



Gender equality in the information society

- a review of current literature and recommendations for policy and practice

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Glossary:

Choice and Agency: refers to an individual's level of autonomy, or control, over their own actions and choices. It is largely determined by an individual's cultural environment, dependent on factors such as civic freedom, opportunity, and empowerment.

Communication Capacity: according to Hilbert and Lopez (2012), 'communication capacity' may be defined as, "the capacity to receive or send information, while being transmitted over a considerable distance outside the local area." The authors clarify that it is important to distinguish between broadcasting and telecommunication for analytical clarity.

E-governance: the use of electronic mediums to facilitate efficient and transparent governance processes; consisting of ICT systems for information dissemination, service delivery, administration, and participation oriented toward engaging and empowering citizens.

G-CASH: is a mobile-phone based money transfer and microfinancing service of Globe, a telecommunication service giant based in the Philippines. G-CASH's services include money transfer (payments or sharing, both local and international), credit and withdrawal etc.

Information Society (IS): a society where the level of reproduction and evolution of information leads to qualitative transformations in social organisation, structure, and arrangements, be they technological, economic, social or cultural (Webster 1995, 2006).

Internet Platforms: online systems that allow users to programme customise and share software or content in ways that facilitate further development and the emergence of new uses. In practice, many platforms, as proprietary spaces having a public function, direct and limit user actions through their pre-designed architecture. Examples include Flickr and Facebook.

Knowledge Commons: collective term used to describe all freely-available knowledge that is accessible to the public in the information age. Historically, the commons were elements of the environment used by all, such as pasture-land and water sources. The knowledge commons fosters an environment of sharing, collaboration and cost-saving. An important distinction between it and previous forms of commons is that information does not depreciate with use.

Knowledge Economy: term used to describe an economy in which knowledge becomes the dominant factor of production, over and above labour and capital.

Knowledge Society: encompasses the ways in which the democratisation of the production, processing, and sharing of knowledge between individuals and groups, facilitated by the rise of ICTs, can be used to advance sustainable human development.

M-money: short for 'mobile money', is a form of payment or money transfer that is performed from or via a mobile device – such as a mobile phone.

M-Pesa: is a mobile-phone based money transfer and microfinancing service for Safaricom and Vodacom, two of the most popular telecom network providers in Kenya and Tanzania. The service allows users to deposit money into an account stored on their cell phones, and then transfer the money to other users in the form of mobile balance, using SMS technology, so that these users may be able to redeem deposits for regular money. Users are charged a small fee for using the service to send/withdraw money.

Micro-work: the breaking down of large business processes into micro-tasks that are distributed to workers across geographic boundaries via software that aggregates a specific type of information

from multiple online sources, using the Internet or mobile phones.

Net Neutrality (short for 'Internet Neutrality' or 'Network Neutrality'): is a foundational principle of the Internet concerning non-discrimination in terms of cost and access to Internet services. Recent net neutrality debates have centred on whether Internet service providers (ISPs) can tier, limit, block or otherwise affect Internet performance.

Network Economy: the emerging economic order within the information society whereby large corporations become internally decentralised as networks, connected for specific projects, before recombining or switching over to other networks once projects are completed. Control over the key nodes in these decentralised networks is the key source of value in the network economy.

Network Society: this term has been made popular by sociologist Manuel Castells, for whom 'network society' means a digital revolution that has heralded the rise of a new social order, one marked by the increasing re-organisation of key social processes and social structures around digitally enabled information networks (Castells 2000).

Open Educational Resources (OER): freely-licensed teaching, learning, assessment and research materials that are freely accessible to everyone online in a variety of formats, including: digital media collections, pedagogical materials, courses, quizzes, lab and classroom activities, games and simulations.

Open Platforms: software systems based on publicly-available, open standards, allowing them to be used in ways other than the originally intended use(s) without modifying the source code. These platforms may consist of commercial and/or open source contents. Wikipedia is an example of an open platform.

Public Sphere: a concept that includes all areas of communication, be it physical space, or various broadcast, telecommunication, and social media, that involves the creation, dissemination and deliberation of public discourse.

Techno-social Paradigm: new social processes that are co-constituted by new technologies, representing an intermediate form between the 'technical' and 'social'. After a certain degree of social appropriation, acceptance, and integration, these processes begin to appear as simply social.

World Summit on the Information Society (WSIS): the landmark pair of UN-sponsored conferences about information, communication and, in broad terms, the information society, held in Geneva (2003) and in Tunis (2005).

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Hilbert, M. and Lopez, P. (2012) 'How to Measure the World's Technological Capacity to Communicate, Store, and Compute Information; Part I: Results and Scope', *International Journal of Communication* 6: 956–979, <http://ijoc.org/index.php/ijoc/article/view/1562> (accessed 6 March 2014)

Abbreviations:

APC	Association for Progressive Communications
ALF	Alternative Law Forum
AquaDeD	<i>Aquaculture et Développement Durable</i>
BiiH	Building Indigenous Initiatives in Heritage
CBFW	Cherie Blair Foundation for Women
DST	Digital Storytelling
FAO	Food and Agriculture Organization of the United Nations
FLOW	Funding Leadership and Opportunities for Women
GDP	Gross Domestic Product
GenARDIS	Gender, Agriculture and Rural Development in the Information Society small grants programme
GNI	Gross National Income
GSMA	<i>Groupe Spécial</i> Mobile Association/ The Association of the Global System of Mobile Communications' Operators' Association
HIV/AIDS	Human Immunodeficiency Virus Infection / Acquired Immunodeficiency Syndrome
HRC	Human Rights Council
IDRC	International Development Research Centre
ICT	Information and Communication Technologies
ISEP	Infolady Social Entrepreneurship Programme
IT	Information Technology
ITU	International Telecommunication Union
IVR	Interactive Voice Response System
M-PESA	Mobile-PESA (Swahili for 'money')
MARI	Mikocheni Agricultural Research Institute
NGO	Non-governmental Organisation
OBGYNs	Obstetrician-gynaecologists
OECD	Organisation for Economic Co-operation and Development
OER	Open Educational Resources
OLPC	One Laptop per Child
SEWA	Self Employed Women's Association
SME	Small and Medium Enterprise

SMS	Short Message Service
SOFA	The State of Food and Agriculture 2010-11 team of the Food and Agriculture Organization of the United Nations
SPARC	Society for the Promotion of Area Resource Centres
SPIDER	The Swedish Program for ICTs in Developing Regions
TV	Television
UN	United Nations
UNCSTD	United Nations Commission on Science and Technology for Development
UNCTAD	United Nations Conference on Trade and Development
UNESCAP	United Nations Economic and Social Commission for Asia and the Pacific
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNICEF	United Nations' Children's Fund
UNSG	United Nations Secretary-General
USAID	United States Agency for International Development
VAW	Violence Against Women
WHO	World Health Organization
WIPO	World Intellectual Property Organization
WOUGNET	Women of Uganda Network
WSIS	World Summit on the Information Society

1. The information society and gender equality

The rapid global spread of information and communication technologies (ICTs), and particularly the proliferation of mobile Internet devices (ITU 2012a:2-3), is redefining not only the realms of information and communication, but the very nature of social structures and institutions (Castells 2000).

ICT is an umbrella term that includes any communication device or application, encompassing radio, television, cellular phones, computer and network hardware and software, satellite systems and so on, as well as the various services and applications associated with them, such as video-conferencing and distance learning (Rouse 2005). Television, computers, cellphones, the Internet, and their delivery systems – cable, wireless, telephony, satellite, broadcast – converge to pave the way for what is referred to as the 'information revolution' or 'digital revolution'. With the digital revolution, the way in which information is produced, stored, processed, distributed and exchanged is fundamentally transformed.

Today, the Internet, as the backbone of our global information and communication systems, enables different hardware and software tools to come together as a massive global network. The resultant social phenomenon is often referred to as the '*information society*' or '*network society*'. The information society is not gender neutral – it has different implications for women and men, girls and boys, and for the relationships between them. It is therefore vital to begin reflecting more critically on how ICTs are changing the nature of gender relations in social, political, economic and cultural landscapes. On one hand it is important to recognise and harness the potential of increased ICT access and connectivity for transforming gender power relations and empowering women - especially those who are poor. As many have pointed out, connectivity increasingly marks a key difference between exclusion and opportunity and the question of ICT access is becoming central to the development agenda (see for example Gurumurthy, Nandini and Saloranta 2012).

On the other hand it is essential that we do not put all our faith in ICTs to 'solve' the problem of gender inequalities. Today, an increasing number of women have access to digital technologies. But all too often, when women use smart phones or access the Internet, the assumption is made that putting these technologies into their hands will be necessarily empowering. Without discounting any possibilities for gender-transformative change in the information society, it is important to examine how techno-social practices reproduce gender power differentials, what norms are privileged in the structures of the Internet, and how the logic of techno-social spaces is contingent upon the design and production of technological architectures (Wajcman 2007). Above all it is imperative to ensure that ICTs are not manipulated in ways that deepen existing gender inequalities or create new ones. From a gender justice standpoint, a more nuanced and longer-term perspective than 'give-access-get-empowerment' is needed for positive gender outcomes in the information society (Vaughan 2006).

This brief is intended to be a guide for policy and programming, providing a synopsis of the debates and reflections for directions ahead, in a domain that is increasingly relevant for all development areas. The brief seeks to critically assess the most recent research on gender and ICTs, adopting a perspective that draws from the conceptual frameworks of information society, 'network society' and 'knowledge society' studies. Changes brought about by the network society mean it is important to rethink some foundational concepts of gender and social transformation, particularly in relation to questions of identity, community, knowledge, and public and private spheres. New 'virtual' spaces and relationships mean these concepts can no longer be understood in terms of fixed, physical places and relationships - rather they need to be seen as flexible, constantly in flux and affected by diverse influences. The discussion in the brief maps and engages with these more fluid underlying concepts,

examining what they mean for gender equality and women's empowerment.

The brief starts by discussing the existing data on the gender gap in access to ICTs, as a means to deepen understanding of the underlying barriers that constrain women's effective participation in the information society. It moves on to a discussion of women's rights and the empowerment capacity of the internet. It then explores the gender and ICT dimensions of key development sectors and issues, notably: women's economic empowerment, ICT-enabled learning for women and girls, women's health and ICTs, gender-responsive governance, women's public-political participation, violence against women and girls, and sexual rights.

Section 4 provides a 'roadmap' for developing a rights and citizenship approach to Gender and ICTs policy. Two interrelated issues - meaningful access to digital technologies for women and girls and open and egalitarian digital architecture – are discussed. Finally the brief identifies gaps in knowledge and sets out directions for policy and programming.

2. Mapping and building upon the emerging evidence on gender and ICTs

In the information society context, advanced ICT skills have increasingly become a pre-condition for individuals to fully realise the benefits of the emergent socio-economic order. Evidence clearly demonstrates that the gaps in access to ICTs are closely associated with the gaps in advanced ICT skills (Broadband Commission Working Group on Broadband and Gender 2013: 6). Hence, a useful starting point in mapping evidence on gender and ICTs is to take a closer look at data sets on access and use.

As early as the World Summit on the Information Society (WSIS) in 2003, the importance of systematic sex-disaggregated ICT data sets to assess the gender gap in access and use has been emphasised. Ten years later the data gap remains. In most developing countries, there has hardly been any progress on the sustained development of sex-disaggregated indicators in relation to ICTs.

Available data indicates that women and men do not have equal opportunities to access mobile phones and the broadband Internet. In order to develop relevant, effective and gender-sensitive policies and programmes at local, national and global levels it is therefore necessary to undertake a detailed analysis that examines the gender gaps in access to specific ICTs and the gendered patterns of use for each type of ICT. This section critically reviews available literature and data with a focus on both 'supply' and 'demand' side issues relating to ICTs. It looks at data on ICT diffusion as well as the structural barriers that constrain women's opportunities to effectively access and utilise ICTs.

2.1. The gender gap in access to mobile phones: What the data says

Mobile telephony has been one of the fastest growing technologies in the world, with mobile networks roughly doubling in size every two years, since 2002 (World Bank 2012:115). In fact, by 2011, around 90 economies across the world had mobile penetration rates of up to 100 percent (*ibid.*). However, despite the apparent ubiquity of mobile phones, there is a still significant gender gap in access to these technologies.

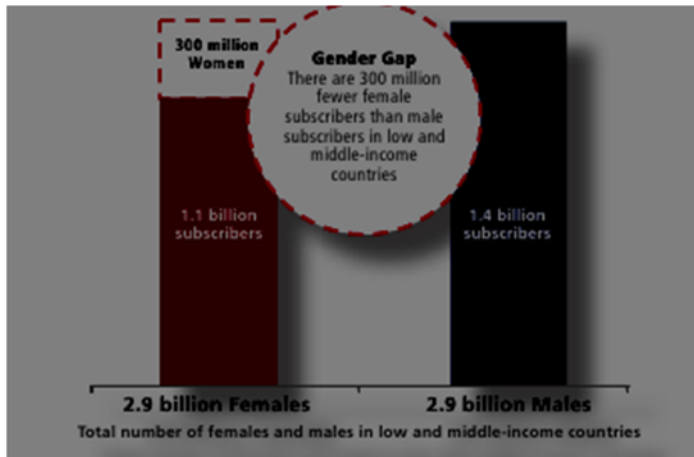


Figure 2.1.1: Gender Gap in Mobile Phone Ownership in the Developing World. Source: GSMA, 2010.

The 2010 Global Study on the Mobile Phone Gender Gap in Low- and Middle- Income Countries, led by the Global System of Mobile Communications Operator Organisation (GSMA) clearly indicates that there is a significant difference between men and women in terms of mobile phone coverage. In fact, a woman is 21 percent less likely to own a mobile phone than a man. This figure increases to 23 percent if she lives in Africa, 24 percent if she lives in the Middle East, and 37 percent if she lives in South Asia (GSMA 2010: 6). As Figure 2.1.1 illustrates, in the developing world, there are 300 million fewer female mobile phone subscribers than male (*ibid.*).

The study also indicated that household income, geographic location, age, occupation and level of education play a key role in determining whether a woman is able to own a mobile phone in low and middle-income countries (GSMA 2010: 8).

According to the study women in urban areas are 23 percent more likely to own a mobile phone than women in rural areas, even if the two women are the same age and have the same income, educational level and occupation (*ibid.*). Similarly, household income has a positive correlation with women's mobile phone ownership; every additional US\$100 in monthly household income increases a woman's likelihood of owning a mobile phone by 13 percent (*ibid.*). Additionally, female students and urban, working women are more likely to own phones (GSMA 2010: 9).

At the same time, mobile phones are still the most accessible modern communications technology and therefore offer a crucial opportunity to bridge the digital divide (World Bank 2012) – and by extension, the gender digital divide.

2.2. The gender gap in access to the Internet: What the data says

Existing sex-disaggregated data clearly reveals that there is not just one Internet gender gap, but many. Firstly, as Figure 2.2.1 indicates, there is a global gender gap in access to the Internet. Recent research by Intel has found that the Internet gender gap, preventing a staggering 200 million women from participating online, is likely to continue to grow (Intel 2013: 22). This claim is corroborated also by the ITU, which forecasted that by the end of 2013, 1.3 billion Internet users would be women (or 37 percent of all women worldwide), compared to 1.5 billion men online (41 percent of all men), resulting in a total global Internet gender gap of 200 million (ITU 2013).

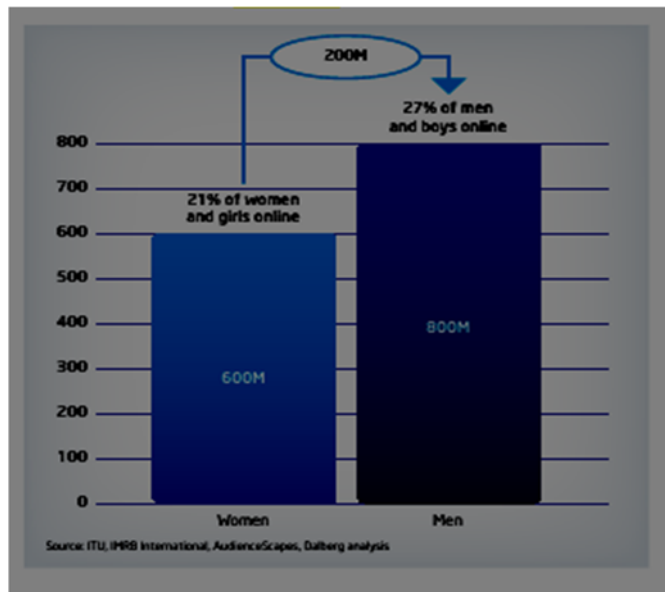


Figure 2.2.1: The Internet gender gap. Source: Intel (2012) *Women and the Web*

Secondly, there is another gap between women in the developing world and their counterparts in the Global North. In developing countries, 16 percent fewer women than men use the Internet, compared with only 2 percent fewer women than men in the developed world (ITU 2013). There are also big regional variations: estimates from sub-Saharan Africa, for example, indicate that there are twice as many men as women on the Internet (Intel 2013: 10).

Thirdly, it is important to always remember that there is a gender gap not only in access to the Internet, but also in patterns of use of the Internet, among men and women (Bimber 2000, cited in Broadband Commission Working Group on Broadband and Gender 2013). In fact, women and men exhibit different patterns of use of the Internet, with quantifiable gaps increasing for more sophisticated uses (Broadband Commission Working Group on Broadband and Gender 2013: 23; Deen-Swarray and Moyo 2013). This is supported by findings from existing research; for example, consider the following findings from a 2010 study of 50,000 regular Internet users across 46 high, medium and low-income countries (TNS Digital Survey 2010, cited in Intel 2013: 68). The study found that men spend more time than women in 'gaming, catching up on news, and viewing multimedia. Women, in contrast, tend to spend more time on social networks, making purchases online, and email. The difference in time spent on social networks, in particular, was significant: Women overall spent an average of five hours per week on social networks, 36 minutes more per week than men, and young women—those aged 16 to 20—spent more time than anyone else, registering 6.8 hours per week on social networks,' (*ibid.*:68). The ways in which these trends vary between developing and developed countries need to be further understood as they have implications for how policies and programmes should envision the inclusion of women and girls into the information society, and what kind of functionalities will most effectively promote their choice and agency.

2.4. Understanding the gender gap in ICT access

2.4.1. Structural factors

Mobile telephones have played an important role in connecting women to the information society. Yet, as noted above, gender-related concerns on access and use remain. As Deen-Swarray, Gilwald and Morrell (2013) observe, the systematic deconstruction of existing sex-disaggregated data on access to mobile phones and the Internet clearly reveal that the gender gap is symptomatic of underlying social structures that perpetuate gender inequality in everyday life. In fact, existing evidence testifies to the fact that the gender gap in income and education levels are key contributors to the gender gap in ICT access. For a more detailed explanation, see Box below, which details the highlights of Research ICT Africa's 2012 study, for which sex-disaggregated data was collected on ICT access and use across 11 African countries (Deen-Swarray and Moyo 2013).

A gender analysis of women's access to telecommunications infrastructure in Africa

Research ICT Africa carried out an 11-country, pan-African survey in 2008 and 2012 to collect sex-disaggregated data on mobile phone ownership and Internet access. The survey covered the following countries: Botswana, Cameroon, Ethiopia, Ghana, Kenya, Namibia, Nigeria, Rwanda, South Africa, Tanzania, and Uganda (Deen Swarray and Moyo 2013).

The study found that, between 2008 and 2012, the uptake of mobile phones had increased for both sexes. However, the study found that women spend less on mobile phone use than men (Deen-Swarray, Gilwald and Morrell 2013: 28), a finding reflective of women's lower incomes compared to men. The study also found that Internet use in all countries in general, and by gender, increased between 2008 and 2012. It also found that in most countries studied there are more men than women accessing the Internet (Deen-Swarray, Gilwald and Morrell 2013: 31). Further analysis reveals that being female reduces the chance of Internet use in all the countries surveyed (Deen-Swarray, Gilwald and Morrell 2013: 37).

The study also noted that individuals are increasingly accessing social networking sites through mobile phones. Currently, Telecom companies in many African countries offer data plans that allow users free access to certain social media and networking sites without incurring additional charges. Such offers do not, however, extend to video-streaming or links to other websites via these platforms. While the share of males signed up for social networks is higher than that of women, the share of women accessing social networks from their mobile phones is higher than that of men. It is likely that women lack the financial capacity to subscribe to costlier data plans.

Whereas the global studies cited in this section (by Intel, etc.) paint a macro picture, the Research ICT Africa study clearly highlights the patterns in Africa. We are able to see here that, in the case of many countries in Africa, ownership of the phone is not where the gender gap lies; it is in the financial ability to use phones where women lag behind, factors that are affected by education levels and employment opportunities.

2.4.2. Social and relational factors

As a personal communication device, the mobile phone brings women into the public sphere, even if it is a small, local social network at the outset. Yet this cultural shift can be potentially threatening to men and male-dominated institutions, as a study of women running mobile pay-phone businesses in Uganda concludes (Kyomuhendo-Bantebya 2009 cited in UNCTAD 2010). As a consequence a serious barrier to women's use of ICTs is the policing and control by male relatives and community members, especially with respect to women's use of mobile phones (see Wakunuma 2012; APC 2010). For

example in India, caste *panchayats*¹ in Uttar Pradesh – known for their regressive gender politics – have banned mobile phone use for unmarried women as they feel they encourage 'loose' conduct (Indian Express 2010). Research from Zambia reveals that women have been threatened, intimidated and even beaten by spouses who seek to control when and where they utilise their mobile phones (Wakunuma 2012). Similarly, the Internet is often portrayed as a 'corrupting' influence on women in some developing countries (Intel 2013:46).

For women, in today's context, the realisation of their rights to information, to participate in the civic and public affairs of the local democracy, to shape local governance agendas, to raise questions, make claims, and demand accountability from local, national and supra-national authorities and actors, depends on basic connectivity infrastructure and innovation in governance systems that can adapt to new citizenship possibilities. A connectivity ecosystem to guarantee these rights would require policies and plans to support public broadband networks and community-owned wireless systems. The mobile phone is seen as a great tool for women's empowerment, but in substantive terms, its utility can be maximised only if it is a part of a larger ecosystem through which the digital foundations for schools, libraries, public offices, NGOs etc. are laid for re-designing institutional processes. The mobiles versus broadband argument creates a false dichotomy pitching the individual right to communicate against institutional restructuring.

2.4.3. Women and the 'communication capacity' gap

In 2013, the International Telecommunication Union found that the rate of growth of mobile broadband subscriptions exceeded that of fixed broadband subscriptions, especially in the developing world. Also, in developing countries, low-bandwidth mobile broadband is fast becoming a substitute/replacement for high-bandwidth, fixed broadband. This trend has led to the emergence of a new 'digital divide' – an increasing inequality in communications capacity between developed and developing countries. In 2001, citizens in developed countries had access to broadband speeds of 40 Kilobytes per second (Kbps) more than their counterparts in developing countries. This gap grew to over three Megabytes per second (Mbps) per capita in 2010 (Hilbert 2011). What this suggests is that there is a different kind of digital divide when we measure communication capacity not only in terms of the installed number of devices, but also in terms of the transmitted amount of information (*ibid.*).

According to the ITU, the majority of users in developing countries are reliant on low-bandwidth mobile broadband infrastructure (ITU 2012: 8). For example only 7 percent of people in the Asia-Pacific region have fixed broadband access. It is also the most digitally divided region in the world, with the Republic of Korea boasting 37.5 percent fixed broadband penetration, compared to Myanmar with only 0.01 percent (ITU and UNESCAP 2013). Hence, for most users in remote, rural areas of the developing world, current ICT infrastructure arrangements significantly restrict the type and quality of applications and services that can be accessed over the Internet.

The implications of the communication capacity gap for women's access to the Internet become clearer when read against the fact that, for many women in developing country contexts, the costs of devices and connections, poor quality of broadband connections, and the limited availability of ICT services outside major urban areas, continue to be major hindrances to their effective use of the Internet.

¹Panchayats refer to the lowest tier of governance and administration in the quasi-federal Indian system, which is situated at the village level. However, caste panchayats refer to informal, non-elected, traditional structures of authority that continue to hold sway over the everyday lives of rural communities, running a parallel government. Certainly it is a common phenomenon for male 'elders' in the caste panchayats to exert control over formal political processes as well.

High bandwidth applications, including video, may be extremely relevant for a majority of women, especially non-literate women. However, even where high-quality broadband may be available, in developing countries existing cost structures make access an expensive, if not an absolutely unreachable, proposition for poor and marginalised people, particularly women. For example, even though prices of fixed broadband have been falling in developing countries, they still remain high relative to income. In 2011, the cost of a fixed broadband connection in developing countries was, on average, more than 40 percent of annual per capita gross national income (GNI). By contrast, in developed countries the price of a fixed broadband connection was, on an average, 1.7 percent of annual per capita GNI (Intel 2013: 60). Additionally, in developed countries, mobile broadband costs less than two percent of monthly per capita GNI, while it exceeds more than 30 percent of monthly per capita GNI in developing countries (ITU 2012: 109-110).

This section has noted that the gender gap in access and use of ICTs is multi-dimensional. It is vital to pay attention to key enabling factors such as income and education, but it is equally important to address social factors that may inhibit access; as well as structural reasons, such as ICT market development and lack of appropriate public investment. Publicly-funded research is also needed on the role of specific devices in determining how women and girls benefit from information and communication flows and networks. The development of a standardised set of sex-disaggregated indicators will enable more robust data gathering processes at the national and global levels.

2.5. Women's rights in the knowledge society

The global nature of the internet has enabled more decentralised information and communication flows. This has heralded a new hope that such 'openness' of the Internet will remove traditional barriers in access to, and production of knowledge.

For women's rights and gender equality, digital technologies represent many new possibilities. They have changed the way information and knowledge are produced, consumed, distributed and shared. The Internet has been at the core of this new paradigm, putting low cost, user-controlled media possibilities in the hands of the smallest women's organisations and grassroots groups, enabling them to tell their stories and present their own perspectives alongside 'big' media players (See Box). Illiterate women who may have historically been denied access to knowledge and formal education are able to engage in and use non-textual forms of expression.

Digital Storytelling: Authenticity for women's voices

Digital Storytelling (DST) is a methodology that was developed in the mid-1990s at the Centre for Digital Storytelling in San Francisco. It has been widely used since then by activists, researchers and artists. The process involves intensive workshops during which participants develop a personal narrative, usually around three minutes long. They then record and illustrate this narrative with still images or photographs. The final product is a short film, which has been produced and edited by the narrator. A first-person voice is used in the narration. Digital Storytelling is often considered to be a 'feminist' methodology, as it enables individuals to control the way in which their stories are represented, and through the process learn new skills (adapted from Lewin 2011).

Video on mobiles and video-sharing online present opportunities for revolutionising the politics of representation. Women's Net and the Sonke Gender Justice Network in South Africa have used DST to address complex issues around gender and HIV/AIDS. Their work with digital stories has helped build communities of solidarity, break down prejudices, as well as facilitate public debate and inform

organisational priorities, approaches and policies. The Pathways of Women's Empowerment² Project in Bangladesh has also utilised digital stories to give policy-makers a sense of the layered, textured realities of marginalised women in the Chittagong Hill Tracts – thus using videos to facilitate dialogue between women in remote communities and government officials (Lewin 2011).

However, the proliferation and democratisation of information in the current context has also given rise to challenges and barriers. These take the form of policy-related tensions between copyright and protection of the public domain, and between individual rights to privacy and the public right to information. These have many implications for gender equality and women's status. In many developing countries, where the law does not adequately protect indigenous peoples and their knowledge, the Internet can be used by private companies for building commercial models that exploit traditional knowledge. Even as the Internet and ICTs open up new possibilities for documenting and sharing traditional knowledge, women artisans, traditional healers and artists may be at risk of exploitation by commercial interests who use the Internet as a platform for consolidating their market power (Randhawa 2009) (see Box).

Building Indigenous Initiatives in Heritage, Malaysia

BiiH (Building Indigenous Initiatives in Heritage) experiment in Sarawak, Malaysia has attempted to utilise the low-cost opportunities for recording and dissemination of traditional knowledge opened up by the Internet and ICTs, to document the traditions of the Bidayuh people, an indigenous community. Audio MP3 players, digital video recorders, and Internet platforms has opened up numerous opportunities for documenting hours of rituals, ceremonies and songs – thus preserving indigenous knowledge that was quickly being lost. Undoubtedly, digitisation has played a crucial role in ensuring the survival of this knowledge. However, at the same time, as BiiH leaders themselves acknowledge, *'considering that (this) knowledge encapsulates the geography, medical lore and other prized information that could be privatised and monetised,'* digitisation also makes indigenous knowledge far more prone to appropriation and exploitation by multi-national corporations (Randhawa 2009). Digitisation and circulation on the Internet breaks down gate-keeping systems that communities have traditionally used to protect and preserve their knowledge, and ensure that communally owned knowledge is not appropriated by a few individuals for profit.

Realising the promise of new local knowledge and learning cultures in the information society is an important task to promote women's access to knowledge, active agency and realisation of rights. Some groups like the Minmini SMS network in Sri Lanka have used digital space in post-war reconstruction dialogue among women. The appropriation of ICTs by grassroots women's groups suggests many creative possibilities. In Manila, citizen reporters from poor neighbourhoods have claimed online space to blog about what reproductive rights legislation means to them (Estrada Claudio and Guitierrez III 2012). In India, women in local politics have forged online communities, using virtual discussion platforms to generate knowledge of gender and politics (Thampi and Kawlra 2012). Other initiatives have used parody to subvert the dominant logic of Internet platforms. For instance, World Intellectual Property Organisation (WIPO) recently brought out a series of educational comics on the idea of trademarks and copyright legislation. The Alternative Law Forum, a lawyers' collective in India, encountered this with a parody, producing a series of spoofs. One of ALF's works, a comic strip titled 'Untrademark This (<http://www.scribd.com/doc/207941875/Untrademark>) is a spoof of the comic on Trademarks (http://www.wipo.int/export/sites/www/freepublications/en/marks/483/wipo_pub_483.pdf) as part

²More details of the project available at <http://www.pathwaysofempowerment.org/>

of this series.

The existence of initiatives such as these demonstrates that digital technologies present strategic possibilities for the inclusion of diverse individuals and groups in the production of knowledge at all levels. However, much depends on the policy environment.

3. Critical themes for gender equality in the information society

Bridging gender gaps in ICT access is about more than simply removing barriers to women's access. Rather, a strategic approach to girls' and women's full citizenship in the information society is needed, which enables marginalised women to access and use ICTs for enjoying equal opportunities, rights and freedoms in the emerging context. This section will discuss the opportunities presented by ICTS and the network society for enhancing gender equality, mapping policy and programmatic imperatives in the areas of women's economic empowerment; promoting women's health; opening up educational opportunities for women and girls; enhancing gender-responsive governance and promoting women's public-political participation. It will also address the question of gender-based violence and consider ways in which the internet can both enable and undermine sexual rights and identities.

3.1. ICTs and women's economic empowerment

ICTs represent an important economic opportunity for developing countries. As per the UN Secretary General's report "Internet broadband for an inclusive society," presented to the sixteenth session of the United Nations Commission on Science, Technology and Development, economic gains occur at the macro level in terms of gross domestic product (GDP) growth from broadband expansion, while benefits can also accrue at the micro level in terms of productivity gains and employment (CSTD 16th Session 2013). ICTs are, of course, generating new jobs – both in the digital technology sector and in other sectors, and are enabling new efficiencies in globalised work flows (Rossotto Kiouk and Paradi-Guilford 2012). For women, these trends bring new opportunities and challenges, as discussed below.

3.1.1. ICT-sector jobs and women

Evidence clearly indicates that women are under-represented in ICT sector employment. Even in Organisation for Economic Co-operation and Development (OECD) countries women account for less than 20 percent of ICT specialists (Tandon 2012, cited in Broadband Commission Working Group on Broadband and Gender 2013: 13). At the global level, as a recent study indicates, women account for '30 per cent of operations technicians, only 15 percent of managers and a mere 11 percent of strategy and planning professionals' (Tandon 2012) in the ICT sector.

Girls who now use computers and the Internet at rates similar to boys are five times less likely to consider a technology-related career than boys (Tandon 2012). This trend is especially worrisome when read against the fact that over 90 percent of formal employment across all sectors will require ICT skills by 2015 (Broadband Commission Working Group on Broadband and Gender 2013: 14). New 'hybrid' jobs present a promising avenue for women. These include fields like bio-engineering, digital media, data informatics, tele-medicine and other unique combinations of ICT skills and domain expertise in every imaginable field. Programming and policy need to be directed toward enabling women to take advantage of these emerging opportunities (Tandon 2012).

3.1.2. Women in micro-work

ICTs are also enabling the creation of new jobs or 'micro-work' through the new possibilities they offer

for restructuring the production chain, including home-based work. The growth of micro-work, with a global market size of about 450 million US dollars, testifies to the opening up of a new economic sector with opportunities for workers in the developing world (Rossotto, Kiouk and Paradi-Guilford 2012). There is also increasing evidence that micro-work is bringing more women into the workforce. A recent study of Amazon Mechanical Turk, one of the earliest entrants in the micro-work business, has revealed that female constituency of its workforce is very high – over 70 percent in the United States and more than 30 percent in India (*ibid.*). There have also been innovative efforts – especially in the area of creating social enterprise models for enabling rural populations to capitalise upon micro-work opportunities – such as the Samasource initiative³.

The picture is not entirely rosy, however. Micro-work often brings with it increasing job informalisation, income insecurities and diminished workers' benefits (Raja, S. *et.al* 2013). Concerns have been raised relating to low levels of pay, eroded work ethics and poor working conditions, and further research is needed to fully understand the impact of this phenomenon (UNCTAD 2011).

3.1.3. ICTs for traditional livelihoods

Considering the fact that the majority of the world's women depend on traditional economic sectors – especially agricultural occupations – for their livelihoods, the role of ICTs in these sectors is important to explore. The deployment of digital methods can support women engaged in traditional livelihoods, including farmers; women in rural, non-farm livelihoods; and artisans– through information dissemination, collaborative learning, cooperative marketing, and other interventions.

However, currently macro-economic structures discriminate against women. Although over 40 percent of agriculturists in the developing world are women, most of them do not have land titles or power over their household's economic decision-making (State of Food and Agriculture Team, FAO, and Doss 2011). This means that the benefits of ICTs in community-based e-agriculture initiatives may accrue to men unless women's participation is ensured by design.

Some examples of initiatives that have managed to strengthen the livelihoods of women farmers are outlined in the Box below.

ICT initiatives for strengthening the livelihoods of women in agriculture

ICTs open up a number of opportunities for addressing mobility and time constraints that limit women's access to markets. For instance, the Zambia National Farmers Union's SMS-based service allows farmers to coordinate their delivery times and organise a single trip to the market. Also, ICTs offer enormous potential for building price information networks for women farmers, capitalising on the high rates of mobile phone diffusion in the developing world, especially in Africa – as illustrated by successful experiments such as the Mikocheni Agricultural Research institute (MARI) initiative⁴ in Tanzania, and the Toro development network in Uganda.

ICTs also offer a number of opportunities for creating learning networks of women farmers – addressing a much needed gap given that, traditionally, farmers' clubs set up under extension services

³ The Samasource Initiative (<http://samasource.org/>) is an innovative social enterprise that trains women and youth from marginalised communities in data processing and then liaises with major technology and data processing companies for complex data projects, which are broken into small 'micro-work' assignments and parcelled out amongst the trainees. Samasource thus opens up employment opportunities in the formal sector for its trainees and offers them a way out of poverty.

⁴ The Mikocheni Research Institute in Tanzania introduced women farmers to mobile phones so they could negotiate with buyers directly, by-passing local middle-men. The most significant achievement was that the opportunities women had to get a fair price for their produce increased their self-confidence to an extent where they opened their own weekly market.

have been male bastions. The Women of Uganda Network (WOUGNET) initiative in Uganda is one such well-known experiment⁵.

ICTs can also be deployed strategically to address structural exclusions such as the denial of land rights to women. Property rights education through capitalising on the power of mobile phones to build dispersed learning networks has been successfully experimented with, as testified to by the experience of the *Togo Union des groupements des femmes*⁶ (association of rural women's organisations). Also, e-registration of services can bring gains for women's strategic interests. By making co-ownership of land or co-stewardship of leased natural resources between husband and wife a compulsory requirement in the digitisation of records, public systems can tacitly promote equitable ownership of resources even if it is only 'on paper' (Philippine Commission on Women 2012). Policies in relation to ICTs can therefore creatively tackle systemic factors that marginalise women.

(Adapted from a 2012 briefing paper for USAID (Huyer 2012) and the evaluation report of the GenARDis small grants programme that supported gender-aware ICT interventions in African Agricultural between 2002 – 2010 (APC 2010b))

3.1.4. ICTs for small enterprises

Emerging evidence is providing a picture of how women's ICT Small and Medium Enterprises (SMEs) have been progressing. Research done by UNCTAD highlights how ICTs may not have a direct impact on the core operations of rural, women-run micro-enterprises that manufacture artefacts or grow produce, but could help sectors like fish processing that are much more 'downstream'⁷. Using a cautionary note, it also observes that in a global economy, some kinds of ICT enterprises run by women – like the 'village phone' service developed by Grameen Phone in Bangladesh for women who, as 'moving phone-booths' provided their phone to villagers, charging them for talk time – may be overtaken by the growing diffusion of mobile phones as more and more people start buying personal phones (UNCTAD 2010). Other research in Africa shows how mobiles seem to have consolidated the power of existing intermediaries because of their access to capital and other resources, while also leading to the creation of new forms of intermediaries, thus affecting women's micro-enterprises negatively (Jagun; Heeks and Whalley 2008).

Newer initiatives such as the 'info-lady Social Entrepreneurship Programme (ISEP) developed by DNET Bangladesh, have experimented with the idea of a mobile information centre, ushering in new social roles and economic avenues for women through enterprises that deliver ICT services. The Info-lady receives specialised training and necessary equipment and then travels to remote areas by bicycle to personally connect villagers to information and knowledge resources such as help-line services, commercial phone services, photography, livelihoods information, international and local voices call services etc.⁸

5. WOUGNET started the 'Enhancing Access to Agricultural Information using ICTs' initiative in 2005, in response to a study that revealed that the lack of agricultural information and skills led to poor production levels for rural farmers, trapping them in poverty. Setting up an information resource centre that provided two-way linkages with women farmers through a combination of radio, video, SMS and old-fashioned notice boards, the project has trained women farmers in improvements in farming practices and enhanced their knowledge of the workings of the market.

6. The *Togo Union des groupements des femmes* initially started an Internet platform that would address SMS-based queries about price information for various crops, but also ventured into mobile phone-based education of women on their property rights, thus adopting a comprehensive strategy to empower women farmers.

7. The downstream stage in the production process involves processing the materials collected during the upstream stage into a finished product. The downstream stage further includes the actual sale of that product to other businesses, governments or private individuals.

8. For more details on the Info Ladies project, see <http://www.theguardian.com/global-development/2013/jul/30/bangladesh-bikes-skype-info-ladies>

Similarly, another institutionally-backed model that SEWA⁹ has built, networking its women members and supporting their livelihoods through information and marketing systems, has enabled the growth of women's small business enterprises (Joshi 2012). In order to be successful women's ICT SMEs have seemed to require long-term public support, which can address the limits of the market and be responsive to cultural specificities (Duncombe and Heeks 2005)

Other research in Africa demonstrates how mobiles have contributed to the exclusion of some micro-enterprises from the supply chain (Jagun; Heeks and Whalley 2008). Below is information on a recent initiative in Kenya that uses text messaging as a way to empower female micro-entrepreneurs.

Soko-Text – An analysis of social enterprise models that attempt to capitalise on the new intermediation possibilities of the network economy

Soko-Text is an initiative based in Nairobi that uses text messages as a way to enable 'mama mbogas' selling vegetables in urban slums to buy in bulk and therefore enjoy lower, wholesale prices. With over three million of Nairobi's population living in slums, 90 percent of this population relies on *mama mbogas* for their daily meals, and therefore the wellbeing and safety of both *mama mboga* and the vegetables greatly contribute to the development of the local economy.

The women's send text messages to a hotline number and the messages are then aggregated into one order communicated to smallholder farmers growing vegetables. of The project aims at curbing the insecurity problems faced by the women entrepreneurs from the slum dwellings of Nairobi, as well as providing a guaranteed market for the smallholder farmers. Women receive discounts of up to 20 percent through this initiative and are also able to avoid the long, early morning journeys to the markets.

Soko-Text demonstrates how networked processes enabled by ICTS can result in better market linkages for small farmers and better, cheaper produce for small retailers. The initiative also points to a longer term concern in these new avenues for economic development; unless the producers (rural vegetable growers) and consumers (urban retail vendors) can have equal control over the platform or the ICT-enabled network, the business intermediary who creates the platform is most likely to corner the gains.

Source: Adapted from BizTech Africa 2013.

3.1.5. Mobile money as a route to economic empowerment

Since the mid-2000s, mobile money transfers have emerged as a pathway to financial inclusion, evoking considerable interest from international funding organisations. Mobile money has emerged as a highly popular and profitable venture enabling the poor and the 'unbanked' sections of the population in developing countries to benefit from the network economy – and has become the subject of intensive regulatory debate in over 30 countries in the Global South (GSMA 2013).

In the past decade, mobile phone money transfer services that use text messaging services and a network of retail outlets as cash-in/cash-out points, have proliferated. At present, over 150 such mobile money deployment services are in existence, many of which are attempting to extend the reach of the financial sector to hitherto unbanked pockets in developing country contexts (GSMA 2013). Some of these initiatives, such as M-PESA in Kenya and G-CASH in the Philippines, have been

⁹ SEWA is an all-women's trade union of poor, self-employed women workers, in India.

phenomenally successful. As the Box below details, there is certainly some evidence of the positive impacts of these initiatives on women's economic empowerment.

M-PESA and its impact on women – The evidence so far

M-PESA is a mobile money transfer and financial service offered by Safaricom in Kenya and Vodaphone in Tanzania. The M-PESA service allows users to deposit and withdraw money, make money transfers, pay bills and purchase airtime through a mobile-phone-based platform, linked to a network of airtime resellers and retail outlets acting as banking agents on the ground. More than US\$320 million is transferred via Kenyan mobile phones each month and this represents roughly a quarter of Kenya's gross national product (Ndiaye 2013).

Women constitute a large percentage of users of this service – and there have been many small-scale research studies that have attempted to investigate the impact of M-PESA on women's economic empowerment and gender relationship architectures at the household level. So far, the evidence has been mixed.

Certainly, there is some evidence of M-PESA enhancing women's control over their savings and household expenditure. Research has found that women clearly articulate an increase in their economic security, due to the opportunities that M-PESA offers them in keeping their savings safe and available for their own use (Ndiaye 2013).

Similarly, studies on the impact of M-PESA among women engaged in traditional livelihoods such as fishing, have demonstrated that the service has enabled women to increase their profits, through the large reductions in financial transaction costs that it enables (White 2012). Previously, women had to abandon their work and stop their business temporarily when they had to make money transfers as the only possibility was to physically transport the money to the bank. For these women, M-PESA has freed up a lot of time to focus on their businesses.

However, research has also suggested that M-PESA may have had some negative impacts on women entrepreneurs running small-scale enterprises. For instance, a 2010 research study found that, even as M-PESA allowed women business owners to make payments more easily to suppliers located in remote locations, it also reduced their control over the quality of goods delivered (Plyer et al 2010, cited in Ndiaye 2013).

Yet it is important to add that the vast reach of the new financial networks that mobile money transfers have enabled also present new regulatory challenges, implicating partnerships between commercial banks, mobile network operators, and small-scale retailers. This is especially important as women constitute a significant portion of the unbanked pockets that mobile money networks are attempting to reach.

3.2. ICT-enabled learning for Women and Girls

There are two core educational imperatives for the information society context. The first relates to the production of skilled future workers who are ICT-literate and are able to use technology for problem-solving. The second is about the development of effective, informed citizens (UNESCO 2008).

The data on educational achievement for women and girls indicates the enormous challenges that need to be addressed in order to realise these twin goals. As of 2010, over 790 million adults lacked reading and writing skills, of whom about 64 percent were women, the majority of whom were located in Sub-Saharan Africa, South Asia and West Asia (UIS 2011). Evidence indicates that over 200 million young people need a second chance to acquire literacy and numeracy skills that are essential

for them to prepare for new job opportunities in the future (UNESCO 2012). In many parts of the Global South, such as Sub-Saharan Africa, many girls do not complete school because of early marriage and pregnancy (Eldis 2007). For these reasons, a large number of women and girls are unable to access formal education systems. Therefore, ICT-related skill-building and education must be offered through other, informal approaches. It is also important to note that even women and girls who can access formal schooling systems may suffer disadvantages. This is because most school systems, especially in the Global South, are not yet fully prepared to enable girls and boys to acquire information and ICT literacy or skills for collaborative ways of working and living that are vital to the new knowledge economy and society (Broadband Commission Working Group on Education 2013:8). The sections below will look at gender and ICTs in both formal and non-formal educational systems.

3.2.1. ICTs in formal education systems

In analysing the gendered implications of ICT interventions in formal education systems, it is important to first recognise the broader systematic transformations they enable. The appropriate use of ICTs in classroom learning can improve the quality of teaching and learning, and also make learning more flexible and accessible, thus promoting gender equity in education (Broadband Commission Working Group on Education 2013: 9). However, experience reveals that such potential cannot be harnessed merely by increasing investments in ICT infrastructure for educational systems (Assar, Amrani and Watson 2010). For example, the well-known 'One Laptop per Child' Initiative – an ambitious project launched by two US-based non-profit organisations to supply affordable laptops for children studying in schools in the developing world – has played an important role in bringing down student-computer ratios (Broadband Commission Working Group on Education: 26). Yet ability to improve learning outcomes in the classroom has been questioned¹⁰ (Leaning 2010).

In fact, research clearly demonstrates that the effective use of ICTs in education is more difficult to achieve than expected – in fact, this is one of the reasons why experiments in investing in computers, educational software, and Internet access in school systems in the developing world has not automatically led to transformations in learning outcomes (Brunello 2010). There are many reasons for this, including the fact that successful outcomes in 'ICTs in school' programmes depend on system change issues, including teachers' professional development, as 'Connect to Learn'¹¹, a partnership founded by the Earth Institute, Ericsson and Millennium Promise in late 2010 has found (Broadband Commission Working Group on Education 2013: 47). The initiative targets under-served segments of the population with a special emphasis on girls, due to the extraordinary challenges they face to stay in school globally and particularly in rural areas. The initiative has been deployed in schools in Ghana, Tanzania, Kenya, Uganda, Senegal, Chile, Brazil, South Sudan, Djibouti, India and Malawi, covering over 10,000 students and their teachers.

10. In his 2010 critique of the 'One Laptop per Child' initiative Leaning points out a fundamental design flaw – the separation of the question of pedagogy and curriculum development from that of technology provisioning. The One Laptop Per Child initiative provides only the hardware and the basic operating software to the schools that it is engaged with, leaving the question of curriculum design open. This limits the effectiveness of the initiative as learning outcomes can be maximised only when context-specific embedding of technology in teaching-learning processes is systematically carried out. Also, constructivist ICT-enabled learning can be optimised only when sufficient attention is paid to digital literacy and media education.

11. The 'Connect to Learn' initiative is an attempt to enable teachers and students in developing country contexts, who have low bandwidth Internet, and limited technological capacities, to take advantage of the opportunities opened up by the ICTs and Internet for classroom learning. This initiative provides a cloud based application with basic software that can function on low bandwidth mobile broadband, which is housed on a centralised server that enables remote management of virus protection, software updating and installation, and system management. The idea is to enable remote hand-holding of 'ICT in education' processes in contexts where teachers themselves are unfamiliar with ICTs. The Connect to Learn initiative, in its outreach efforts, especially focuses on enabling girls to access Internet and ICTs.

ICT-enabled open educational resources (OER) hold immense potential for breaking traditional barriers in teaching-learning. They promote the availability of teaching, learning and research materials in the public domain, new networked forms of learning, and teachers' communities of practice, thus presenting exciting frontiers to make learning processes more inclusive. OER-based systems can close the knowledge divide between countries and social groups. Many developed countries have begun to develop an integrated approach. For example the South Korean government has combined production of public digital content, cloud based applications and mobiles (Broadband Commission Working Group on Education 2013: 26). Empirical evidence demonstrates that these interventions can lead to empowering outcomes for women and girls. UNESCO's Women in Africa Portal¹² shows how OER can be harnessed to develop gender-sensitive learning resources. Small-scale pilot projects have clearly demonstrated that ICT-enabled communities of practice can be the stepping stone for female teachers' greater autonomy and agency within the public education system (IT for Change 2013a).

In the education and technology debate, an area that needs urgent attention is the gender gap in science and technology education. Data reveals that, though the number of women enrolling in undergraduate courses is increasing, far too few are studying science and technology-related subjects (Morley 2005). The field seems to be perceived by girls and young women as being boring, geeky or simply unfeminine (Tandon 2012). Motivating girls to pursue studies and careers in technology is a challenge that needs commitment from policy actors. Initiatives such as the ITU's 'Tech Needs Girls' campaign to encourage girls to, "embrace technology and invent the future," are important not only to correct imbalances in women's participation in fields that have traditionally been restricted to boys, but also will translate into economic opportunities for women in the face of the projected shortage of skilled labour in science and technology fields (Broadband Commission Working Group on Education 2013: 24).

What we have seen in this discussion is that 'ICTs in education' initiatives need to be guided by a recognition that ICTs are not a neutral, one-stop solution with automatically virtuous effects (Watters 2013). Rather, ICT possibilities work best when deployed for longer-term benefits towards systemic reform (UNESCO 2011).

3.2.2. ICTs in non-formal education

The potential of new ICTs to open up unprecedented possibilities for life-long learning and building communities of learning, especially for rural girls and women, is clear. Numerous mobile learning initiatives have been implemented in Africa and Asia over the past five years. The Jokko Initiative – Senegal (UNICEF Innovation 2013), the Literacy Promotion through Mobile Phones project – Pakistan (Broadband Commission on Education: 23, 46), Nokia Life Tools – Indonesia (Foundation for Social Change 2014), and Business Women Mobile Initiative – Nigeria (CBFW 2012) are examples of interventions that are explicitly targeted at women and girls. Evidence points to multiple benefits of these interventions, as can be gleaned from a detailed discussion on these initiatives in Box 6 below. Additionally, research by UNESCO concludes that in projects using mobile phones to promote learning among girls and women, the benefits of high-speed Internet can strengthen efforts by providing women greater access to educational and learning opportunities, the chance to participate in

¹²'Women in Africa' is an Internet portal initiated by UNESCO that has attempted to cast the spotlight on African women and women from the African diaspora who have played a key role in the political, cultural and economic history of the continent. The portal which houses a number of freely shareable textual and non-textual resources around this thematic area is intended to encourage a gendered reading of African history among scholars, students and teachers,

dialogue with online communities, and the potential to express themselves through user-generated content such as blogs and videos (UNESCO 2013, cited in Broadband Commission on Education: 23).

Box 6: Mobile learning initiatives

The Jokko initiative in Senegal: is a collaboration between UNICEF, and Totsan, an NGO in West Africa that implements community empowerment programmes. The Jokko initiative has introduced mobile phones to reinforce literacy as well as the organisational skills taught under Totsan's Community Empowerment Programme. Most importantly, the initiative has set up a Community SMS network that has proved useful for men and women. A few illustrations of the initiative's benefits for women may be appropriate here. Nurses and health workers can communicate far more easily about vaccination campaigns, and women's associations' representatives can reach out to their group members more easily, since the introduction of the SMS network.

The Literacy Promotion through Mobile Phones project in Pakistan, a joint initiative of UNESCO, Mobilink Pakistan, and the NGO Bunyaad Foundation, has attempted to utilise mobile phones for the 'literacy education' of rural women and girls. The project distributed mobile phones with pre-loaded memory cards with learning content, and prepaid SIM cards, to the participating women and girls, who were then taken through a literacy programme that used a combination of literacy classes with mobile phone-based reinforcement. The programme found that such a strategy helped in greater retention of literacy skills among the participants. Also, the literate women were able to extend greater control over their everyday lives, and were more likely to participate in support groups, and send their daughters to school.

Nokia Life Tools is an SMS based, subscription information service that is aimed at developing country mobile phone markets, which offers a range of information services covering healthcare, agriculture, education and entertainment. In Indonesia, Nokia Life has partnered with local NGO 'Foundation for Social Change' to launch information service targeted at women business owners. The service has benefited women entrepreneurs who often find it difficult to keep themselves updated about crucial economic and business trends, due to time constraints they face.

The Cherie Blair Foundation for Women launched the Women Business Mobile Service in Nigeria in 2012, on the basis of a research study which showed that 93 percent of women entrepreneurs were willing to accept a value-added mobile service that addressed the core challenges they face in their business. This service that provides information and messages via SMS specifically tailored for women entrepreneurs, reaches out to over 70,000 women in the country. This initiative is being supplemented through an entrepreneurial capacity-building initiative that Cherie Blair Foundation has initiated in partnership with Nigeria's Youth for Technology Foundation.

Yet while these initiatives do indicate some evidence of benefits, making them sustainable requires much more than access to ICTs. It is vital to go beyond simply providing internet access to girls in schools if the empowerment effects are to be sustainable. Recent research on public access also recommends that setting up public access computing venues as part of public libraries enables greater access to Internet services, for women and girls (Beyond Access 2012), admittedly an important policy priority, for promoting women's life-long learning.

3.3. Women's health and ICTs

In 2010, over 287,000 women died from pregnancy or health-related complications (World Health Organization 2012). Unsafe abortions are one of the leading causes of maternal deaths (*ibid.*), and in many parts of the world, women's reproductive health rights are not respected by the governments in power (The Hindu 2013). Furthermore, in most developing countries, the health sector is under-financed, leading to shortfalls in service delivery, and inadequate investment in equipment upkeep (InfoDev 2006). Despite tight budgets, developing countries have made significant investments in incorporating e-health (and m-health) strategies into their national health plans since the mid-2000s (WHO 2006). In fact, in the past decade, numerous initiatives in developing countries have attempted to utilise the potential of ICTs for improving the dissemination of public health information. This has enabled remote consultation and access to better treatment for geographically-isolated communities; as well as facilitating collaboration and cooperation among health workers (infoDev 2006: 4).

Insights from specific case studies of e-health and m-health interventions for improving health outcomes for women indicate that integrating a gender analysis of inequalities into the design of the interventions is crucial for success (Dapaah and Rashid 2010). For example, in an IDRC-funded e-health initiative in rural south India that attempted to utilise an ICT-based pedagogy for health education of women and girls, it was found that household barriers and prevailing cultural norms discouraged women's presence in public spaces. Effective strategies had to be developed to ensure women's participation in the project meetings. The initiative found that the visual power of ICTs to communicate health information facilitated interactive learning and effective learning outcomes (*ibid.*).

Technology-mediated communication has also been used to overcome cultural taboos that prevent women from effectively accessing health information and health services. For example the Aunty Jane Hotline¹³ in Kenya has successfully utilised an interactive voice recording (IVR) service for providing women and girls with reliable, safe, and confidential sexual and reproductive health information services, in a context with high rates of maternal mortality, and cultural barriers that prevent open discussions about reproductive health rights.

Interventions have also used the potential of ICTs to create effective data architectures for facilitating targeted health service delivery. For example, the *Programa Mãe Paulistana* (São Paulo Mothers' Programme) launched by local public authorities, provides comprehensive care coordination for pregnant women and offers free pre-natal care, exams, ultrasounds, medicine, transportation to appointments, one-year follow up on the child's health, and family planning (Centre for Health Market Innovations 2006). Each woman is issued with cards that track the number of visits and developments, as well as one for free public transportation. The programme then monitors each participant from the time of screening for pregnancy to one year after delivery, to ensure that health services are delivered effectively. The proportion of pregnant women in the programme area who complete all six scheduled prenatal visits has increased from 10 percent to 80 percent after its inception. Also, the transmission of syphilis and maternal deaths from hypertension have decreased, and the percentage of children visited by a health-care worker within 15 days of birth has increased from 15 percent to 82 percent (Piette, J.D. et. al. 2012).

Interventions have also focused on front-line community health workers, enhancing their capacities to deliver health services. *Gram Vikas*, an NGO in Orissa state of India, initiated a Community of Learning for women health extension workers who use mobile-phone videos for maternal health information

¹³ <http://auntyjanehotline.weebly.com/ask-aunty-jane.html>

outreach in the community (Ramachandran et al 2010). The Indonesian initiative 'Aceh Besar Midwives' illustrates another approach to harnessing the potential of ICTs (Chib 2010). This initiative has utilised mobile phone calls to facilitate communications between mid-wives and remotely-located obstetrician-gynaecologists (OBGYNs) – in order to support midwives in diagnostics and health care decision-making in a relatively isolated community. ICT systems in health delivery can end up becoming a centralised bureaucratic apparatus.

The e-health 'revolution' poses important questions for policy and law with regard to the security and confidentiality of health information data sets being created by many countries in developed and developing countries to facilitate better planning and delivery of public health services especially targeting women. The risk that these information systems can be manipulated to strengthen state suppression of women's reproductive rights is very real. In Brazil for instance, research has noted how a new health policy measure supposed to address maternal morbidity and mortality through compulsory pregnancy registration has jeopardised women's reproductive rights and failed to address the two main problems with maternal health in the country: the over-medicalisation of childbirth and the need for safe, legal abortion (Diniz 2012: 125–132).

Today, many low-income countries are resorting to mobile data gathering through Open Platforms and tools such as CommCare and the MoTech Suite (Grameen Foundation 2014), in order to build centralised databases of health information in order to accelerate the development of planned interventions in the area of reproductive, maternal and child health. However, such enthusiasm should not overshadow the pressing need for policy frameworks to address the questions of protecting the security of the data collected, regulating the ownership of the data and determining access permissions to the information collected (ITU 2013a). In Brazil for instance, research has noted how a new health policy measure supposed to address maternal morbidity and mortality through compulsory pregnancy registration has jeopardised women's reproductive rights and failed to address the two main problems with maternal health in the country: the over-medicalisation of childbirth and the need for safe, legal abortion (Diniz 2012: 125–132).

Systemic challenges pose difficult barriers to harnessing the power of e-health on a wider scale. Donor funding has been useful for establishing pilot projects. However, the integration of these initiatives into public health care systems does require public investment and a systematic revamp of institutional health care delivery. This proposition is rather daunting in much of the developing world where public health delivery faces cut-backs. The effectiveness of large-scale ICT infrastructure also depends on reliable electricity infrastructure. For example, the South Africa Health Information Systems programme, a non-governmental organisation that specialises in the development and maintenance of health information systems, suffered extensive data loss in a project in Nigeria when the power failed and all the stored mobile phone text messages were deleted after 24 hours (Keeton 2012).

An important gap to be addressed is the lack of systematic impact assessments of e-health and m-health interventions, especially in the Global South. State of the art analysis of e-health research in developing countries reveals that the field requires 'more systematic evaluations and better codification of lessons learnt from existing programmes, which in turn will allow programmes that are currently struggling to employ technology to make educated decisions about when and how to implement ICT;' (Lewis *et al.* 2012). Also, existing evaluations of m-health research have indicated that, 'despite the claims of potential benefits that can be realised from m-Health, evidence is yet to be conclusively established on the acceptance and feasibility of this technology for large-scale deployment. Literature on m-Health implementations is still dominated by studies of pilot projects

and those implemented to run for a short period, dealing with specific problems' (Chigona, Nyemba-Mudenda and Metfula 2013). Deeper impact on women's health seeking behaviour and health outcomes depends very much on how ICTs can become an important ingredient of institutionalised health care delivery.

3.4. ICTs, gender responsive governance and women's public-political participation

3.4.1. ICTs and gender-responsive governance

The mainstreaming of ICTs into public service delivery in different sectors is gaining momentum in many developing countries. ICTs can expand the outreach of governmental services and provide increased value, accountability and transparency as users access e-Governance services to find, among other things, the names and contact information of local officials and their roles and responsibilities; rules and regulations; information about different government schemes; and eligibility criteria for social welfare services. ICTs can also enable citizens to interact with their government and local electoral bodies and representatives on issues such as grievances, new services, the status of existing services and the reporting of corruption and harassment.

As a new scaffold for governance systems and processes, ICTs, in fact, signify new architectural possibilities for democracy. E-governance or delivery of services online, as well as integration of ICTs into social welfare and social protection delivery, present new opportunities for equity and inclusion. Open data has triggered considerable interest, for enabling greater transparency.

In an early case study of the Kenya open data, it has been noted that transparency represents only the first step to a more informed citizenry and that initiatives should also address digital inclusion and information literacy. This involves ensuring ICT access and the presence of an 'info-structure' with NGOs and other civic intermediaries who can take data and turn it into useful information that actively supports transparency and accountability. It has also been observed that investments in Kenya linked to the open data project go some way to addressing this, seeking to stimulate and develop the skills of both journalists and technology developers to access and work with open data. However, much of the focus here is on e-government efficiency, or stimulating economic growth through creation of commercial apps with open data, rather than on transparency and accountability goals (Davies 2012). It is vital to ask what measures will enable women to access and make sense of data, what data would make sense to their well-being and rights and how being informed by transparency projects can assist their claims-making needs careful and conscious thinking. As the Broadband Commission's recent report on gender notes, most ICT and e-governance policies do not openly tackle gender (Broadband Commission Working Group on Broadband and Gender 2013:28). On the contrary, there seems to be an assumption that ICTs, somehow or automatically, will promote gender equality.

The content and implementation of e-governance has so far been heavily technical and supply driven in most developing countries, and fails to take issues of accessibility and the need for basic information on e-governance processes into account (IT for Change 2012). While many e-Government efforts are directed at the Internet, the lack of easy availability of computers, Internet connectivity, and the relatively high level of skill needed to operate them, especially in rural areas, make it impractical for women to benefit from these initiatives. Innovations in e-governance must therefore invest in appropriate methodologies that respond to particular needs of women and men as a means to bring public information and services closer to women (see Box below).

Making Local governance work for women through effective use of ICTs

Women-gov¹⁴ is an action research project working in Brazil and India to utilise the potential of ICTs for enhancing the informational, associational and communicative power of marginalised women's collectives to facilitate the emergence of gender-responsive models of local governance.

In Rio de Janeiro, the Women-gov project has sought to support *Criola*, a local NGO, to strengthen women's voices and increase their visibility in their communities. Working with a group of Afro-Brazilian women community leaders, *iyàlòódes*, in two sites located in São João de Meriti in the outskirts of Rio de Janeiro, the project has used ICTs to enhance the awareness of these women leaders about budgetary allocations on public services, helping them acquire a critical perspective of the Brazilian government's current investments in building community health infrastructure for the urban poor. The informational opportunities opened up by the Internet have been effectively utilised by accessing online data on public health services published by the Brazilian government as part of its e-governance initiatives. Further, it has focused on strengthening the capacities of the *iyàlòódes* to take advantage of new possibilities for collective action via the Internet and social media platforms in order to effectively deal with the local governance structures in their communities and tackle urgent concerns such as poor quality of public services. Additionally, the project has carved out platforms for the *iyàlòódes* to make their voices heard in the public sphere by convening community meetings to which other members of the community, local leaders and governance officials are invited. The project has also facilitated the involvement of the women in national debates around a proposed Law guaranteeing Civil Rights with respect to the use of the Internet (*Marco Civil da Internet*).

Women-gov India is spearheaded by the *Prakriye* - Centre for Community Informatics and Development, IT for Change.¹⁵ Partnering with *dalit*¹⁶ women's 'collectives', or *sanghas*, in the Mysore district of Karnataka state, the project supports the women to run digitally-enabled community information centres for effective entitlements-seeking. The information centres set up under the project have succeeded in strengthening *sangha* members' linkages with local government (*Gram Panchayats*) and with other public institutions in the community such as pre-schools (*anganwadi*) and schools. The strategy has given women enough credibility in the villages, helping them by-pass informational gatekeeping by local power elite. The information centres have even been approached by local authorities to undertake household surveys for beneficiary identification under government schemes, highlighting their credibility as non-partisan public institutions. Furthermore, the project has adopted a community media strategy consisting of a weekly radio programme and periodic video screenings, produced with the participation of the *sangha* women, mainly as a means to promote citizenship education and encouraging peer-based reflections and articulations on governance and democracy among members of women's *sanghas*.

Source: IT for Change 2013b

¹⁴ <http://www.gender-is-citizenship.net/women-and-governance/>

¹⁵ The authors are from IT for Change, an NGO in Bangalore, India that works at the intersection of development, social justice and digital technologies. (www.ITforChange.net).

¹⁶ 'Dalit' refers to a social group in South Asia who are traditionally regarded as 'untouchable' in the caste system. While discrimination based on caste has been prohibited and untouchability abolished under the Constitution of India, discrimination and prejudice against Dalits remains.

3.4.2. ICTs and women's public-political participation

With the advent of social media and a more interactive information society a new era of social and political activism has been born, with new spaces for discourse, action, participation and mobilisation opening up every day. Scholars like Castells (2012) go as far as declaring that all contemporary social movements are inextricably interwoven with the Internet.

Because of the global nature of the internet there has been a shift from interest-based politics to a more fluid, issue-based group politics (Harcourt 2012). The decentralisation of action in the network society, however, does not necessarily imply a democratisation of power (Gurumurthy 2013). Even with access to digital resources, marginalised individuals and groups still need access to other resources if they wish to be heard. Small, under-resourced organisations lack the resources to promote their messages and have a prominent presence through search engines such as Google (Hindman 2009). Certainly the Internet has emerged as a powerful medium for women to communicate across national and international boundaries in order to promote more progressive agendas and call for justice (Sholkamy 2011). For example, in the aftermath of the 2009 military coup that overthrew the democratically elected president in Honduras, the national feminist movement organised a group called *Feministas en Resistencia* (Feminists in Resistance), and documented the abuses conducted by the armed forces and broadcast them through a channel on Youtube. This group forged trans-national ties with other women's groups in Latin America, who conducted demonstrations at the Honduran embassies in their respective countries – which generated sufficient political pressure that saved the lives of many political activists (Salas 2012).

Female activists have embraced online spaces to create a safe harbour; feminist movements deploy social media to inform, organise and mobilise; feminist organisations have forged translocal solidarities for concerted 'real world' action; and individuals across geographies are networking online in new formations of transnational organisations (Gurumurthy 2013). In countries such as Saudi Arabia, women have seized cyberspace, challenging cultural taboos and pushing back against patriarchal repression (See Box).

Another opportunity for gender equality is the ability to use virtual space as 'public' space. For instance, young female religious bloggers in Iran, who are otherwise absent in public discourse, use online space to 'publicly' assert their views, talking about why they use their hijab, 'broadcasting' themselves like other women do (Masserat 2008).

Seizing cyberspace to fight gender-based repression

In June 17 2011, the Women2Drive campaign was launched in Saudi Arabia to protest the religious ban imposed on women drivers (Speier 2011). Dozens of videos surfaced on social networking sites showing local women taking to the wheels of their cars rather than depending on hired drivers or male members of the family to drive them to their destinations. Following this, several women drivers were physically abused for going against Arabic tradition. The campaign had been spearheaded by Manal al-Sharif in May 2011, who put up a YouTube video of herself taking a test drive, urging women to follow suit. In the video, she says, "This is a volunteer campaign to help the girls of this country [learn to drive ...]. At least for times of emergency, God forbid. What if whoever is driving them gets a heart attack?" She started a Facebook page called 'Teach me how to drive so I can protect myself', requesting the authorities to lift the ban. Instead, she was detained by the police and forced to sign an agreement saying she would not drive again. In protest, the Women2Drive campaign took off by forming a Facebook group with the same name, which is now actively gathering comments that pour in continuously from Facebook users across the globe, with the 'likes'

accumulating daily (Ray 2013).

For girls and young women in developing country contexts, avenues for civic public action are very minimal. In regions like South Asia, girls are heavily restrained through adolescence, and navigate to adulthood via early marriage, with little or no agency as socio-political subjects. What we see in youth cultures from developed countries suggests interesting possibilities for young women in developing countries. By forging virtual communities, blogging, creating websites etc. - which may be seen as part of the emerging practices in, and new meanings of political participation - girls set out key ideas about girl-centred feminism and anti-racism, and direct readers to off-line activities that may be activist or cultural (Harris 2008). Online spaces like - TakingITGlobal.org or YouthNoise.org that offer social network services for users interested in addressing social issues such as poverty and human rights – have been found to exert a significant and positive impact on individuals’ activities aimed at engaging in civic and political action (de Zuniga, Jung and Valenzuela 2012).

Innovations in political consciousness-building among girls and women in developing country contexts, are bound to be highly contextual, and may need to combine offline and online methods, using computers and the mobile phone, and incorporating capacity-building in photography, video and blogging. In Cape Town, South Africa, in a project on local governance, girls are using social networking sites and videos to discuss local governance issues, and to demand that local authorities ensure their rights to public transport and employment (Lewis, Hussen and van Vuuren 2013). Young women in Mysore, India, who are telecentre operators, exchange updates on public information on a simple chat-based network, also meeting periodically for collectively deliberating on their public roles¹⁷. Opportunities for peer networking and connecting online seem to represent an important first step in nurturing girls as active citizens.

Yet it is important to recognise there are both opportunities and risks arising from these new modes of mobilising across physical boundaries, particularly with regard to transforming gender inequalities and empowering women. For example, online spaces are as likely to be used for promoting conservative, unprogressive gender roles and norms as they are for promoting more progressive ideas. As the story of Radio Mullah from North-west Pakistan demonstrates, women were willing to breach the traditional rules confining them to the private sphere to be part of the FM radio broadcasts. But, co-opted into the Mullah's scheme of things, their voices only added up to a reinforcement of a retrograde political agenda that invoked the ideal of the feudal patriarchal system (Shaheed 2011).

The digital space has also become synonymous with unprecedented surveillance. States are still capable of closing down the internet as the Syrian government did in November 2012, and of conducting large-scale filtering such as the blocking of You-Tube in Pakistan in mid-2012. There is also ongoing censorship of civic activism in China (Iam Chong and Oi Wan 2012).

Opportunities for peer networking seem to represent an important first step in nurturing active citizenship among women and girls, and in enabling women to make claims vis-a-vis public authorities (Hijab and Zambrano 2008). See Box for further details.

¹⁷ www.gender-IS-citizenship.net

Women's groups and ICT-mediated claims-making

Innovative possibilities have been used by women's groups to articulate their claims in local development and governance. Women from Mahila Milan, a grassroots organisation, were able to influence local authorities during a slum reconstruction process in Cuttack, Eastern India, by sharing their vision of the future housing they desired using geographic information systems (SPARC 2010). In Uganda, WOUGNET has set up Voluntary Social Accountability Committees for community monitoring in the North of the country (SPIDER 2013). The organisation has trained women and men to use a range of media – Internet, mobile phones, radios, digital cameras and print media – to raise their voices against poor governance and service delivery. In Bolivia, indigenous women were trained to network among themselves using online platforms, and also to collectively lobby authorities with their governance agenda (Wamala 2012).

While this discussion shows us the innumerable pathways in the current context for transforming gender relations and empowering women as public-political actors through ICTs, there are also new risks and threats that must be recognised. For example, digital spaces are as likely to be used for promoting conservative gender roles and norms as they are for promoting more progressive ideas. The digital space has also become synonymous with unprecedented surveillance. States are still capable of closing down the internet as the Syrian government did in November 2012, and of conducting large-scale filtering such as the blocking of You-Tube in Pakistan in mid-2012. There is also ongoing censorship of civic activism in China (Iam Chong and Oi Wan 2012).

3.5. Violence against women

Even as women's organisations and women's movements globally have grown in their presence and strength, gender-based violence in online spaces continues to grow. The UN estimates that 95 percent of aggressive behaviour, harassment, abusive language and denigrating images in online spaces are aimed at women, and come from partners or former male partners. Studies show that the victims of cyber-stalking are predominantly female (APC 2010a). In parallel, online gaming images reproduce male heterosexual violent stereotypes and are heavily sexist and racist (Embrick, Wright and Lukacs 2012). Also, for women in the technology community, navigating gender power and responding to sexism and misogyny in online cultures is a big barrier to their effective participation (Reagle 2013).

Sexual harassment and violence online take multiple forms, from online intimidation involving threats of sexual violence, to doctored photographs and technological attacks that shut down feminist blogs and websites. The majority of targeted individuals are women, and the abuse of female victims invokes gender in threatening and demeaning terms (Citron 2009), as the example below from a Filipino woman demonstrates:

"It's been a month since I have been receiving nasty mean text messages, death threats and rape threats. I was also being watched. Whenever I receive a text it's either they say that they are watching me or following me. It's becoming scarier every day. The problem is I don't know who is those people who send those text messages. (...) As much as I want to file a case I can't do anything because I have no proof on such person. (...) I tried to contact the network company if they can help me regarding my case. But they just said the person who sends me those text is using a prepaid and they cannot do anything about it." (Story from the Philippines, cited in Moolman 2013)

Cell phones have become double-edged swords for girls and women – a potential tool for freedom, but one that is too close for comfort – it is one of the first items to be destroyed by the partner during violent reactions, according to survivor testimony (APC 2010). With the roll out of connectivity infrastructure in developing countries, public access points, like Internet cafés, become integral to

human trafficking networks. In Indonesia and the Philippines, new business ventures have come up whereby many of these cafés have private booths equipped with a PC and webcam where adolescents perform sexual acts in front of web cameras for money transferred to their prepaid mobile accounts.

Undeniably, the Internet has ushered in a new regime in sexuality (see section 3.6). However, the rise and hold of commercial interests in the Internet space has also meant the normalisation and increased acceptance of sexualised imagery in mainstream cultural products. The pornography industry has continued to remain a predominantly masculine environment (Van Doorn and Van Zoonen 2010). Yet, because of commercial interests and arguments about the democratisation of information a political and legal framing of the issue is not established in most countries. Compounding the crisis is the fact that few women's rights activists are working actively on this issue (Sandler 2013).

Engaging the law and asserting the need for protecting and promoting women's freedom and security remains a key strategy. However, what is also clear from across the world is that it is possible to appropriate cyberspace to effectively denounce VAW. Techniques of subverting mainstream gender norms in cyber space with alternative discourses of gender, body, sexuality and power have been widely adopted (Monroe 2012). See Box for more details.

Using internet campaigns to challenge ideas about consent

A group of feminists in Baltimore created a fake "Victoria's Secret" campaign around the company's underwear line "PINK", printing "Yes", "No", "Maybe" and "No means no". This new underwear line was titled "Consent is sexy", and it went viral online very quickly, with people at first thinking it was a company sponsored campaign and praising the company for taking a strong stance on issues of sexual violence. It then became known that a Baltimore feminist group was actually behind the campaign, and that they had used this online strategy to challenge corporate endorsement of gender-based violence through underwear lines that have things like "Sure thing" printed on them. This is a good example in the use of social media to garner attention for an important cause as well as shame a large company.

Source: Bonifacic 2012

Social movements and women's movements have also used ICTs for campaigning against VAW and promoting images of women free from stereotypes in the media – such as the 'Take Back the Tech'¹⁸ campaign of the Association for Progressive Communications that calls upon all users of technology to protest violence against women, take control of technology, and use it consciously to challenge unequal power relations. ICTs are used for prevention of VAW and for assistance of VAW survivors, for instance, the police maintains assistance phone networks using ICTs, in countries like Brazil.

3.6. Identity and sexuality in the network society

The new spaces of the digital world offer enormous possibilities for self-expression and for a creative pursuit of solidarity and community. Though it would be incorrect to make a sweeping generalisation that digital spaces are necessarily emancipatory, they do alter the way people connect with others. While much more research is needed to understand the manner in which gender identities are contested, shaped and reclaimed through virtual activity, what is more than evident is that we are currently in transition, at a point where the social categories of sexuality and gender identity are being

destabilised.

In traditional societies, young women are increasingly able to forge independent relationships outside the boundaries of cultural norms restraining women and girls (Bhattacharjya and Ganesh 2011), and young people with non-normative sexual orientations are able to seek supportive communities¹⁹, thanks to the Internet. Equally, online environments potentially present the possibilities for marginalised sub-cultures to both contest dominant cultural and sexual norms (in the case of Lesbian, Gay, Bisexual and Transgender people) and to subvert mainstream culture – as in the case of Islamic punk music groups using online social media for building community and breaking stereotypes (Murthy 2010).

Much of what we know about female sexuality and the Internet comes from the standpoint of risk and 'harm' (Doring 2009); this means that we know little about the positive gender dimensions of active use and techno-social practices, particularly with regard to the more interactive Web 2.0 platforms (See **Box 1**). This is particularly true for developing country contexts (Gasser, MaLay and Palfrey 2010). Also, the positive implications of online contact for older women's sexual expression have yet to be sufficiently researched.

Recoding Web 2.0 – strategies used by women and girls online

Web 2.0 is a term used to denote the way the Web has evolved to allow users to interact and collaborate with each other as creators of user-generated content in a virtual community, in contrast to websites where people are limited to the passive viewing of content. Examples of Web 2.0 include social networking sites, blogs, wikis, video-sharing sites, web applications, and mash-ups. There are a number of creative strategies that girls and women have adopted, employing Web 2.0 spaces to subvert its dominant sexual mores. For example, students from New Zealand parodied the Robin Thicke video “Blurred Lines,” that has been widely criticised for condoning rape, with their video called “Defined Lines” that included lyrics like “What you see on TV, doesn’t speak equality, it’s straight up misogyny,” (Moawad 2013). Digital artists have tackled controversial issues such as the politics of gender and race by framing the issues in alternative ways. The digital comic “Princess” published by Action Lab Comics is about a woman of colour superhero who challenges the assumptions of masculine super-hero archetypes (*ibid.*). Qahera is another bilingual comic in which the protagonist, a veiled superhero, combats Islamophobia and sexual harassment (Moawad 2013).

Without undermining the benefits of the free spaces online that generate new codes of sexuality and identity, it must also be stated that gender stereotypes and assumptions are still perpetuated through Web technology. For example, women’s personal data may be used to target them as consumers of products considered gender-specific.

An important issue with respect to identity and sexuality is that the vast majority of young men and women in developing countries, especially in Asia and Africa, will not take the same route to Internet access as their counterparts in the developed world. The access device they are most likely to use is the mobile phone and not the computer (ITU 2012: 109). For those who may be using computers, the access location will most probably be a public access point such as an Internet café. Hence, their encounters and explorations of digital space must be understood more systematically (See Box). Conversely, it is important also to design and implement digital literacy programmes for young people in contextually-relevant ways, thus enabling them to negotiate social change in the network society as informed actors.

¹⁹E.g. online support groups such as <http://www.dailystrength.org/support-groups/Lesbian-Gay> , <http://emptyclosets.com/forum/> .

Equipping young people to understand 'the digital'

There is a growing case for media literacy and awareness, particularly for young women and girls in developing countries, many of whom seem to be unaware of the power of the Internet. A Pakistani case involving a 16 year old girl illustrates this point. The girl was unknowingly videoed with her boyfriend by his friends. The video was widely distributed via smart phone technology, and then used to blackmail the girl into sleeping with the boy's friends. The case has been reported to the police, and court proceedings are still pending. It highlights the need for policy and programme around gender and sexuality to go beyond harm-based rhetoric and to enable young people to become more media-literate, recognising how the social and technological can intersect in ways that reinforce traditional gender-based inequalities.

Source: Case study from Association for Progressive Communication's Women's Rights Program, 2013, supported by Funding Leadership and Opportunities for Women (FLOW), Ministry of Foreign Affairs of the Netherlands.

4. A Rights and Citizenship Roadmap for Policy and Programme Interventions on Gender and the Information Society

The discussions so far have painted a broad brush picture of the depth and breadth of the implications of information society change for gender equality and women's empowerment. They have also looked at key themes and policy imperatives in areas such as economic empowerment, education, health, governance, public-political participation, and violence against women. What these threads illustrate is the need for a twin-pronged approach to policy-making on gender and digital technologies – extending and re-articulating existing laws and policies to ensure they are more gender-aware, and looking at web-based services and products through a gender lens. In most developing country contexts, this is very much a work in progress.

Three specific challenges arise in relation to gender and ICT policy. First, ICT policies need to integrate gender analyses from their inception. This is currently happening very rarely, if at all. Recent Broadband Commission research demonstrates that in 2012, less than one third of countries' national broadband plans refer to gender (Broadband Commission Working Group on Broadband and Gender 2013: 28). For example, documents on e-governance do not highlight the gender implications of decisions and choices made by citizens. Second, the social outcomes of technology projects are usually determined by contextual factors and intended change may take a long time. Sensitivity to gender dimensions in the design can contribute to positive impacts for women and girls but it is important to conduct an analysis of the social, cultural and economic context for shaping appropriate projects that reach the intended audiences. Finally, ICT policy development needs to be considered in conjunction with other policies on economic and financial inclusion, broadband and other infrastructural areas such as education, health, governance, and health. These policies in turn need to integrate gender dimensions at planning, implementation and evaluation stages.

A core principle for gender equality and ICT policies is a 'rights and citizenship' approach²⁰. This is an essential component of a vision towards equal opportunities for women and girls in all aspects of

²⁰ A rights and citizenship-based approach focuses on the downward accountability of government agencies to secure the civic-political and socio-economic rights of citizens enshrined in the human rights covenants. Many scholars have argued that this approach implicitly involves considerations of social justice and equality and should be extended to migrants.

social, economic, political and cultural life as new ICTs evolve and become part of daily realities. This approach is expressed by the new UN Resolution - 'The Promotion, Protection and Enjoyment of Human Rights on the Internet' A/HRC/20/L13 – which was launched in 2012. The Resolution affirms that the “same rights that people have offline must also be protected online” (Office of the High Commissioner for Human Rights 2012). The Resolution calls upon all States to promote and facilitate people's access to the Internet. According to the UN Special Rapporteur on the promotion and protection of the right to freedom of opinion and expression the Internet must be seen as a catalyst for individuals to exercise their right to freedom of opinion and expression, and facilitates the realisation of a range of other human rights – including economic, social and cultural rights, such as the right to education and the right to take part in cultural life and to enjoy the benefits of scientific progress and its applications, as well as civil and political rights, such as the rights to freedom of association and assembly (La Rue 2011). While it is true that the Internet is an enabler of other rights, the 'right to the Internet' itself has been recognised in various ways by some states²¹.

Furthermore, the World Summit on the Information Society acknowledges in its Tunis Commitment document, (WSIS Tunis 2005: para 23) that the full participation of women in the Information Society is necessary to ensure the inclusiveness and respect for human rights. The document encourages all stakeholders to support women's participation in decision-making processes and to contribute to shaping all spheres of the information society at international, regional and national levels.

The two elements of the rights and citizenship approach to the internet: a) Meaningful access to digital technologies, and b) Open and egalitarian ICT architecture are outlined below.

4.1. Meaningful access to digital technologies

A rights-based approach to access is much more than bridging the gender gap. It is about ensuring that digital technologies and the Internet are available to diverse groups of women and men, and creating the conditions that can enable such access to produce meaningful gains for all, including in being able to shape technologies.

An August 2011 Note by the Secretary General on Promotion and Protection of the right to freedom of opinion and expression (UNSG 2011 : para 58) underlines the importance of equal and *effective* access to the Internet for women, emphasising that such access can play a key role in promoting their empowerment:

‘Indeed...the Internet promotes empowerment by connecting women to a wide range of resources, for example to improve health, bolster education, allow for informed decisions and pursue economic opportunities.’

Commenting on what has become a central theme to digital inclusion debates and policy processes, the report, also asserts:

‘the importance of ensuring that individuals possess the necessary skills to make full use of the Internet, or what is often referred to as “digital literacy” ... (encouraging) States to provide support for training in information and communications technology (ICT) skills, ... (wherein) course modules (on freedom of expression) should not only clarify the benefits of accessing information online, but also of responsibly contributing information’ (UNSG 2011: para 45).

Key policy directions in the area of women's and girl's access to technologies discussed below are

²¹See http://en.wikipedia.org/wiki/Right_to_Internet_access for a list of states that recognise the Right to Internet Access.

based on the above considerations for meaningful and effective access.

4.2.1. Policy directions for meaningful access

- Access to ICTs should be understood as access to the gains of the information society. For rural and marginalised women, this implies that the Internet's essential functionalities and services, such as email, Web search facilities, and social networking platforms, are made available as public goods.
- Digital literacy is an essential component of meaningful access, enabling women and girls to not only develop essential technical skills as users but to become active agents who can participate in social and public life.
- Immediate efforts are needed to ensure greater affordability of mobile and other technologies for all, while making access to affordable broadband an important citizen right. This means that digital inclusion policies should focus on special programmes for women and girls and that a national fibre network plan to ensure cheap bandwidth access to all citizens should be a priority issue for infrastructural policy. Such 'broadband bonus' can have distinctive, gender-related benefits for women, including efficient access to information, savings in transportation and benefits in health and entertainment (Greenstein and McDevitt 2012).
- Pro-people licensing regimes for promoting the deployment of local wireless connectivity networks can allow smaller players like women's cooperatives, to compete with larger online companies while also connecting unreached and remote populations (Akoh 2008). Special programmes for women to run community-owned and not-for-profit infrastructure, promoting local applications, services and content should also be encouraged, and funded with public money where possible.
- To achieve gender-equitable economic and social outcomes, mobile phone ownership/diffusion needs be increased along with the development of infrastructural aspects such as electricity and initiatives that bring public services such as health and governance information to women via their phones. Framing appropriate Universal Service Obligations for Internet Service Providers is central to guaranteeing meaningful access.
- There is a need for new forms of public access that go beyond internet cafés. Community digital libraries, where low-cost tablets preloaded with content and sim cards can be borrowed; public information can be accessed; and digital literacy and skill development can be obtained present a new option to address the limitations of shared public access facilities. This new genre of public access can focus on building women's civic intelligence and solidarity. This approach can also be designed to combine ICTs with livelihoods training for women farmers, and women in the informal sector, thus creating a socially legitimate opening for women and girls in socially difficult circumstances to 'discover' and effectively use ICTs.
- Research on gender divides in access must explore the qualitative experience of access, positioning women in their roles as users, consumers and producers. Understanding the gender dimensions of the 'communication capacity' gap would offer a more informed reading of gender inequitable access than measurements based on device ownership. Also needed is a better understanding of the potential benefits and risks of Web 2.0 technologies from a gender perspective.

4.2. Open and egalitarian ICT architecture

In her report, 'The right to enjoy the benefits of scientific progress and its applications,' (Shaheed 2012: recommendation 74), to the United Nations General Assembly, the Special Rapporteur on Cultural Rights, observes that:

“States (must) ensure freedom of access to the Internet, promote open access to scientific knowledge and information on the Internet, and take measures to enhance access to computers and Internet connectivity, including by appropriate Internet governance that supports the right of everyone to have access to and use information and communication technologies in self-determined and empowering ways.”

The emerging discourse on Open Development – a field of study that concerns the deployment of ICTs for development – highlights the potential of technology for taking participatory development to the next level (Open ICT for Development 2012). This would translate into universal access to communication tools and information, universal participation in informal and formal groups/institution and collaborative production of information.

Issues of public domain and knowledge commons are also strongly linked to the question of women’s knowledge. Mechanisms are needed for protecting local communities’ and women’s rights to create and share knowledge openly and freely, accessing public information and knowledge that concerns their basic needs and rights, and protecting their practices from being commercially exploited (Gurumurthy 2008). The ultimate goal for universal access to ICTs is to allow citizens, especially marginalised people, to communicate and access information and knowledge. The Creative Commons initiative offers a range of possibilities for legally protecting content in such a way that it becomes and remains open content in the public domain. Particularly for young women from developing countries, 'open access' resources also reduce costs of learning.

However, for women and girls to engage with these shifts towards Open Development and ensure that the Internet is open, equal and just for both men and women certain principles would need to be followed, as outlined in the box below.

Building gender policies for an equitable and just digital ecosystem

The Internet must be maintained as a public space and governed recognising that in crucial respects it comprises a global commons.

It is essential to preserve online diversity and to prevent monopolies in either content or in the provision of essential public services in mobile as well as fixed network architectures.

All people have the right to freedom of expression online. Any restrictions, on grounds of security concerns or otherwise, must be for strictly defined purposes and in accordance with globally accepted principles of necessity, proportionality and judicial oversight.

Where a divergence emerges between the utility of the Internet for public interest purposes and the particular interests of Internet service or technology companies, the public interest must take priority, and the service must be subjected to regulation as a public utility.

The right to access and contribute to the development of the Internet, including its content, particularly of marginalised and/or minority groups, is essential to maintaining cultural and linguistic

diversity and must be secured through protective discrimination and affirmative action.

Personal and social data must belong to the relevant individual and social group. Policy frameworks for operationalising such effective control and ownership of digital data must be developed.

People must be able to enjoy all their rights and entitlements as citizens, even if they choose not to have Internet access. Access to and use of the Internet should not become a requirement for access to public services.

All people must have the right to use the Internet without mass surveillance. Any surveillance, on grounds of security concerns or otherwise, must be for strictly defined purposes and in accordance with globally accepted principles of necessity, proportionality and judicial oversight.

Source: <http://content.netmundial.br/contribution/towards-a-just-and-equitable-internet-for-all/110>

5. Conclusion and Recommendations

Through this document we have sought to revisit the gender equality challenge in a world that is witness to the evolution of a highly complex information society predicated upon digital technologies. Some clear messages emerge from the analysis set out in the brief.

First, women and men do not have equal opportunities to access mobile phones and the broadband Internet. Regional variations in the gender gap are significant - estimates from sub-Saharan Africa, for example, indicate that there are twice as many men as women on the Internet. Patterns of use may also be contingent upon current ICT infrastructure arrangements. In rural areas, for instance, the type and quality of applications and services that can be accessed over the Internet may be very limited. While mobile 'smart phone' technology may be increasingly accessible to women, data on ownership does not tell the whole story: women's patterns of phone use are also important to understand, with indications that many poorer women cannot afford to receive extensive information via their phones. This gap is in turn linked to underlying gender gaps in income, education and employment. At the same time mobile technologies can be a double-edged sword: the new opportunities that the Internet and mobile phones open up for women may invite disapproval or extreme negative reactions from men. These are all issues that need to be taken into account when analyzing research data of mobile phone usage or developing internet access strategies.

The brief outlines the emancipatory potential of the Internet and digital space in terms of enabling women to assert their rights and tell their own stories. We noted that despite the promise, the reality is that women's participation in online spaces is often circumscribed by gender norms and structures. Yet there are positive cases where digital space is also used by artists and young people for generating alternative representations about gender.

We also noted how political processes have shifted from interest-based to a more fluid, issue-based group politics. However, while this presents new decentralised routes for women and girls to collaborate and act, we pointed out that ICTs and the network society cannot guarantee the democratisation of power. Similarly, the new hope that 'openness' of the Internet will remove traditional barriers that have prevented women and marginalised groups from accessing, and shaping knowledge may not automatically translate into the reality of a truly global, inclusive and pluralistic knowledge domain.

The brief also discussed the implications for gender and ICTs for the key development policy sectors and issues of employment, education, health, accountable governance, violence against women and sexual rights.

It notes that women are under-represented in ICT sector employment but stressed that public policies must go beyond the provision of basic ICT skills training. Women's SMEs require long-term public support, continued training, access to necessary resources, and help in expanding their markets. M-money presents advantages for women in the informal economy who have restricted access to financial resources, but it is vital that new financial systems do not take advantage of women by charging unrealistic interest rates for example.

The brief points out that ICTs open up unprecedented possibilities for life-long learning and building communities of learning, especially for rural girls and women, with references to numerous mobile learning initiatives which have been implemented in Africa and Asia. However, it cautions that in developing countries, the public education system is not yet fully prepared to enable both girls and boys acquire the information and ICT literacy, and the skills for collaborative ways of working and living, which are vital to the new knowledge economy. For girls and women to participate equally in the knowledge society, a systemic approach is needed to the development of gender-responsive digital literacy programmes, public investment in high quality ICT infrastructure – especially for schools and public libraries – appropriate OER, and roadmaps connecting skills with jobs.

The brief emphasises the role that ICTs can play in the dissemination of public health information, provision of remote health consultation and access to better treatment. Although more systematic research is needed, case studies of e-health and m-health interventions for improving health outcomes for women indicate that integrating a gendered analysis of inequalities into the design of the interventions is crucial for success. Public health ICT initiatives that facilitate collaboration among health workers can have important health outcomes for women. The institutionalisation of smaller-scale efforts in e-health and m-health will also require appropriate governance frameworks to ensure the privacy of citizen information.

We argued that ICTs can play an important role in effective service delivery and accountable governance, but that most ICT and e-governance policies and programmes do not explicitly address gender issues. On the contrary, there seems to be an assumption that ICTs will automatically promote gender equality. With connectivity and access to online public data, new horizons for women's active citizenship emerge. Yet as ICTs become integrated with public service delivery systems, women's groups and grassroots communities will need to build the skills and capacity to understand and engage with public data and information systems. This will enable women to engage directly in local planning, and community monitoring of service delivery, and in holding public authorities to account.

We also cautioned that digital space has become another major site of violence against women (VAW). Sexual harassment and violence online take multiple forms including threats of sexual violence, doctored photographs, technological attacks that shut down feminist blogs and websites, cyber-harassment. The control of the Internet by big business has also seen the normalisation of violent sexual imagery in online cultural products. It clearly emerges that laws and policies to protect women and girls from violence need to be re-framed to recognise, prevent and redress new forms of technology-related VAW. This means taking such steps as expanding definitions of violence and harm beyond physical harms, and introducing laws that deal with new phenomena like cyber-stalking, 'sextortion', etc. However, legal remedies to tackle gender based violence must not become an excuse to undermine women's and girls' Internet freedoms.

The discussions in this brief point to a rapidly changing technological scenario that undoubtedly is changing society at multiple levels. This calls for new policies on gender and ICTs that promote gender equitable digital inclusion, as well as open and egalitarian digital architectures. The World Summit on the Information Society acknowledges that the full participation of women is necessary to ensure the inclusiveness and respect for human rights in the Information Society. Policies on gender and ICTs will therefore need to be rooted in a rights and citizenship approach. Such an approach implies much more than bridging the gender digital gap. It is about ensuring that digital technologies and the Internet can produce meaningful gains for all, including in being able to shape technologies.

5.1. Recommendations for Policy and Programming

- Immediate efforts are needed to ensure greater affordability of mobile and other technologies for all, while making access to affordable broadband an important citizen right.
- Investments are needed to promote women's and girls' leadership programmes, such as CICSO's training and mentorship programme in West Asia (Tandon 2012) which can provide confidence in using ICTs as an empowerment tool.
- ICTs policies in traditional economic sectors should focus on flexible, context-appropriate strategies that create new networking opportunities for women. They should ensure the central involvement of women's producer and cooperative organisations, as such organisations provide the greatest potential for sustainability.
- Efforts should be made to build the capacity of rural women's groups using an integrated technology approach. For example the AquaDeD project in Benin has utilized video, television and mobile phones to enable rural fisher-women to learn new conservation techniques to increase their market (APC 2010a)
- It is vital to conduct gender-sensitive evaluations of mobile money initiatives for women's empowerment to identify opportunities and risks. Governance frameworks should also be put in place to ensure a level of regulation for these enterprises.
- Gender-based ICTs programming for educational outcomes needs to go beyond girls' increased access to computers. It requires locally relevant strategies to encourage girls to actively explore new technologies.
- Sustainable ICT programmes in education require a systematic approach, incorporating gender sensitivity in digital literacy programmes, creating open educational resources, investing in ICTs infrastructure for schools and public libraries and other community spaces, and promoting locally-networked educational institutions.
- Issues of medical ethics need careful scrutiny in e-health to address the need for data security and individual rights over personal health data as well as in ensuring that digital innovations do not aim to replace provision of direct, personal health care with technology.
- More exploration is needed into the potential benefits of mobile technologies for health information and provision. For example mobile phones present opportunities for maternal health monitoring and voice SMS can open up a channel of communication with illiterate

women.

- It is vital to grasp the possibilities ICTs offer for community-generated information relating to governance. Citizen information centres can be designed to generate data from the community level and to mobilise the voices of women, girls and other marginalised groups.
- Legal interventions to address the issue of VAW must begin from the premise that the internet is a key instrument in the promotion of rights. Legal remedies to tackle VAW must not be used as a means to undermine women's and girls' rights to communicate.
- Laws and policies to protect women and girls from violence need to be re-framed to recognise, prevent and redress new forms of technology-related VAW. This means taking steps such as expanding definitions of violence and harm that go beyond physical manifestations, and introducing laws that address new phenomena such as cyber stalking, 'sextortion' and other online violations (Sandler 2013).
- To tackle VAW in the context of ICTs is it vital that gender equality advocates work with national women's machineries and women's groups to enable and monitor the implementation of ICT policies that are grounded in women's rights.
- Investments should be made to enable reporting of abuses through toll free calls
- Sex-disaggregated data, based on globally agreed standardised indicators, is important to meet policy-related goals. The technology-gender connection must be continuously unpacked for making better sense of who is gaining and who is not, and indeed, who is gaining at whose cost and who is losing – a task that gender researchers must set for themselves.

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