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**INSTRAW Virtual Seminar Series on
Gender and Information and Communication Technologies (ICTs)**

Summary of Discussions and Recommendations

Prepared by

Sophia Huyer and Tatjana Sikoska *

INSTRAW

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I. Introduction:

Information and communication technologies (ICTs) are widely recognized as key elements of the new global knowledge-based economy, ensuring rapid and continuous transfer of commercial, financial and political information crucial to the development process. However, it has been argued that a gender digital gap is emerging as women worldwide lag overwhelmingly behind men in the access to and use of ICTs. In order to address the gender digital divide, the Fourth World Conference on Women (Beijing, 1995) delineated a strategy to promote greater access to communication and information by women internationally. Likewise, the Beijing+5 Conference (New York, 2000) called upon development cooperation to strengthen the capacity of women to use new technologies for advancing their position and for achieving gender equality and thus sustainable development.

As a result, many initiatives have been undertaken by women and women's organizations that aim at providing women with access to ICTs as tools for their social, political and economic empowerment. Furthermore, national and international agencies have also pursued many initiatives in order to ensure that women are not deprived of the benefits of the emerging "information society". Many of these initiatives, however, have been undertaken in relative isolation from one another, and thus are not informed by shared learning experiences, nor are these projects and initiatives necessarily integrated into larger development policy frameworks from the beginning.

Section I: INSTRAW Collaborative Research Project on Gender and ICTs

To address the need for sharing knowledge and learning about gender aspects of ICTs, INSTRAW implemented a collaborative research programme which aimed to:

- ascertain the state-of-the-art in terms of access and use, management and regulation, and impact of ICTs on women.
- determine the constituents of an enabling/disabling environments for access and use of ICTs by women;
- 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;
- investigate what is presently being done by key stakeholders to promote and support projects aimed at the equal participation of women and men in ICTs in developing countries; and,
- propose ways in which ICTs can better serve as an important tool for women's empowerment.

In order to achieve these objectives, INSTRAW invited the submission of papers that were used as background material for a series of Virtual Seminars. The Seminars took place during an eight-week period from June to September 2002 and were were organized as an email-based discussion. There were 325 persons, from more than 50 countries from around the world, subscribed to the Seminar discussion with a total of 184 contributions.

The Background papers that were prepared for each Seminar were intended to highlight key issues and strategies in each area and to set the context for the Seminar discussions. All of the papers may be accessed at INSTRAW's website: www.un-instraw.org

The first Virtual Seminar addressed the issue of the “neutrality” of ICTs. A background paper entitled: "Are ICTs Gender Neutral? A gender analysis of six case studies of multi-donor ICT projects" was prepared by Nancy Hafkin. This paper explored the hypothesis that women do not benefit equitably from ICT and development projects without specific gender analysis and efforts. Six field studies were conducted and reviewed ICT projects of the Information for Development Programme (infoDev) from Africa, Asia, and Latin America were conducted.

The second Virtual Seminar addressed the issue of enabling and disabling environments for access to and use of ICTs by women. A background paper entitled "Cyberfeminist technological practices: Exploring possibilities for a women-centered design of technological environments" was prepared by Radhika Gajjala. This paper attempted to respond to questions such as the following: Are there “women-friendly” practices of ICT design and use? Do “women-friendly” strategies for access and use of ICTs necessarily allow entry to women from all backgrounds irrespective of race, class, caste, sexuality and geographic location? Is it possible to devise women-friendly and gender-sensitive strategies for the development of technological environments and practices that will be empowering and enabling for women, particularly those in the third world countries?

The Third Virtual Seminar addressed the issue of management and regulation of ICTs . A background paper entitled: "Engendering Management and Regulation of ICTs" was prepared by Anita Anand and Mahesh Uppal. This paper looked into the specific reasons for women's lack of access to and use of ICTs and links these to gaps in regulation and management of ICTs.

The Fourth Virtual Seminar addressed the issue of using ICTs as tools for women's empowerment. Two background papers were prepared for this seminar: 1) "Empowering Women for Public Policy Advocacy: Looking Behind the Internet to Enable Citizen Information Systems" by Juliana Martínez and Katherine Reilly; and 2) "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.

The paper by Martinez and Reilly focused on the access to and of use of “public information” concerning governmental decisions and policies by organized women. Mijumbi's paper to the contrary explored lessons learned and experiences obtained by individual rural women in accessing and using ICTs for their economic empowerment.

II. Summary of Major Discussions

Based on the above-mentioned background papers deriving from research, a discussion forum took place over a period of eight weeks. Several important cross-cutting themes emerged during these seminar discussions, reflecting the connections and intersections between the four topics and the background papers presented. They are:

- a) The social context of technology and women's relation to the technology per se;
- b) Barriers to women's access to technology and ways to overcome these barriers through:
 - i) gender-sensitive ICT projects; ii) gender-sensitive policy and regulation; and iii) development of gender-sensitive indicators and statistics;
- c) Main approaches to ICTs as a tool for women's empowerment;
- d) Access to and management of information through ICTs.

Section I: The Social Context of Technology and Women's Relation with it

One major issue discussed extensively by seminar participants dealt with the relation between gender and technology and how this relation is in turn influenced by the very nature and environment of technology per se. Technological environments, as explained in the background paper prepared by Gajjala, 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 which specific technologies are put to use. It is important to emphasize the unequal power relations within which all the factors that shape such environments co-exist. Gender is one of these factors.

1.1 Understanding the link between gender and the social context of technologies

Gender refers to the varying roles and relations between women and men which are influenced by socio-cultural, political, economic, religious and environmental factors. Technologies, including the new ICTs are not gender-neutral. The use of ICTs and other technologies by women and men reflects to a large extent the wider socio-cultural and economic context. Gender-based power relations within societies bring about substantial disparities in access and use, and in production, management and regulation of ICTs apart from the disparities caused by class, economic status, national situation, infrastructure, and geographical location.

Gansmo (ICTNet discussions archive¹) argued that unfortunately there is an interchangeable use of the terms gender and women and that this interchangeable use detracts from the richness of the term gender and from possibilities for engaging in more productive dialogues and developing more effective approaches for analyzing the relationship between women, men and technology. This view was complemented by Gajjala's paper as it argues for the use of gender as crucial concept in understanding the technological environments and women's relationship with those environments.

In addition, to the importance of understanding the gendered context of technology, it was also pointed out that in order for a tool to become a "technology", it must also fit into its social context. As Montgomery (ICTNet archives) suggested, ICTs do not become gender-neutral as a result of a "more general quality of technology". That is, technologies are tools 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 its meaning. In his view, to be a "technology" a tool must fit into its social context. Otherwise it is simply an inanimate object. Therefore, a

¹ The complete text of all contributions from participants can be found in the ICTNet archives which can be indexed by author. See http://server778.dnslive.net/pipermail/ictnet_un-instraw.org/ .

technology project should be seen as a component of the social context in which it is placed, and not the other way around. 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, age, etc 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.

Yet, he also emphasized that it is insufficient to talk about integrating a social component in a 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 improving the quality of life, another concept that must be defined within the social context to which it is being applied.

1.2 Women's relationship with technology

There is an almost universal lack of visibility of women and/in technology, both in the industry and as users. Discussions showed that the reasons for this are many. One is the way the media strengthens social preconceptions that women are less suited to or interested in working with technology. Another reason mentioned by participants is the actual number of women in the ICT industry which is smaller than that of men. This, in turn, is biased by the unequal access to education by women and men; glass ceilings in industry and research; and lack of financial resources.

Contrary to common beliefs that women participate in ICT education has increased, Hafkin commented that there is a decrease in the enrolment of young women in computer science courses in the USA and Canada, while in many developing countries, numbers seem to be increasing.

Nevertheless, while in some countries, such as India, the profile and participation of women in science and technology is increasing, in many countries there are few opportunities for women to engage in technology and be seen as a role model. Moreover, as Gajjala argues, even when the number of women increases, as in India, women's relationship with the technology is not necessarily equal to that of men. She noted that in India, the issue is not a lack of women with expertise in these areas, but rather the barriers they face due to disabling socio-cultural and managerial environments at work and at home. In understanding the relationship between women and/in technology, it is thus important to bear in mind that creating environments conducive to women IT workers' upward mobility is more of an issue than the mere question of access to ICTs or IT-related education and training.

Based on her analysis of the individual empowerment of women and men IT workers in India, she argued that their individual empowerment 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) workplace 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 disabling for women.

Furthermore, through the analysis of male/female student's experiences in using Internet, it becomes clear that the Internet in its present state, is not necessarily an enabling environment for women, as many women do not feel comfortable with its content, both substantive and visual. This was also supported by the experience of women in El Limon, Dominican Republic who were provided with the opportunity to use ICT facilities, contributed by Landschultze (ICTNet archive). She argued that useful 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.

Section II: Barriers to women's access to and use of ICT's and ways for overcoming them

2.1 Barriers to Access to and Use of ICTs

It was commonly argued during the seminars that a major determinant of women's access to and use of ICTs is the wider socio-economic and cultural context. Statistics from the Arab Human Development Report (2002) provided by Treiki (ICTNet archives) show that few important facts affect women's access to and use of ICTs in the Arab world: a) half of the women in the Arab world are illiterate; b) the percentage of women's participation in Arab parliaments is almost the lowest in the world; c) scientific expenditures in the region are very low compared to other regions; and d) water scarcity figures largely in the lives of most of the population.

It is not surprising then, that of the 1.2 per cent of the Arab population who can access the Internet, very few are women. However, there are some hopes for improvement in the future as there are increasing literacy rates among young women between the ages of 15-24 in the Arab world; and the annual growth rate of Arab users is among the highest in the world.

The situation in rural Canadian communities shows that women in this country also experience difficulty in using ICTs, for reasons of poverty/cost, availability, travel and time restrictions stemming from their double load of domestic and productive activities – barriers shared with women in developing countries (Baker, ICTNet, archives), hence, reinforcing the point that differences in women's use of technologies/ICTs are affected by class, economic level, national situation, access to resources, infrastructure, etc., rather than by geographical location alone, i.e., the North/South digital divide.

Of the barriers to women's access to and use of ICTs mentioned during the seminars, language and literacy were considered to be among the major ones. Women make up two-thirds of the world's 875 million illiterates, and have less access to training in the international languages that make up a substantial portion of Internet and IT content (with the exception of radio which provides indigenous programming in local languages). Osborn (ICTNet archives) commented that based on his work in Niger with Bisharat, an NGO which engages in research, advocacy, and networking relating to use of African languages in software and web content, it is not sufficient to rely on more educated people to intermediate between a larger, less educated group and the technology. More effort needs to go into assuring "soft access" to less educated and illiterate people, and in developing relevant content/design. There is the added issue of providing

multilingual support in those countries where more than one language is used. From his experience, failure to adequately address soft access and multilingual issues is disfavours women more than men.

Yet, it was clearly stated 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, as they are currently available – but scientific and technological literacy is also 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 school and university, 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.

Establishing ICT-enabled networks has been a widespread practice aimed at encouraging greater participation of women in ICTs. As noted by Nath (ICTnet archives) such networks have the potential to empower women and create greater opportunities for their participation in the governance process, but not many e-governance strategies are currently structured to encourage the women’s participation. He noted that there are several reasons for this, including women’s lower access to resources, their absence from meetings and network planning, and the situation that the knowledge possessed by women is not recognized or valued equally with men’s knowledge.

The persistence of barriers to women and technology contradicts the fact that in the very remote past, women were naturally linked to technological development, for example in the development of agriculture, as Selaimen (ICTnet archives) reminded us. She noted that at a certain point of history, women were put aside insofar as technological research and development are concerned. Participants acknowledged that understanding this change is crucial for comprehending the forces operating in the 21st century, which in turn is crucial for the development of appropriate policies and strategies to enhance women’s access to and use of ICTs.

Addressing these barriers is essential. The question remains however 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 sector, or ntreating separate technological environments and spaces for women?

2.3 Overcoming barriers to access to and use of ICTs

2.3.1 ICT-based projects and transfer of knowledge and technology

Development cooperation has increasingly sought to improve the access to and use of ICT’s particularly in developing countries by financing and implementing ICT-oriented projects. The important question however is whether or not these projects enable women to empower themselves through ICTs. That is to say, are these projects gender sensitive? Do they fulfil their objectives given the persistent economic, social and cultural barriers to women’s use of ICTs?

The analysis of infoDev projects presented in Hafin's paper show that ICTs are not necessarily gender neutral and that given the persistent gender inequalities and unequal power relations within our societies, substantial disparities in access, use, production and management and regulation of ICTs continue to exist. If these gender-based disparities are not addressed, women will continue to lag behind men in access to and use of ICTs.

The analysis of selected infoDev ICT development projects as conducted by Hafkin, referred to a 'gender lens', or a means of changing perspectives on a project, somewhat like changing a camera lens, to look at whether or not gender has been considered in project design and implementation, or whether the project impacts women and men differently. As Gajjala remarked, "gender and technology" are being approached from various perspectives – women in development, cultural studies perspectives, and liberal feminist perspectives – in both developing and developed countries. The "gender lens" concept might be a way of bringing together or finding cross-cutting themes about the assumptions made and approaches taken to women and ICTs in each of these perspectives. It could also greatly enrich some first-world-centered gender and technology dialogues and "complicate" or deepen existing theoretical frameworks.

Yet, an important question of whether or not gender-sensitive ICT projects do constitute an enabling and empowering environment for women, particularly women from the developing countries was frequently raised during the seminars. Various arguments related to the issue of transfer of western technologies to developing countries vis a vis the need for developing genuine, gender-sensitive programmes and project designs suitable to the given social and cultural contexts of the developing countries, were provided during the discussions.

Discussions highlighted the need to understand women's experiences with on-line and other technological spaces and the difficulties of negotiating rules, authority and definitions of "women-centered" as set within larger global structures of corporate culture, race, class, caste, sex and geography. It was 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; hence, ICT-oriented development projects ought to reflect such women's agendas.

Bonder (ICTnet archives), referring to her research in Latin America on the development and use of web sites by women's organizations, raised another relevant concern. Whether or not women are using ICTs to address gender biases in the medium, other media and society. Her research on over 50 web sites found that these web resources do not tend to include information of other social movements or information on addressing social conflicts and policies. She found little innovation in the language used (with the exception of trying to avoid sexist language), visual style or textual approach. And finally, these sites tended to offer little space for interaction, with the exception of occasional forums or the availability of contact addresses. The question raised therefore was whether or not this result from a lack of women's sense of ownership over these technologies and their products?

Women's ownership or sense of ownership of technology appears to be an important aspect of overcoming the barriers to women's access to and use of ICTs. Gajjala's analysis of women-

centered listservs clearly point out that it is essential that women feel that such technologies and spaces belong to them and are tailored to their particular needs if they are to serve as a tool for their empowerment. It was therefore argued by participants that ICT-oriented projects are not enough. Projects need to transfer technology with which women feel comfortable. And to do so, women must be involved in the design, the implementation and the monitoring of ICT-oriented projects. As Rommes (ICTnet archives) stated, the important question is how can we make women/end-users an obligatory point of passage for designers and policy-makers?

The need to continue research and explore possibilities around what kind of technology women want, how do they want to use it, and how can women's imagination and creativity be integrated into technology projects and cyberspaces was strongly expressed during this discussions, and as was the acknowledgement that ICT-based development projects must take this into consideration.

2.3.2 Gender-sensitive ICT policy

Who is an expert in gender and ICT and what does or should this expertise consist of? This is a central question concerning women's confidence in their understanding of ICTs and ICT implementation. Related questions include: how much and what kind of knowledge do women need to make informed policy contributions; and what needs to be done to get policy makers to recognize the validity of women's perspectives? These questions were discussed from several perspectives during the Virtual Seminars.

In addressing the above mentioned issues, it is crucial, as Gordon (ICTnet archives) 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 breath of experience and knowledge. This argument is strongly supported by Hafkin's paper whereby she showed that the presence of women on a project team did not mean 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. She then argued for the need for gender equality training that can benefit both women and men.

The question of what constitutes a female ICT expert was originally raised by Haris (ICTNet archives) in reference to the need to integrate a wider social vision into ICTs, rather than simply a technical one. Syed (ICTNet archives) 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 the ICTs is necessary. Sociologists may be better able to assess the social implications or usages of ICT. Haris has also observed that more and more urban women are working in math sciences and engineering, which can create a greater distance between urban and rural women, and may further de-legitimize the rural women's perspective.

One approach to the answer comes from Rommes' (ICTNet archives) experience in Europe. She argued that women and women's groups are experts on what women in their everyday life need and what they need for empowerment from ICTs and so they should be more involved in the design (and policy) processes, if only to make visible the kind of politics which exist in such seemingly gender-neutral places.

2.3.2.1. Working with policy makers

Bonder (ICTNet archives) observed based on her research with science and technology policy makers in South America that a lack of integration of gender, or a lack of understanding of the gender and other social implications of ICTs can come from a “disconnection” between gender experts and policy makers. Some materials produced by gender experts for policy makers can be based in a lack of understanding or attention to the level of knowledge, values or purposes of the implementers. The outcome can be accusations of sexism on one side and a negative reaction to gender issues on the other.

Gansmo (ICTNet archives), referring to her own struggle with the question of how to make the "gendered nature" of policy-making visible, suggested that in order to do so, it is necessary to:

- make generalized conclusions from qualitative research;
- disseminate findings in ways that are interesting and comprehensible to others;
- raise the visibility of qualitative and feminist researchers, through presentations and networks;
- use narratives and stories with a personal dimension.

Chamberlain (ICTNet archive) referred to a recent "gender mainstreaming" activity at infoDev, and noted from that experience that policy makers do not necessarily need to be "converted" to be able to understand the importance of acting on the needs of women. The combination of:

- "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;
- case studies showing that projects which took into account gender relations and concerns were more successful than those which did not;
- an internal review of projects showing that women do not benefit when their concerns and situation are not specifically taken into account; and
- examples of how women could and should be included in ICT projects;

all provided both rationale and means in a straightforward and non-threatening way for policy makers to begin to address the gender issue.

From this experience, one can learn that researchers/advocates should:

- focus on providing evidence of how the development process is strengthened by the greater participation of women;
- use solid quantitative indicators and data;
- present their findings in ways that their audience can understand and relate to; and
- illustrate the consequences of women's exclusion from the ICT community.

Jorge (ICTnet archives) based on her work with government policy makers and regulators, found that using statistics or case-study data can demonstrate the gender effects of policy and/or regulatory decisions. Asking informed questions about a proposed action or policy is also an important behaviour or policy change agent. She claimed that it is easier to integrate gender into implementation – or the practical end of things – without necessarily changing the gender “position” of the policy makers involved. Other important tools for mainstreaming gender into ICT policy making include curricula development, “how-to” guides and information kits.

2.3.3. Gender-sensitive regulation of ICTs

Anand and Uppal, in their background paper 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.

Furthermore, Anand (ICTnet archives) emphasized that the mainstreaming of gender concerns into telecommunications regulation and policy is vital. The experience of women and development issues over the last 30 years has shown what happens when women's empowerment strategies are seen as separate or parallel to policies of UN agencies, governments and NGOs. She 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 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.

Uppal (ICTnet archives), in turn, also noted that privatization of telecommunications will not work if the regulatory framework that accompanies it is not sound. According to Uppal (ICTNet archives) 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.

Particularly important is that women, intervene more actively on issues such as tariffs and universal service. For example, it should be possible to ask regulators to mandate that there be 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.

She also argued that clear understanding of the duties and roles of the government and the private sector is important. For that, despite the fact that profit remains the primary concern of a commercial enterprise, the government regulation can still do much to ensure that public funds are targeted better and in this action address the concerns of those, such as women, whom the markets sometimes do not consider as profitable customers.

Seow (ICTNet archive) added to the discussion by emphasizing the need to fine-tune regulation. The question of how women's needs are relevant to regulation is not clearly seen if the understanding of regulation is limited to resolving licensing issues, spectrum issues, competition acts, telecom codes, etc. In such a framework "women's issues" are not seen 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.

Therefore, Seow (ICTNet archive) 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 e.g., providing improved connectivity to the population. Within such context, the issue of how gender concerns fit into these goals, should be addressed.

2.3.4 Infrastructure development and technology transfer

The transfer of technology and development of an adequate infrastructure was an important issue discussed during the seminars. What kind of technology do women need, particularly women in the developing countries? Several affordable, low-tech strategies that offer ways of reaching large numbers of people were mentioned. Radio, TV and cinema, for example, have the additional advantage of using local languages and presenting information in entertaining and informative ways. Radio is one of the most wide-spread communication technologies, and is found in many homes. However, since it is not an interactive technology, it should be accompanied by group discussion, with a tutor if necessary.

Bridges (ICTnet archives) noted that "the uses to which a technology is put depends on history, existing social arrangements and the particular needs of the population", including theatre and especially radio, which provide an affordable, low-tech way of reaching large numbers of people. Cell phones are also widely used, while Wireless Local Loop (which allows free local calls) in India seems to present a lower-cost and simpler alternative even to cell phones.

Another example for technology transfer mentioned during the discussions was the development and setting-up of telecentres as a potentially useful vehicle for providing ICT access to women. However, it was argued that without explicitly addressing the needs of women users, telecentres will not necessarily serve the needs of women. The example of the ACACIA programme of IDRC (International Development Research Centre) was mentioned by participants. In a recent evaluation of women's access to telecentres, they found out that cost of access, even when lowered, continues to constitute a major barrier for women who tend to have less access to resources and as a result less discretionary income. Other factors such as religious and cultural restrictions continue to affect their access as well.

Kandaswamy (ICTnet archives) noted that in India various kinds of technologies have been developed to overcome barriers of affordability, ease of access, and power – but what is missing is venture capital for non-traditional technologies. Lower-cost technologies (i.e., for the so-called 'poor') can be a profitable undertaking for the private sector. She asks, what is the problem with the private sector? Is government regulation/obstructionism to blame, or is it just plain lack of understanding or attention to these issues? The Grameen Phone project which supplies cell phones to women's small enterprises and other emerging examples call attention to the profit possibilities of serving low-income groups.

Jorge (ICTnet archives) responded to some of these questions in the context of telecentre sustainability. She noted that research indicates that those telecentres which have been sustainable (without donor funds) tend to be the ones that have prepared a careful needs assessment or feasibility study at the outset, and had a well-developed project plan (business plan) to address the specific needs and demands of the community they serve. Some of these were also able to get funds to develop new programmes to address the needs of the local population as those were further identified (e.g., the CD-ROM prepared by IWTC for Uganda telecentres), which in turn guaranteed increased interest in the telecentre and in the services it provides.

In addition, she noted that 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 is clear from the telecentre experiences in the Dominican Republic, Peru (RCP), South Africa, Uganda, and most recently in Chile. 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 greater difficulty in achieving sustainability.

The need to make these projects sustainable was strongly noted during the discussions. Jorge (ICTnet archives) stated that policy makers may need to rethink the definition of sustainability. Many projects are under great pressure to become sustainable in say two or three years. This may be unrealistic in many cases, where demand will only be sufficient to ensure sustainability after the community learns more about ICTs, the advantages of access, and is trained to use the array of services that ICTs can provide. It takes time to create demand. As a result, policy makers also must recognize that in many areas incomes are so low that the population cannot afford to pay for ICT services, despite great potential demand, even at subsidised rates. This is where we need to focus policy and regulatory attention, in order to develop mechanisms to support access in such areas. Access to ICTs (including basic communications) should be considered a right, not a luxury.

Section III: ICTs as tool for women's empowerment

That ICTs have been recognized to be an important tool for women's empowerment remains unchallenged. Discussions revealed that two major approaches to women's empowerment through ICTs are being commonly used; one is based on the empowerment of individual women and the other on the empowerment of organized group of women.

3.1. ICTs as tools for empowerment of individual women

The first approach dealt with during the seminars focuses on using ICTs as tool for individual use and empowerment of women. Several examples in support of the individually-based empowerment approach were presented during the discussions such as self-help groups. One of these is the Self Employed Women's Association (SEWA), which uses ICTs to support self-employed women's business activities. The Uganda CD-ROM based at the Nakaseke and Buwama Telcentres is another example of a training and information source developed for the

individual entrepreneurial activities of local women.² This project developed a package of ICT-based learning materials about micro enterprise that responds 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 amongst 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's paper showed that research conducted on impact of the CD-Rom on the empowerment of women is mixed. Some women found its content to be useful while others did not understand its focus and relevance. A few responses indicated that by accessing information through ICTs women can improve their situations. It was evident that not only did many of the women interviewed learn how to save money and some even decided to open up bank accounts, but also they learned how to manage their resources in better and more efficient ways.

Yet, research also revealed that through this experience, women also benefited as they became multipliers and trainers of other women in ICTs, apart from experiencing improvement of reading skills; increase in productivity and yield; and greater awareness and interest in use of ICT and other communication tools such as mobile phones. Interviewed women that used the CD-Rom have become more confident, opened up and become more sociable, willing to discuss own situations and together come up with solutions to help reduce poverty. For example, the women have formed a women's desk at the Telecentre where they collectively go about their day-to-day activities.³

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

3.2 ICTs as tools for collective empowerment of women: information use and management

The focus of ICTs as being a tool for the collective empowerment of women was particularly well documented and presented by Martinez and Reilly. In their background paper, they argue that "an implication of this focus 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)* seeking to participate in policy and decision making processes" (Martinez and Reilly 2002).

² These examples link to the gap which has been identified in the DAW e-discussions on the use of ICTs to support women's productive entrepreneurial activities, and which constitutes a critical area for further attention.

³ For more findings on the impact of the CD-ROM on women's empowerment, see the paper by Mijumbi.

The approach to collective women's empowerment through ICTs as elaborated by Martinez and Reilly, brought to the attention of the participants the difference between the dominant approach to ICTs for development and an alternative one. The authors explain that the dominant one focuses on connectivity, particularly on facilitating individual rather than collective use, and ICTs are seen as the solution to closing the so-called "digital divide". The alternative one recognizes that access alone does not ensure the positive impact of the technology on women's empowerment. They further argue that since the digital divide is a result of existing social and economic divides ICTs are seen as a tool with the potential to empower groups to close existing social divides, but they are not the only solution nor are they the entire solution.

In a comment related to this background paper, Reilly (ICTNet archive) followed up on 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 the primary, or "first generation" empowerment issue. It is important to understand how women can use ICTs to better understand their world and to make political change, and in order for ICTs to empower women, we need to be thinking about policy formation, including the various actors participating in policymaking, their interests and agendas.

Discussions reinforced the view that access to public information is important for the participation of civil society organizations and social movements in shaping public policy, while conversely, a lack of public information makes it harder for women to promote policy changes, as public information is required to even make the argument that a policy change is needed.

III. Overcoming the Gender Digital Divide: Conclusions and Recommendations

Several issues raised during the discussions appear to be of crucial importance for overcoming the gender digital divide. Among them are: content and quality of information; provision of relevant data and analysis; and adequate regulation and telecommunication policy. But before addressing these issues, it is important to emphasize that the gender digital divide needs to be qualified first.

Current statistics are inadequate for a real understanding of how many women use ICTs, and what they use them for. While the Cisco Networking Academy Programme and others have made a start in this direction, but this is also an area where work is just in the beginning stages. The International Telecommunications Union (ITU) and the World Bank are two institutions which are beginning to assess current knowledge in the area and to promote more systematic collection of sex-disaggregated data on ICT use. Related to this are ongoing discussions elsewhere on national assessments of "e-readiness"; international and national indexes of the "digital divide" or telecommunication indicators, and other attempts to gather comparative data in meaningful ways.

Seow (ICTNet archives) remarked that there are several guides to e-readiness studies and a great deal of work on measuring and conceptualizing the digital divide. However, statistics and quantitative assessments to portray women's position are still missing. She suggested a series of

statistics which are relevant to women's interaction with ICTs, including access to PCs, wireless and other technologies, but also access to credit, existence of women-specific technology projects, support for teleworking for women, and survey of relevant laws.

Furthermore, Rahman (ICTNet archives) observes that it is also important to measure the enabling environment necessary to promote use of ICTs, through 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. He also noted that initiatives or factors supporting the use of ICTs and ICT services by women include capacity and skill development; raising the percentage of women and girls educated at all levels; decreasing poverty levels; increasing awareness and response to gender issues in the society, among others.

3.1 Content and Quality of Information accessible through ICTs

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.

As observed by Landschulze (ICTnet archives) appropriate content of information available 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 hardly 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 hardly available in the Internet, especially for a non-academic audience.

Jorge (ICTNet archives) supported this view, saying that content and relevance of content of the available information to the various communities around the world is a big problem. She suggested that telecentres, for example, are a good venue for accessing information but a good telecentre plan must focus on providing information available (from many sources), but also on developing the appropriate information needed by the community for various purposes (health, education, commerce, establishing businesses, etc.).

Furthermore, women's organizations need to make clear their information needs to governments, including looking behind government rhetoric to identify gaps and problems with public information systems. In return, government has a responsibility to provide clear, comprehensive and accurate information.

3.2 Data and research-based analysis

As already noted, the collection of sex-disaggregated data on all aspects of ICTs, including education, access and participation in research, industry and decision making, is a priority and should be systematically integrated into national data collection.

Furthermore, it was clearly stated that 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. Particularly important seems to be the need for more evaluation of the benefits of ICT projects to all users, particularly women. Project design should begin with the active involvement and consultation of targeted beneficiaries and continue throughout all the phases of the project implementation.

The question of whether women are using ICTs as effectively as they could to address gender biases in the medium, media and society, needs to be further explored. More research needs to be done on what kind of technology women want, how do they want to use it, and how can women's imagination and creativity be used in forming a cyberspace that is gender-appropriate? Closely connected to this, is the need for research on how different kinds of literacy provide women with the tools to create technologies that are suited to their interests, concerns and perspectives.

Another level where more research is needed is that of policy. There is a great need to make the "gendered nature" or results of policy visible, including through:

- Documenting evidence of how the development process is strengthened by the greater participation of women and illustrating the consequences of women's exclusion from the ICT community;
- Using case studies to show that projects which take into account gender relations and concerns are more successful than those which do not;
- Disseminating findings in ways that are interesting and comprehensible to others, including using narratives and stories with a personal dimension;
- Raising the visibility of qualitative and feminist researchers, through presentations and networks.

3.3 Regulation and telecommunications policy

Gender sensitization and training of regulatory staff seems to be of crucial importance for improving ICT regulation. Moreover, women should be more involved in the regulatory *process* itself. But for this, more efforts are required to attract women professionals to work for or with regulatory bodies, especially in strategic positions.

While profit remains the primary concern of a commercial enterprise, regulators should take action to ensure that public funds are targeted to address the concerns of women, who the markets sometimes do not consider as profitable customers.

Education and content issues should be worked into regulatory and policy issues.

Women need to intervene more actively on issues like tariffs and universal service, for example in lobbying regulators to mandate that there be free/inexpensive phone access to rape crisis services or concessional access to communications for one-parent families.

Communication regulation needs to be based on a larger understanding of what the key long-term issues are, and the social implications of regulation. Long-term issues include providing

connectivity to all groups, information, education, consumer protection, and resolving market failures.

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. To do this they need to develop increased expertise in these sectors. They should make organizing and lobbying for appropriate telecommunication policies and initiatives a priority, including actively following developments in governmental, corporate and non-governmental sectors. This will allow women and other social groups to be able to respond quickly and effectively, and be taken seriously by governments and regulatory agencies.