to be adopted to the particular conditions of the place where they are being established. For example, discussions pointed out that the most sustainable telecentres are of a size which is appropriate to serve the actual demand in the market area, and provide services that the community is in fact willing and able to pay for. This was clearly confirmed through the experiences and assessment of the telecentre experiences in the Dominican Republic and Uganda. Transferring ICTs through projects aimed at implementing telecentres is not an easy task and if the wrong model (size, services, location, infrastructure, etc.) is implemented, there is a higher probability of failure, or a greater difficulty in achieving sustainability, it was concluded.

For this reason Jorge[26] argues that we need to rethink the definition of sustainability. And in such an exercise, it is also important to bear in mind that demand is sufficient to ensure sustainability only after the community learns more about ICTs and the value of access, and is trained to use the array of services that ICTs can provide.

For this, participants agreed, it is important that adequate transfer of know-how accompany technology transfer as well. In this regard, several affordable, low-tech strategies that could be employed in order to reach large numbers of people were outlined, such as those based on the use of tools such as radio, TV and cinema. Relying on strategies based on the use of these tools, offers an additional advantage in terms of using local languages and presenting information in entertaining and informative ways[27].

c) Designing technologies appropriate to women's needs

The question of whether transfer of Western technologies to developing countries or developing genuine, gender-sensitive programmes and project designs suitable to the given

[25] Sonia Jorge, [ICTNet] "Telecentre Sustainability, Public Information, Policy and Organized Women," 13 September 2002.
[26] Jorge, *ibid*.
[27] An illustration of how important and useful radio is, for example, was provided by Sylvie Siyam: "To duplicate such an [ICT] project in our country, it is better to use community radio broadcasts. Usually you can find a radio in every house. The radio is bought by the head of the family and used in the parlour, especially in the evening after the family comes home from the farm, market or school. But when the mother doesn't go to the farm, she listens to the radio the whole day as a friend, not to feel isolated. So I think that in cases such as this, radio is the best technology to empower women, so long as the hours of broadcast are chosen to reflect women's schedules". [ICTNet] "ICT for Women", 10 September 2002.

social and cultural contexts of the developing countries should become the dominant approach to overcoming the gender digital divide was frequently raised during the Seminars.

Many participants argued that women should define their own agendas for the entire range of information and communications technologies, including not only computers, cell phones and digital video (to name a few), but community networks, theatre, song, radio and cinema[28]. But for that, it is crucial that we understand women's experiences with on-line and other technological spaces, and the difficulties of negotiating rules, authority and definitions of what is "women-centered" technology.

Arguing along these lines, Bonder[29], referring to her research in South America on the development and use of web sites by women's organizations, questioned whether or not mainstream ICT tools used by women help them address wider gender inequalities. She argued that, based on her research on over 50 "women-centred" web sites, there was little innovation in language (with the exception of trying to avoid sexist language), visual style or textual approach. Furthermore, she emphasized that these sites tended to offer little space for interaction, with the exception of occasional forums or the availability of contact addresses, which in turn, makes us question their capacity to provide an effective tool in the hands of women and their organizations for empowerment and change in society. Is the result of a lack of a sense of ownership by women over these technologies and their products or not?

Nurturing women's ownership or sense of ownership of technology appears to be an important precondition for overcoming the barriers to women's access to and use of ICTs; and for that to happen, it is important that ICT tools are tailored to the specific needs of women. As Rommes[30] pointed out, the important question is how can we make women and other end-users an obligatory point of consideration for designers and policy-makers?

The need to continue to research and explore possibilities around what kind of technology women want, how they want to use it, and how women's imagination and creativity can be integrated into technology and ICTs for development projects (as well as cyberspaces) was strongly expressed during the discussions.

d) Gender-sensitive ICT policy and regulation

Overcoming the persistent barriers to women's access to and use of ICTs as well as making sure that ICTs equally benefit women and men is not possible without adequate policy making and regulation of the ICT sector development. In addressing this issue, Seminar participants focuse on different aspects of this issue, such as what constitutes ICT expertise, strategies for working with policy-makers, as well as strategies to integrate gender concerns in regulation of the sector.

Gender and ICT expertise

In discussing strategies for integrating gender into ICT developments, the need to influence ICT policy making from a gender perspective was frequently reiterated during the Seminars. However, to do so, expertise and knowledge in issues relevant to the regulation of telecommunications, tariffs, and sector development, among other issues, is required. But who is

[28] For example, Connie Bridges, *op. cit.*; Osborn, *op. cit.*; Sylvie Siyam, *op. cit.*; and Sybille N. Nyeck, [ICTNet] "Hello," 11 September 2002.
[29] Gloria Bonder, [ICTNet] "Are Women Changing Gender Bias?" 5 July 2002.
[30] Els Rommes, [ICTNet] "Re: ICT Regulation and Policy," 30 August 2002.

an expert in gender and ICTs, and what does or should this expertise consist of? Seminar participants felt that this is a central question concerning women's confidence in making informed policy contributions as well as making policy makers recognize the validity of women's perspectives in ICT sector regulation

The question of what constitutes an ICT expert was originally raised by Haris[31] in reference to the need to integrate a wider social vision into ICTs, rather than merely a technical one. Syed[32] argued that one does not need to be a technocrat to form opinions and approaches on gender and ICTs, although of course some amount of basic knowledge about ICTs is necessary. In addressing the questions of ICT expertise and knowledge, it is crucial, as Gordon[33] pointed out, that we avoid situations where by virtue of being a technical person and female, one is automatically assumed to be a gender and ICT expert – regardless of the actual perspective or breadth of experience and knowledge. This argument was strongly supported in Hafkin's review of ICT projects from a "gender lens", where she found that the presence of women on a project team did not ensure that gender considerations would be incorporated into a project, or even that the project planning and implementation would be informed by an understanding of gender considerations (Hafkin 2002).

When discussing the issue of gender and ICT expertise, some participants felt that it was important to work on the recognition of the value of qualitative gender research as there seems to be predominance in the perception that qualitative gender research or other forms of social and qualitative research are not as valid as quantitative research. Consequently, according to Gansmo[34], much important qualitative research on women and computers or social and gendered differences in perceptions of ICTs, for example, is rejected in favour of quantitative surveys of distribution of ICT access, which are generally not sex-disaggregated.

Based on her experience in Europe, Rommes[35] argued that notwithstanding the need for female expertise in gender and ICTs, it should be recognized that women and women's groups are experts on what women need in their everyday lives and what they need for empowerment from ICTs, even though they may not be experts on the technical aspects of ICTs. As such, she argued, women should be more involved in the design (and policy) processes in order to ensure positive impact of ICT policy making on women (for some examples on how ICT policies affect women see Box No. 2 below).

[31] Shazia Haris, [ICTNet] "Re: [ICT Net] FW: ICT Regulation and Policy," 24 August 2002.
[32] Sadiq Syed, [ICTNet] "FW: ICT Regulation and Policy," 27 August 2002. Note: this message was actually posted by Jeannie Ash de Pou who forwarded the original message from Sadiq Syed.
[33] Dorothy K. Gordon, [ICTNet] "FW: FW: [ICT Net] FW: ICT Regulation and Policy," 27 August 2002. Note: this message was actually posted by Jeannie Ash de Pou who forwarded the original message from Dorothy Gordon.
[34] Helen Gansmo, [ICTNet] "Re: Gendered Policy-Making" 24 July 2002.
[35] Rommes, *op. cit.*

Box No. 2

Some Examples of How ICT Policy Affects Women

- Control of access and use: in India a few years ago, the first public telephones in rural villages were located in the Chief's house, ostensibly to make use of presumed better infrastructure and to prevent vandalism. However, given the mix of authority, awe and fear that the Chief represents in most Indian villages, the location of the telephone would deter women (and the poor) from using the facility. But in another village in India, a village computer obtained through a project of the M.S. Swaminathan Foundation was placed in the home of a "public-spirited farmer", whose college-educated daughter operates the computer full-time on a volunteer basis. In one case she found a list of veterinarians in the area on the Internet, which was used to find treatment for a local woman's main source of income, her milk cow (Arunachalan 2002).
- Licensing and Fees: the implementation of large up-front licence fees for Internet access affects women more than men, as women make up the majority of small and micro business owners.
- Benefits of e-commerce initiatives: researchers in a project to examine e-commerce and its regulation in China initially considered gender issues to be superfluous to the project goals. However, upon reflection, they came to identify implications for women of the policy being implemented. Among these were the beliefs that the project would: a) increase employment opportunities for women, especially as e-commerce was not a field requiring physical strength or endurance; b) decrease women's domestic workload (by their being able to do shopping online) and increase their available time for leisure and career development; and c) give women with small children or living in remote areas the possibility to continue their education online (through distance education). Yet, if the reality of some of these possibilities, such as how many women would be sufficiently educated and Internet-connected to become e-consumers, and the feasibility of dissemination of distance education to women in rural and remote areas of China in the near future, given that Internet users are very heavily concentrated in major cities would have been considered, the main considerations behind the decision–making would have been different.[36].

Working with policy makers

Based on her research experience with science and technology policy makers in South America, Bonder[37] observed that the lack of gender integration or the lack of understanding of gender and other social implications of ICTs is in part a result of a "disconnection" between gender experts and policy makers. Some materials produced by gender experts for policy makers lack an understanding or fail to pay attention to the level of knowledge, values or purposes of the implementers. Furthermore, Gansmo[38] suggested that in order to bring closer policy makers and gender expertise, it is necessary to use findings based on qualitative research; disseminate them in ways that are interesting and comprehensible to others; raise the visibility of qualitative and feminist researchers, through presentations and networks; and use narratives and stories with a personal dimension, among other strategies.

[36] Meng, Liu. "Exploring Adequate Reform Models for the Telecom Sector in China" as cited in Hafkin and Jorge 2002.
[37] Gloria Bonder, [ICTNet] "More on Mainstreaming Gender in Policies," 11 July 2002.
[38] Gansmo, [ICTNet] "Re: Gendered Policy-Making" *op. cit.*

Referring to a recent gender mainstreaming activity at *info*Dev, Chamberlain[39] added that policy makers do not necessarily need to be "converted" in order to be able to understand the importance of acting on the needs of women. What they need is information that combines: a) "hard facts" i.e., available statistics on women's use of ICTs, their role in development, their participation in science and technology in general, and their access to education; b) case studies showing that projects which take into account gender relations and concerns are more successful than those which do not; c) an internal review of projects demonstrating that women do not benefit when their concerns and situation are not specifically taken into account; and d) examples of how women could and should be included in ICT projects, among others to provide both the rationale and the means in a straightforward and non-threatening way to policy makers.

In addition to this, as argued by Jorge[40], it is important that policy-makers are provided with appropriate how-to" guides, and information kits, apart from being asked informed questions about a proposed action or policy.

Gender-sensitive regulation of ICTs

In the background paper "Engendering Management and Regulation of ICTs" commissioned by INSTRAW for this research project, Anand and Uppal (2002) addressed the potential areas and strategies for integrating women's situation and concerns in telecommunications policy and regulation. The authors begin by arguing that the tendency to view increased private sector investment as a supplement or replacement of public investment in technology infrastructure has led to a subsuming of women's concerns to the larger goal of expanding infrastructure to the poor. Notwithstanding the importance of bringing adequate ICT infrastructure to the poor, it is crucial that in doing so women's needs and situation are taken into consideration. Therefore, the authors argue for the need to outline the regulatory challenges and opportunities that exist from a gender perspective in a context where it is clearly understood that the processes and impacts of regulation involve more than administrative rules or technological change; rather that they also have a strong context-specific component (social, economic, political and cultural) which should be taken into consideration.

Noting that the 2001 UNDP Human Development Report states that regulation and policy measures can and should be taken to ensure that women will benefit from ICTs, Anand and Uppal (2002) identify several areas where regulation and policy can incorporate gender and social concerns. These are:

- Telecom sector liberalization and competition;
- Independent regulation;
- Awareness building;
- Infrastructure creation and operation – reducing costs;
- Content; and
- Intermediation – providing support for use of ICTs.

Many participants provided inputs and examples in support of each of these important areas of regulation where gender component should be ensured. Anand[41] reiterated that the mainstreaming of gender concerns into telecommunications regulation and policy is vital as the

[39] Louise Chamberlain, [ICTNet] "Getting the Gender Message through to Decision-Makers," 26 July 2002.
[40] Sonia Jorge, [ICTNet] "Engendering Regulation and Policy Making," 14 August 2002.

experience of women and development issues over the last 30 years has shown that failure to integrate them into development policies and projects has led to either exclusion of women from the benefits of development or diminishing of their positive impact on the lives of women and wider communities. Anand suggested that women can and should organize and lobby for appropriate telecommunication policies and initiatives, including actively following developments in governmental, corporate and non-governmental sectors. This would allow women and other social groups to be able to respond quickly and effectively, and to be taken seriously by governments and regulatory agencies. In her view, women's and gender concerns can be made an integral part of the regulation agenda if women identify and work actively with the policymakers involved (for information on gender-aware guidelines on regulation and policy making see Box No. 3).

Box No. 3
Gender-Aware Guidelines for Policy-making and Regulatory Agencies

The ITU Task Force on Gender Issues (now the Working Group on Gender Issues) devised a set of guidelines to ensure that "both women and men are considered in the process – both as part of the processes themselves as well as in considering the impact of decisions made."

1. General

- Facilitate and promote the establishment of a Gender Unit within the Regulatory Agency, the Ministry and/or as an inter-agency effort.
- Review, revise or develop new regulations, circulars, issuances and procedures to remove any gender bias.
- Promote gender analysis as part of the policy process.
- Develop and establish systems to gather gender statistics.
- Dialogue with other national entities.

2. Human Resources

- Ensure equal hiring opportunities for all women and men, regardless of race, ethnicity, class and age.
- Ensure that a certain percentage, targeting 50%, of all supervisory and management positions are occupied by women.
- Develop campaigns to attract women professionals, particularly for technical and decision making positions.
- Develop and ensure the existence of appropriate support systems for professional women and men
- Ensure that there are no wage disparities among the genders and establish a policy to eliminate any such gaps

3. Training

- Ensure equal access to training opportunities
- Promote gender-awareness training opportunities for women and men
- Support technical and management programmes that train women professionals and create internship programmes with educational institutions.

4. Licensing Activities

- Award a certain percentage of licenses to woman-owned companies and/or companies with women in top management positions
- Develop and market licensing procedures in which potential women owners can have access to the information
- Promote the development of business assistance programmes and partnerships with expertise in assisting women entrepreneurs
- Develop license award criteria based on social responsibility of the business as well as universal access objectives of the proposed venture
- Ensure that licenses awarded contain certain conditions to promote gender analysis and mainstreaming for the particular company.

Source*:* International Telecommunications Union, 2001

[41] Anita Anand, [ICTNet] "FW: ICT Regulation and Policy," 13 August 2002. Note: this message was actually posted by Jeannie Ash de Pou who forwarded the original message from Anita Anand.

Furthermore, while discussing current trends towards the privatization of telecommunications, Uppal[42] noted that such developments will not work if the accompanying regulatory framework is not sound; and even less if that regulatory framework is not based on the specificities of gender relations and situation within given country. According to Uppal, women, like many other marginalized groups, cannot afford to ignore the privatization and regulation of telecommunications. But they need to develop an expertise in order to devise effective strategies for achieving their goals[43].

Ensuring women-sensitive regulation requires some fine-tuning. According to Seow[44] the question of how women's needs are relevant to regulation could not clearly be seen if the understanding of regulation is limited to resolving licensing, spectrum issues, competition acts, and telecom codes. In such a regulation framework "women's issues" are not perceived as falling within the scope of government interest. However, when long-term goals are taken into account, such as providing connectivity, information, education, consumer protection and resolving market failures, then the inclusion of social concerns becomes relevant and should include women's needs and gender concerns.

Based on such arguments, Seow called for an interpretation of communication regulation which is based on a larger understanding of these or other long-term issues and a closer examination of what long-term goals in regulation are, such as, for example, providing improved connectivity to the population. It is within such a context, she argued, that the issue of how gender concerns fit into these goals should be addressed.

In order to successfully integrate gender perspectives into ICT regulations, Uppal[45] argued that a clear understanding of the duties and roles of the government and the private sector is also important. Despite the fact that profit remains the primary concern of a commercial enterprise, government regulation can still do much to ensure that public funds are better targeted and that address the concerns of those, such as women, whom the markets sometimes do not consider as profitable customers.

In line with these arguments, Kandaswamy[46] noted that in India various kinds of technologies have been developed to overcome barriers of affordability, ease of access, and power – but, she raised concern, that what is missing is venture capital for non-traditional technologies.

Despite concerns arising out of the existing conflict between objectives of universal accessibility/affordability and profitability, an increased attention to strategies for making low-income markets, including women, attractive to private sector providers and investors has been prompted. Still, however, women remain non-attractive to the market, although cases where ICTs are successfully and profitably targeted to women are beginning to emerge. The example of thr GrameenPhone programme undertaken in Bangladesh was shared during the Seminar. GrameenPhone, while selling phones and time to urban customers, sponsors Village Phone, a

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[42] Mahesh Uppal, "Engendering Management and Regulation of ICTs," 30 July 2002.

[43] Examples include regulation that provides free or low-cost telephone access to, for example, rape crisis services, or concessional access to communications for one-parent families; issues which cannot be factored into the rules for universal service.

[44] Isa Seow, [ICTNet] "FW: [ICT Net] Engendering Management and Regulation of ICTs," 31 July 2002.

[45] Mahesh Uppal, *op. cit.*

[46] Deepa Kandaswamy, [ICTNet] "To Answer a Couple of Questions," 20 July 2002.

programme in which people without phone service in rural areas take out small loans to purchase cell phones and air time at cost. The programme began in 1997, and now has 575,000 subscribers in 12,000 villages, making it the largest mobile operation in the country. At the end of 2001, after just five years, GrameenPhone Ltd. made $27 million in pre-tax profit — far sooner than many First World start-ups. In this case, the Bangladesh government did not charge an upfront licensing fee, because, according to Iqual Qaudir, the founder of GrameenPhone, it expected cell phones to be a marginal business for the very rich. GrameenPhone now has more subscribers than the government-owned telephone company (Anand and Uppal 2002)[47].

III. Conclusions and Recommendations

INSTRAW's research on gender and ICTs focused on the:

a) identification of persistent barriers to access to and use of ICTs by women, including, on the one hand, those related to gender socialization, cultural patterns and unequal access to education and training in general, and in the technical aspects of ICTs in particular; and, information availability and adequacy of its content, on the other hand; and,
b) identification of ways forward to overcome these barriers with a view to increasing the capacity of ICTs for transformative empowerment of women.

From the analysis and arguments presented both in the five background papers commissioned by INSTRAW for this research and the discussions during 8 weeks of Virtual Seminars, it is clear that despite substantial progress in providing women with access to ICTs for their empowerment, there seems to be a continuous need to further strengthen the entire area of ICTs from a gender perspective. In doing so, the following conclusions and recommendations emanating from this research should be taken into consideration:

1. *Understanding and measuring of the gender digital divide is the first step forward*. Particularly important is to engage in work that would develop appropriate statistics and data on the scope and characteristics of the gender digital divide. *Currently available sex-disaggregated data in ICT tends to be inconsistent and unreliable, obtained either from telecommunication organizations (telephone companies) or estimates based on shipment data (of, for example,*

[47] The Grameen Phone experience suggests a potential solution for attracting telecom operators to serve rural areas: target un-served and under-served regions and provide support for the acquisition of quality market-appraisal knowledge and market data through research in the field. It also points to a potential solution for telecom operators facing the significant challenge of managing the last mile of rural telecom operators: link existing and successful micro-credit organizations with telecom operators (fixed line and or wireless) to expand public call office (PCO) coverage in rural areas (Richardson et al 2000). A recent report by Prahalad and Hammond (2002) for the World Resources Institute also shows that innovative approaches to access are required as: the poor live in high-cost economies, and as a result, they are a prime market for economies of scale; the poor have purchasing power in the aggregate. Income level does not determine purchases in ways commonly assumed; low-income markets are geographically and population concentrated; rural areas have untapped purchasing power; and that the poor welcome new technologies.

personal computers). They are also inadequate for a real understanding of the numbers of women who use ICTs and the purposes for which they are used[48].

Hence, it is recommended that:

- ***Data on women's participation in the knowledge society should be systematically collected at the national level,* including participation in technical education at all levels, access (including but not restricted to Internet access) and participation in research, industry and decision making.[49]. *In addition, a series of statistics which address women's interaction with ICTs such as access to PCs, wireless and other technologies; access to credit; existence of women-specific technology projects; support for teleworking for women; should also be collected.[50]***
- ***Systematic collection of sex-disaggregated data aimed at quantifying the gender digital divide should be a high priority for governments, international organizations and NGO and should be integrated into national data collection systems;***
- ***The enabling environment necessary for promoting the use of ICTs by women should also be measured. Indicators related to socio-economic status, ICT-basic infrastructure, level of knowledge society, potentiality of acceptance (in terms of finance and capacity), and gender equality and awareness at local levels should be compiled.***

2. *Enhancing research and research-based analysis and ideas on the links between women and information and communication technologies as tools for their empowerment is sine qua non for successful lobbying and appropriate policy-making on gender and ICTs.* Yet, there seems to be an apparent lack of sufficient research and qualitative analysis in this area and this gap needs to be urgently addressed.

Therefore, it is recommended that research and analysis should:

- ***Evaluate the benefits of ICT projects to all users from a gender perspective;***
- ***Explore whether women are using ICTs as effectively as men do in addressing gender biases in the medium, media and society;***
- ***Identify the kind of technology women want, how they want to use it, and how women's imagination and creativity can be used in developing women-appropriate technologies and ICT applications;***

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[48] For example, an ITU survey (International Telecommunications Union 2002) showed that "while women make up 42% (on average) of all the Internet users globally, this ranges from less than 30% in Morocco, India and Turkey to more than 50% in Canada and the United States. However, it should be noted that this data does not include many of the least developed nations where access to ICTs is often the most difficult.

[49] The Cisco Networking Academy Programme and others have made a start in this direction, but this is an area where work is just beginning. The International Telecommunications Union (ITU) and the World Bank are beginning to assess current knowledge in the area and to promote more systematic collection of sex-disaggregated data on ICT use. For example, the ITU held a World Telecommunications/ICT Indicators Meeting in January 2003. The gender session discussed which telecommunication/ICT indicators are important for gender analysis, the availability of telecommunication/ICT gender disaggregated statistics and ways to move forward; while the World Bank is initiating research on sex-disaggregated indicators to measure, monitor and evaluate the gender dimension of ICTs in developing countries.

[50] For more information on specific examples of the types of statistics needed, see Isa Seow [ICTNet] "On eReadiness," 24 July 2002.

3. *Addressing inequalities in access to ICTs is important but in itself is not a sufficient condition for women's empowerment through ICTs***.** This research confirmed that as important as access strategies for women are, they are only useful when paired with content that women can use effectively in support of their activities and concerns.

It is thus recommended that in addressing the content and quality of information accessible through ICTs,

- ***Governments must consider women's information needs. But in order to be able to do so, women's organizations need to make clear what these needs are, including identification of the gaps in the public information systems.***
- ***Governments should provide clear, comprehensive and accurate information on all relevant public issues.***
- ***Information provided through ICTs should be available in formats, languages and, visual designs, appropriate to women's needs and status in society;***

4. *Development cooperation and projects aimed at the transfer and diffusion of information and communications technologies are a powerful tool in bridging the gender digital divide* and enabling better access to and use of ICTs by women as was confirmed by this research project.

Yet, there are number of steps that need to be taken in order to ensure that ICT-based development projects benefit women the same way as they benefit men. These include the following:

- ***Project beneficiaries should be involved in the project design.***
- ***A gender perspective should be ensured through its integration into the project proposal guidelines, as the participation of women project planners is not in itself a guarantee of gender awareness.***
- ***ICT projects should tackle capacity-building issues and themes, with direct application to women's daily lives and working environment.***
- ***Projects in technical fields (technical training for example) should specifically focus on the participation of women because the pool of eligible women in these fields is small, especially in Africa.***
- ***Follow up is important to assess the continuing use and usefulness of a technology or to project to women's needs and objectives***.

5. F*inally, this research reinforced the need to address ICT policy-making and regulation seriously.* It concluded that gender sensitization and training of regulatory staff is of crucial importance for improving ICT regulation. In addition, it also reiterated that women should be more involved in the regulatory *process* itself. *But to do so, more efforts are required to attract women professionals to work for or with regulatory bodies, especially in strategic positions.*

This research concluded that substantial intervention in regulatory and policy-making practices is required, and recommended that actions be taken to ensure that:

- ***Regulators take action to guarantee that public funds are targeted to address the concerns of women, who are not always considered to be potentially profitable***

customers by the private sector for whom profit remains as the primary concern.

- ***Education and content issues be worked into regulation and policy.***
- ***Communication regulation needs be based on an understanding of the key long-term issues, such as providing connectivity to all groups; providing adequate information to all social groups; ensuring equal possibilities for ICT education; providing consumer protection, and minimizing the negative effects of market failures, among others.***
- ***Women's and gender concerns be made an integral part of the regulation agenda by enabling women to work actively with the policymakers involved. Women must develop increased expertise in the sector. They should make organizing and lobbying activities for appropriate telecommunication policies and initiatives a priority, and actively follow developments in governmental, corporate and non-governmental sectors.***

In concluding, it is worth noting that perhaps the most important conclusion stemming from this research is that for the potential of ICTs for women's empowerment to be harnessed to the maximum, there is a need for women in developed and developing countries to share their knowledge, strategies and situations in order to better inform policy makers and develop lobbying activities on a wider scale. Women need to develop advocacy strategies to address the needs of women in access to and use of ICTs and shape policy formation. However, it is crucial that the policy-making context and process itself be understood by women, including the positions and power of various actors participating in policymaking, their interests and agendas. Research and capacity building to strengthen the knowledge base of women and their organizations are crucial elements in this endeavour and should become a priority at both the national and international levels.

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References

Arab Women Connect. 2002. "Education Seen as the Most Urgent Issue." 19 November 2002 http://www.arabwomenconnect.org/awc/e_news_prev.asp?news_id=97&news=true (last accessed 12 May 2003).

Alshejni, Lamis. 1999. "Unveiling the Arab Woman's Voice through the Net." In *Women@Internet*, W. Harcourt, ed. London: Zed Books.

Anand, Anita and Mahesh Uppal. 2002 "Engendering Management and Regulation of ICTs." Background paper prepared for the INSTRAW Virtual Seminar Series on Gender and ICTs. http://www.un-instraw.org/en/research/gender_and_ict/virtual_seminars.html

Arunachalam, Subbiah. 2002. "Reaching the Unreached: How Can We Use ICTs to Empower the Rural Poor in the Developing World through Enhanced Access to Relevant Information?" M. S. Swaminathan Research Foundation. Paper presented at the IFLA General Conference, Glasgow, 18-24 August.

Bastani, Susan. 2001. "Muslim Women Online." Photocopy, unpublished.

Carr, Marilyn, M. Chen and R. Jhabvala, eds. 1996. *Speaking Out: Women's Economic Empowerment in South Asia.* London: IT Publications.

Carr, Marilyn and Sophia Huyer. 2002. "Information and Communication Technologies: A Priority for Women." In *Gender, Technology and Development* 6 (1 2002):85-100.

Colle, R.D. and R. Roman. 2002. "Dealing with Gender as an ICT Access Issue." In *TechKnowLogia* 4 (3 2002)

http://www.techknowlogia.org/TKL_active_pages2/TableOfContents/main.asp?IssueNumber=17 (last accessed 12 May 2003).

Gajjala, Radkhika.2002. "Cyberfeminist Technological Practices: Exploring Possibilities for a Women-Centered Design of Technological Environments." Background paper prepared for the INSTRAW Virtual Seminar Series on Gender and ICTs http://www.un-instraw.org/en/research/gender_and_ict/virtual_seminars.html

Hafkin, Nancy. 2002. "Are ICTs Gender Neutral? A Gender Analysis of Six Case Studies of Multi-Donor ICT Projects." Background paper prepared for the INSTRAW Virtual Seminar Series on Gender and ICTs. http://www.un-instraw.org/en/research/gender_and_ict/virtual_seminars.html

_____. 1999. "Convergence of Concepts: Gender and ICTs in Africa." In E. Rathgeber, ed. *Gender and the Information Revolution in Africa*. Ottawa: International Development Research Centre.

Hafin, N. and Sonia Jorge. 2002. "Get In and Get In Early: Ensuring Women's Access to and Participation in ICT Projects". In *Women in Action*, No. 2, 2002. http://www.isiswomen.org/pub/wia/wia202/getin.htm (last accessed 15 May 2003).

Hafkin, N. and N. Taggart. 2001. "Gender, Information Technology and Developing Countries: An Analytic Study." Washington: Academy for Educational Development. http://www.usaid.gov/wid/pubs/it01.htm (last accessed 12 May 2003).

Huyer, Sophia. 1997. "Supporting Women's Use of Information and Communications

Technologies for Sustainable Development." Ottawa: International Development Research Centre. http://network.idrc.ca/ev.php?URL_ID=10939&URL_DO=DO_TOPIC&URL_SECTION=201&reload=1039732688 (last accessed 12 May 2003).

IDRC Gender and Information Working Group. 1995. "Information as a Transformative Tool: The Gender Dimension." In *Missing Links: Gender Equity in Science and Technology for Development*, 267-293. Ottawa: International Development Research Centre.

INSTRAW. 1998. "'EMAGE' for the Advancement of Women: INSTRAW's Strategy for the New Millennium." INSTRAW/BT/1998/R.3. Santo Domingo: United Nations International Research and Training Institute for the Advancement of Women INSTRAW.

International Telecommunications Union. 2002. Survey results can be viewed at www.itu.int/newsarchive/wtd/2002/survey/ (last accessed 12 may 2003).

_____. 2001. "Gender-Aware Guidelines for Policy-Making and Regulatory Agencies." http://www.itu.int/ITU-D/gender/pdf/GenderAwarenessGuidelines.pdf (last accessed 12 May 2003).

Kenney, Charles, J. Navas-Sabater and C. Qiang. 2000. "ICTs and Poverty." Draft manuscript. World Bank, August.

Knight, P. et al. 1995. "Increasing Internet Connectivity in Sub-Saharan Africa – Issues, Options and World Bank Group Role." Washington, D.C: World Bank.

Malcom, Shirley. 1997. "Knowledge, Technology and Development: A Gendered Perspective." http://www.wigsat.org/malcom.html (last accessed 12 May 2003).

Marcelle, Gillian M. 2000. "Transforming Information & Communications Technologies for Gender Equality." Gender in Development Monograph Series #9. New York: UNDP.

Martinez, Julia and Katherine Reilly. 2002. "Empowering Women for Public Policy Advocacy: Looking Behind the Internet to Enable Citizen Information Systems." Background paper prepared for the INSTRAW Virtual Seminar Series on Gender and ICTs. http://www.un-instraw.org/en/research/gender_and_ict/virtual_seminars.html.

Mijumbi, Rita. 2002. "The Use of Information and Communication Technologies as a Tool to Bridge the Gender Digital Gap." Background paper prepared for the INSTRAW Virtual Seminar Series on Gender and ICTs. http://www.un-instraw.org/en/research/gender_and_ict/virtual_seminars.html

Moser, Caroline. 1993. *Gender Planning and Development: Theory, Practice and Training*. London and New York: Routledge.

Oxaal, Z. and Baden, S. 1997. Gender and Empowerment: definitions, approaches and implications for policy. Draft Report Num. 40. BRIDGE.

Prahalad, C.K. and Allen Hammond. 2002. "What Works? Serving the Poor, Profitably." Washington, D.C.: World Resources Institute.

Richardson, Don; Ricardo Ramírez, and Moinul Haq. 2000. *Grameen Telecom's Village Phone Programme in Rural Bangladesh: A Multi-Media Case Study*. Telecommons Development Group, Final Report.

http://www.telecommons.com/villagephone/index.html (last accessed 12 May 2003).

Sene, Khamathe. 2001. "PanAfrican Study on Telecentres Mali: Multipurpose Community Telecentre of Timbuktoo. Evaluation and Learning System for Acacia (ELSA)." International Development Research Centre, Report.

Sikoska, Tatjana and Nuket Kardam. 2000. "Introduction" in *Engendering the Political Agenda: The Role of the State, Women's Organizations and the International Community"*, Santo Domingo: United Nations International Research and Training Institute for the Advancement of Women INSTRAW.

Society for International Development and UNESCO. 1998. *Women in the Digital Age – Using Communication Technology for Empowerment: A Practical Handbook.* SID: Rome.

Stamp, Patricia. 1989. *Technology, Gender and Power in Africa*. Ottawa: International Development Research Centre.

UNCTAD. 2003. "Information and Communication Technology (ICT) Development Indices" UNCTAD/ITE/TEB/MISC.2 (VOL.III). Prepared by the United Nations Conference on Trade and Development (UNCTAD) Secretariat for the World Summit on Information Society. Geneva: UNCTAD.

UNDP. 1999. *Human Development Report 1999*. New York: Oxford University Press.

UNESCO. 2001. "Educating Girls and Women." *Information Kit on Education for All.* Paris: UNESCO.
http://www.unesco.org/education/efa/ed_for_all/background/background_kit_girls.shtm.
(last accessed 12 May 2003).