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# **Indigenous Peoples and the Information Society: Emerging uses of ICTs**

*“In the evolution of the Information Society, particular attention must be given to the special situation of Indigenous Peoples, as well as to the preservation of their heritage and their cultural legacy.”*

WSIS Declaration of Principles, 2003, Article 15

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# Abstract

During the World Summit on the Information Society (WSIS) Indigenous Peoples called for their full and effective participation in the Information Age on their own terms. While implementation of the WSIS Plan of Action has been limited, there are examples of Indigenous Peoples creatively engaging with information and communications technologies (ICTs) independently, or in partnership with NGOs, private sector, governments, intergovernmental organizations, and other Indigenous Peoples. A broad range of innovative software, hardware, and existing technologies are being employed to, among other things: defend Indigenous Peoples' human rights; and preserve, manage, and promote their unique cultural heritage. This report summarizes

Indigenous Peoples' engagement with the Information Society and provides an overview of their participation during the World Summit on the Information Society (WSIS). Particular attention is given to the relevance to "knowledge societies" and Action Line C8 of the WSIS Plan of Action on "Cultural diversity and identity, linguistic diversity and local content." Drawing on Indigenous Peoples' declarations, statements, and interviews with key experts and activists, as well as intergovernmental and academic reports, this review also showcases innovations, examples of good practice and emerging trends, with recommendations to guide strategies, projects, and policy-making, in the post-WSIS environment.

## Keywords

**Indigenous Peoples, WSIS, ICT, UNESCO, United Nations, UNDRIP, Knowledge Societies, Digital Divide, Information Society, Knowledge Societies**



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# Introduction

## Background

Current estimates indicate that there are over 370 million Indigenous Peoples living in some 90 countries, representing over 5,000 language and cultural groups.<sup>1</sup> While Indigenous Peoples are extensively diverse, they have one unfortunate commonality – a history of injustice.<sup>2</sup> Today, the situation of Indigenous Peoples in many parts of the world is recognized as critical. Whether living in developed or developing nations, Indigenous Peoples frequently face multiple barriers to effective participation in political and decision-making processes, including, but not limited to, lack of infrastructure and connectivity, social and economic inequality, racial prejudice, language gaps, and inappropriate education. Within a complex environment of barriers and challenges, the current state of the world's Indigenous Peoples may seem bleak; however, there is cause for cautious optimism.

Indigenous Peoples are overcoming these barriers and challenges in creative ways, independently, or in partnership with non-government organizations (NGOs), private sector, governments and intergovernmental organizations, or other Indigenous Peoples, including by directly engaging with the digital revolution in information and communication technologies (ICTs). A broad range of innovative software, hardware, and existing technologies are being employed to, among other things: defend Indigenous Peoples' human rights; preserve and promote their unique cultural heritage, ancestral knowledge, practices and languages; exchange experiences and best practices; develop and implement community development projects and services; and manage their heritage (including biological diversity). Nevertheless, despite positive developments, social, economic, and digital disadvantage among Indigenous Peoples continue to be pervasive realities. Political will, cooperation, and comprehensive, multi-stakeholder strategies are essential to promote, attain, and sustain a more equitable information society,<sup>3</sup> with the full, effective, and meaningful participation of Indigenous Peoples.

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1 UN News Centre, "First World Conference on Indigenous Peoples Opens at UN Headquarters", 21 September 2014, [www.un.org/apps/news/story.asp?NewsID=48768](http://www.un.org/apps/news/story.asp?NewsID=48768) [accessed 8 February 2016].

2 While there are many national definitions, there is no universally accepted definition of Indigenous Peoples in international law (ILO 2004, p.2). As noted by numerous United Nations System conferences and reports, many Indigenous Peoples themselves believe that a definition is neither practical nor advisable. ILO Convention No. 169, however, contains a "statement of coverage" and contains the principle that self-identification be considered as a "fundamental criterion for determining the groups to which the provisions of the Convention apply" (*ibid.*).

3 A recent review of UNESCO's action within the WSIS context (Souter 2010, p.10), argues that since the 1990s, the term "Information Society" has been used to characterize "new social, economic and cultural relationships brought about by [the] changing information and communication landscape" and a "society in which information and knowledge will play critical roles in enabling the development of countries, communities and individuals."

## Scope of the report

This report summarizes Indigenous Peoples' engagement with the Information Society and provides an overview of their participation during the World Summit on the Information Society (WSIS). Particular attention is given to the relevance of "knowledge societies" and the WSIS Action Line C8 on "Cultural diversity and identity, linguistic diversity and local content."<sup>4</sup>

The report closes with recommendations for strategies, projects, and policy-making, in the post-WSIS environment, that are particularly relevant for governments, the United Nations system, and other existing and potential partners of Indigenous Peoples and ICT-related projects and initiatives.

## Methodology

In addition to the experiences shared during the 2003 and 2005 phases of WSIS, and through the International Indigenous ICT Task Force (ITTF), the report also draws on Indigenous Peoples' declarations, statements, and interviews with key experts and activists, as well as intergovernmental and academic reports. Declarations and statements were selected to provide a representative selection of material from international and regional meetings that had been developed and/or endorsed by Indigenous Peoples. Where possible, regional balance was also respected in selecting experts for interview.

The review showcases innovations and examples of good practice, selected in collaboration with ITTF via recommendations, substantive reports and a review of post-WSIS Indigenous Communication Networks. The case studies examined herein have been identified not only for their noteworthy response to local needs or wants, but also for their human rights-based approaches and potential applicability across both "developing and developed" national landscapes. Noting that there is generally a lack of systematic collection and documentation of disaggregated data concerning Indigenous Peoples and ICTs, the case studies have been analyzed using a mixture of empirical, theoretical and ideological criteria.

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4 See WSIS Implementation by Action Line: [www.itu.int/net/wsis/implementation/](http://www.itu.int/net/wsis/implementation/) [accessed 20 December 2015]

# Indigenous Peoples & the Digital Revolution

## The Digital Divide

While the digital revolution continues to forge new ways to generate and preserve knowledge, educate people, and disseminate information, it is also characterized by the growing gap between those who are information-rich and those who are information-poor. When discussing ICT access and usage, or the lack thereof, the term digital divide is often applied to describe disparities and exclusion. Indigenous Peoples around the world are increasingly aware of this gap, often finding themselves socially, economically, and digitally disadvantaged.<sup>5</sup>

As a consequence of impoverished socioeconomic positions, many Indigenous Peoples are distinctly disadvantaged with regard to digital information access and distribution, whether residing in developed or developing countries (Samaras, 2005). Additionally, Indigenous Peoples, and others, are often disadvantaged in terms of literacy and other skills-based capabilities required for effective utilization of ICTs (Samaras, 2005; Helsper, 2010). Writing on the situation of Aboriginal Australians, Katrina Samaras (2005: p.84) suggests that as ICT access is increasingly linked to “social, economic, and political opportunity,” existing inequalities constraining access can be perpetuated or exacerbated by digital disadvantage. More recent research continues to support this observation, with only a small fraction of remote Aboriginal Australians using the internet, and far less having access to broadband (ACCAN, 2010).

Although based on the situation of Aboriginal Australians, Samaras’ insightful analysis linking digital, social, and economic disadvantage is applicable to Indigenous Peoples globally. For instance, commenting on the barriers many Innu children experience with regard to ICTs, Jack Penashue, an Innu from Sheshatshiu, Labrador stated, “In order for our children to participate on an equal level with leaders of the future, they need to have the same access and training with computers and the internet as children from all cultures” (quoted in Brown and Tidwell Cullen, 2005). Considering the diversity of Indigenous Peoples, however, while digital disadvantage should be viewed in the context of broader social and economic divides, it is not always just a question of access or socioeconomic exclusion. “Digital choice” also affects ICT engagement by Indigenous Peoples.

Indeed, cultural factors and social context can influence positive or negative attitudes toward technologies (Helsper, 2008). Genuine concern about and skepticism towards ICTs, for example, can be influenced by past experiences, especially from the colonial era (Kamira, 2002). For many Indigenous Peoples, ICTs represent a vulnerability to further colonization, a lack of legal protections for traditional knowledge, intellectual property, and collective guardianship, and a risk of compromising community

protocols (Kamira, 2002; Deer and Håkansson, 2006). Affecting attitudinal and cultural barriers toward ICTs requires more than innovative and creative approaches; it requires a level of trust attainable only with the full and effective participation of the communities involved, as well as the implementation, adequate protections, and safeguards of Indigenous Peoples’ rights.

Indigenous Peoples reaffirmed this position during the second phase of WSIS noting that the “dignity and human rights of Indigenous peoples, nations and tribes” must be respected if the “economic, information and digital divide which separates technology rich nations and the private sector from the most marginalized peoples of society, including Indigenous peoples, nations and tribes, is to be bridged.”<sup>6</sup> From this perspective, bridging the economic, information, and digital divides can be linked to core rights such as freedom of expression and the right to receive information.<sup>7</sup> In turn, these rights place media well inside the framework of the human rights regime. Within this context, media and rights should not be understood as the “mere ability to view indigenous programming or listen to indigenous news”, there are also clear linguistic and cultural rights implications (Graham 2010: p.505). Additionally, media recognized as a right supports other “core rights impacting Indigenous Peoples, such as the rights to non-discrimination, self-determination, and respect for cultural integrity” (Graham 2010: p. 430). Article 16 of the United Nations Declaration on the Rights of Indigenous Peoples, for example, articulates Indigenous Peoples’ right to media based upon preexisting international human rights norms. For instance, the International Labor Organization’s Convention 169 on Indigenous and Tribal Peoples, in Article 30, establishes means of communication as a key strategy for development.<sup>8</sup> Underscoring linkages between self-determination and media, the 1992 Rio Declaration’s Principle 10 promotes access to information, access to public information, and access to justice as key pillars of sound environmental governance and sustainable development (Stec 2015). It is in this interconnected global framework of rights, norms, and standards, the WSIS C8 Action Line on Cultural Diversity and Identity, Linguistic Diversity and Local Content, which links to directly sustainable development, calls for enhancing the capacity of Indigenous Peoples to develop content in their own languages and enabling them to more effectively use and benefit from the use of their traditional knowledge in the Information Society.<sup>9</sup>

<sup>5</sup> See generally, the Report of WSIS Parallel Event (2005) Indigenous Peoples and the Information Society: Toward an International Indigenous Portal, November 14, 2005: [www.un.org/esa/socdev/unpfii/documents/report\\_en.pdf](http://www.un.org/esa/socdev/unpfii/documents/report_en.pdf) [accessed 3 February 2016]

<sup>6</sup> *Ibid.* Paragraph 10, page 3.

<sup>7</sup> At international level the freedom of expression and the right to receive information are affirmed in, *inter alia*, Article 19 of the Universal Declaration of Human Rights [www.un.org/Overview/rights.html](http://www.un.org/Overview/rights.html) and Article 27 of the International Convention on Cultural Rights (ICCR) [www.ohchr.org/EN/ProfessionalInterest/Pages/CESCR.aspx](http://www.ohchr.org/EN/ProfessionalInterest/Pages/CESCR.aspx), while at regional level they are affirmed in Article 10 European Convention on Human Rights [www.echr.coe.int/Documents/Convention\\_ENG.pdf](http://www.echr.coe.int/Documents/Convention_ENG.pdf) and Article 9 of the African Charter on Human and Peoples’ Rights [www.achpr.org/instruments/achpr/](http://www.achpr.org/instruments/achpr/), among others.

<sup>8</sup> See “Part VI, Education and Means of Communication” of ILO Convention 169 at [www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:12100:0::NO::P12100\\_INSTRUMENT\\_ID:312314](http://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:12100:0::NO::P12100_INSTRUMENT_ID:312314)

<sup>9</sup> See WSIS C8 Action Line at [www.itu.int/net/wsis/c8/index.html](http://www.itu.int/net/wsis/c8/index.html)

## Grasping a Double Edged Sword

Viewed positively or negatively, ICTs are powerful tools that offer opportunities to link Indigenous communities, even in the most remote regions, to each other and to the rest of the world. However, obstacles to connectivity still remain, including poor or absent basic infrastructure (electricity, hardware, etc.), high costs, inadequate bandwidth, or poor, unreliable service and limited budget allocations for IT maintenance and lifecycle. In a 2011 UNESCO Policy Brief focusing on Indigenous Peoples, Paul Resta (2011: p.2) draws attention to a range of barriers, including the “lack of ICT expertise among policymakers, shortages of teachers with IT skills, the dominance of English and other non-indigenous languages on the Internet, the lack of parental and community support”. He also highlights the “lack of legislative and policy implementations to support longer term ICT initiatives.” As formidable as this list of barriers may seem, they are not the only significant challenges on the horizon.

Indeed, as the digital revolution is also recognized as a key dimension of globalization, some observers caution that ICT access among Indigenous Peoples could reinforce and accelerate the dominance of Western-based modes of thought, culture, and learning strategies, challenging the maintenance of cultural diversity (UNESCO, 2002; Dyson et al., 2006). Resta (2011: p.4) observes, for instance, that television, radio, films, and even computer games have resulted in “massive and continuous exposure” of many Indigenous youth to non-indigenous cultural values and information with little opportunity to reinforce their own cultural heritage. Indeed, television in particular, is linked to many “societal ills” faced by Indigenous Peoples including “cultural erosion, lack of community involvement, increasing disrespect toward others, violence,” and even serious health issues such as obesity (Resta 2011: p.4).

Notwithstanding the challenges and barriers, the potential of equitably participating in the Information Society is recognized and often welcomed by Indigenous Peoples themselves. In various statements, position papers, and declarations, Indigenous Peoples support opportunities to use ICTs, for example, to defend their human rights, revitalize culture and languages, increase educational opportunities, access to new marketplaces, and facilitate Indigenous-to-Indigenous networking. Recognizing ICTs as both barriers and enablers, the Waitangi Tribunal in Aotearoa New Zealand, for instance, acknowledged:

*“Broadcasting media, radio and television, play a key role in the maintenance or loss, development or stagnation of language and culture ... The virtual absence of Maori language from radio and television has been a potent factor in the decline in the number of fluent speakers of Maori over the last forty years...”*

(Quoted in Kamira, 2002: p.13)

Incorporating ICTs on their own terms is a consistent demand made by Indigenous Peoples around the world. Kenneth Deer, president of the IITF and a member of the indigenous Mohawk Nation, affirms this position stating “Indigenous Peoples need to take part in the Information Society on their own terms and on the basis of their cultural backgrounds, to be able to shape their future without risking losing their cultures and identities” (pers. comm., 9 December 2012).<sup>10</sup> Deer also notes that “Indigenous Peoples have their own concepts of knowledge, information, and communication and have developed their own forms of information communication.” Additional positions by Indigenous Peoples with regard to ICT concerns and long-term aspirations are found by reviewing their participation during the World Summit on the Information Society (WSIS).<sup>11</sup>

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**10** UNESCO Report. Email to: Roberto Borrero. 09 December 2012. Personal communication.

**11** See generally the Geneva Declaration of the Global Forum of Indigenous Peoples and the Information Society available at [www.un.org/esa/socdev/unpfii/documents/ips\\_genderand\\_icts\\_en.pdf](http://www.un.org/esa/socdev/unpfii/documents/ips_genderand_icts_en.pdf), the 2005 final report of the event Indigenous Peoples and the Information Society: Toward an International Indigenous Portal available at [www.un.org/esa/socdev/unpfii/documents/report\\_en.pdf](http://www.un.org/esa/socdev/unpfii/documents/report_en.pdf) and the 2005 statement of Navajo Nation President, Joe Shirley available at [www.itu.int/net/wsis/tunis/statements/docs/pe-indigenous/1.pdf](http://www.itu.int/net/wsis/tunis/statements/docs/pe-indigenous/1.pdf)

# Indigenous Peoples & WSIS

The International Telecommunication Union (ITU) adopted a resolution at its Plenipotentiary Conference in Minneapolis in 1998 to hold a *World Summit on the Information Society* (WSIS) and to place it on the agenda of the United Nations.<sup>12</sup> In 2001, the United Nations General Assembly Resolution 56/183 endorsed the holding of WSIS in two phases.

Not including preparatory and inter-sessional work, the first phase, also known as the Geneva phase, took place in Geneva from 10–12 December 2003. Its objective was to “develop and foster a clear statement of political will and take concrete steps to establish the foundations for a people-centered, inclusive, and development-oriented Information Society,” reflecting all the different interests at stake (Berry 2006: p.1). These foundations were laid with the adoption in Geneva on 12 December 2003 of the *Geneva Declaration of Principles and Geneva Plan of Action*.

The second WSIS phase, held in Tunis from 16-18 November 2005, also referred to as the “Tunis phase”, aimed to put “Geneva’s Plan of Action into motion as well as to find solutions and reach agreements in the fields of Internet governance, financing mechanisms, and follow-up and implementation of the Geneva and Tunis documents” (WSIS 2006). Indigenous peoples participated throughout both phases in a number of different ways. As a result of effective advocacy efforts by the International Indigenous Steering Committee (IISC) (see below) and the Indigenous Caucus, outcome documents specifically mention Indigenous Peoples and contain a number of clauses and actions of direct relevance to them. This phase concluded with the adoption of the Tunis Commitment and Tunis Agenda for the Information Society on 18 November 2003.

Each of these phases marked the culmination of many months of consultations and negotiations among government representatives, experts, and members of the private sector and non-government organizations. The preparatory process included reviews of vast amounts of information and sharing a broad spectrum of related experiences. As a result of the successful advocacy efforts of Indigenous Peoples’ representatives during the WSIS process both the Geneva Declaration of Principles and the Tunis Commitment both contain an Indigenous-specific paragraph that reads:

*“In the evolution of the Information Society, particular attention must be given to the special situation of indigenous peoples, as well as to the preservation of their heritage and their cultural legacy”*

(Geneva Declaration, para.15, WSIS 2003;  
Tunis Commitment, para. 22, WSIS 2005)

## The Geneva Phase

In conjunction with the first WSIS phase, Indigenous Peoples organized preparatory events to demonstrate their desire to directly engage with the Information Society, and to express what they considered to be at stake. As a result of this work, a diverse group of Indigenous Peoples, in cooperation with the Government of Canada, the Aboriginal Canada Portal and Connectivity Working Group, the United Nations Permanent Forum on Indigenous Issues (UNPFII) and other UN Agencies, a number of member states, and the City of Geneva, organized the first Global Forum of Indigenous Peoples and the Information Society (GFIPIS), which took place in December 2003. In fact, the GFIPIS was one of the largest official parallel events of the Summit and one of its important outcomes was the adoption of the *Geneva Declaration of the Global Forum of Indigenous Peoples and the Information Society* (GFIPIS, 2003).

The GFIPIS Declaration affirms the importance of ICTs as recognized by Indigenous Peoples, stating:

*“Information and Communication Technology (ICT) should be used to support and encourage cultural diversity and to preserve and promote the language, distinct identities and traditional knowledge of Indigenous peoples, nations and tribes in a manner which they determine best advances these goals. The evolution of the information and communication societies must be founded on the respect and promotion of the rights of Indigenous peoples, nations and tribes and our distinctive and diverse cultures, as outlined in international conventions. We have fundamental and collective rights to protect, preserve and strengthen our own languages, cultures and identities.”*

(GFIPIS, 2003)

The effective participation of Indigenous Peoples at the Summit via the GFIPIS subsequently resulted in their specific mention in the main outcome documents of the Geneva Phase: the WSIS Declaration of Principles and the Geneva Plan of Action. These documents, along with the GFIPIS Declaration, provide guidance to governments, Indigenous Peoples, UN agencies, non-governmental organizations, the private sector, and academics interested in using ICTs to help improve Indigenous Peoples’ quality of life.

The *WSIS Geneva Plan of Action* further highlights, at C1.f, “the role of governments and all stakeholders in the promotion of ICTs for development” suggesting that they explore the “viability of establishing multi-stakeholder portals for Indigenous Peoples at the national level.” At C4.i, Capacity Building is highlighted, calling for the “launch of education and training programmes, where possible using information networks of traditional nomadic and Indigenous Peoples, which provide opportunities to fully participate in the Information Society.” Reflective of concerns of Indigenous Peoples

<sup>12</sup> See ITU. (1998) Plenipotentiary, Conference Minneapolis available at <http://handle.itu.int/11.1004/020.1000/4.16>

presented in the GFIPIS Declaration, cultural diversity and identity, linguistic diversity, and local content are also addressed in the WSIS Plan of Action.<sup>13</sup>

## The Tunis Phase

The second WSIS 'Tunis phase' aimed to put "Geneva's Plan of Action into motion as well as to find solutions and reach agreements in the fields of Internet governance, financing mechanisms, and follow-up and implementation of the Geneva and Tunis documents" (WSIS, 2006). A pre-summit planning meeting was held in Ottawa, Canada in March 2005 to develop Indigenous participatory strategies for Tunis. Discussions focused on bridging the digital divide, Universal Indigenous Connectivity, effectively leveraging ICTs for sustainable development and poverty reduction, and the defense of Indigenous rights and cultures. At the close of the meeting, an International Indigenous Steering Committee (IISC) was formed to follow-up on the recommendations by organizing a parallel event at the second Summit.<sup>14</sup>

This parallel event, entitled *Indigenous Peoples and the Information Society*, was held under the theme "Towards an International Indigenous Portal". The objectives of this event were to: review actions to date in relation to international Indigenous connectivity; share regional experiences; craft an international Indigenous e-strategy in the post-WSIS environment; and explore the possibilities of creating an international Indigenous web portal (IISC, 2005: p.1).<sup>15</sup> Indigenous participants reaffirmed support of the 2003 WSIS outcome documents, the GFIPIS Declaration and Plan of Action, and the report of the WSIS Indigenous Thematic Planning Conference for Tunisia. As a result of these and other advocacy efforts by the Indigenous Caucus and the IISC, the Summit's outcome documents specifically mention Indigenous Peoples.

- 13** Indeed, at the C8 line of action specifically, stakeholders are urged to, *inter alia*,
- d) Develop and implement policies that preserve, affirm, respect and promote diversity of cultural expression and indigenous knowledge and traditions through the creation of varied information, content and the use of different methods, including the digitization of the educational, scientific and cultural heritage.
  - e) Support local content development, translation and adaptation, digital archives, and diverse forms of digital and traditional media by local authorities. These activities can also strengthen local and indigenous communities.
  - k) Enhance the capacity of indigenous peoples to develop content in their own languages.
  - l) Cooperate with indigenous peoples and traditional communities to enable them to more effectively use and benefit from the use of their traditional knowledge in the Information Society.
- 14** The group consisted of indigenous nominated Indigenous Peoples representatives from the global regions identified by the UNPFII.
- 15** This parallel event was organized under the auspices of the IISC, and other event sponsors included the Secretariat of the United Nations Permanent Forum on Indigenous Issues, Indian and Northern Affairs Canada, the Canadian International Development Agency, OCCAM (Observatory for Culture and Audio-Visual Communications), the Global Knowledge Partnership, UNESCO, and the Cisneros Foundation (IISC, 2005: p.1).

## Additional WSIS Related Outcomes

Other important outcomes of the WSIS process for Indigenous Peoples include the establishment of the International Indigenous ICT Task Force, an Indigenous NGO created in order to follow-up on post-WSIS implementation. The IITF continues to pursue its mandate as a non-profit organization comprised of Indigenous individuals. Additionally, the Indigenous Peoples Caucus in Tunisia repeatedly expressed the importance of an internet portal developed by and for Indigenous Peoples. In response to this actionable item, the IITF successfully developed and continues to maintain an Indigenous-led and focused internet portal.<sup>16</sup>

Representatives of several governments and UN agencies collaborated with Indigenous Peoples during the first and second phases of WSIS and also noted the desire for the establishment of an international indigenous portal. Indeed, WSIS Action Line C1 encourages the exploration of "establishing multi-stakeholder portals for indigenous peoples at the national level."<sup>17</sup> The Swiss Agency for Development and Cooperation (SDC) provided funding for the development and maintenance of the portal for three years. However, that funding has since come to an end and no other financial support was provided from any governmental or intergovernmental entities to further develop or maintain the portal over a longer-term.<sup>18</sup> The successful creation of the IITF's Indigenous Portal is a groundbreaking, indigenous-led, best practice model promoting cultural and linguistic diversity as well as media pluralism. However, financial investment and equitable partnerships are still needed to sustain the portal, and other innovative initiatives envisioned by the organization. That this project is hindered by a lack of sustained support is relevant to the current review and planning for future projects and policy.

It is also relevant that the *Tunis Agenda* for the Information Society states that the WSIS implementation mechanism at the international level should be organized based on the themes and action lines in the Geneva Plan of Action, as well as moderated or facilitated by UN agencies when appropriate. Moreover, the ITU, UNESCO, UNDP and others are charged with coordinating and facilitating the implementation of the Geneva Plan of Action. While implementation of the WSIS Action Lines has been limited (Souter, 2010), the calls for partnerships with Indigenous Peoples have not gone unnoticed by these entities. As evidenced from various reports available in the public domain, they have taken this role seriously, developing a number of programmes that pay particular attention to the special situation of Indigenous Peoples within the context of the Information Society. While these programs can be considered successful overall, a majority of these, and related programs, are time-bound with short-term funding and commitment. However, as indicated by

**16** [www.indigenousportal.com](http://www.indigenousportal.com)

**17** See WSIS Plan of Action and Actions Lines at: [www.itu.int/net/wsis/docs/geneva/official/poa.html#c1](http://www.itu.int/net/wsis/docs/geneva/official/poa.html#c1)

**18** The portal's server was donated by Mohawk Internet Technologies, a private company 100% owned by the indigenous community of Kahnawake, Canada. While this in-kind contribution is a good example of private-public partnership, it was not a financial donation to further develop and maintain the portal itself.

statements during the WSIS process, resolving barriers to Indigenous Peoples' access to ICTs requires longer-term, sustainable partnerships.

## Knowledge Societies & Indigenous Peoples

With regard to the implementation of the Geneva Plan of Action, the role of UNESCO, in particular, continues to present significant opportunities to expand the scope of the current and emerging dialogue on the Information Society, by integrating the broader social, ethical, and political dimensions envisaged within the framework of knowledge societies. As presented in UNESCO's 2005 report *Towards Knowledge Societies*, the growth of technological networks alone is not sufficient to lay the groundwork for knowledge societies (p.19).

Even as UNESCO acknowledges the reality of the digital divide, it registers even greater concern with what it identifies as the *knowledge divide* between the "most favored and the developing countries," particularly the least developed countries (LDCs). Relevant to discussions concerning Indigenous Peoples, there is every indication that this divide will widen, even within the societies themselves. Concurrent with its mission, UNESCO is clear that "the rise of a global information society (...) must not overshadow the fact that it is valuable only as a means to achieve genuine knowledge societies" (UNESCO, 2005: p.19). In other words, while ICTs are recognized as knowledge-generating tools, they do not constitute knowledge itself.

Although the term *knowledge societies* has not been widely incorporated within Indigenous Peoples' positions concerning the Information Society, at WSIS Tunisia there seemed to be general accord with UNESCO's position. For instance, in his address to the WSIS plenary in Tunis on behalf of the IISC and the Indigenous Caucus, Navajo Nation Chief Joe Shirley (2005: p.1) stated, "Information is not wisdom. Information is without value if it is not available to those who need it. Knowledge, combined with the wisdom of our peoples, is what creates true opportunity".

The emerging dialogue encompassing knowledge societies and ICTs should be of particular relevance to Indigenous Peoples who are concerned with, among other things, intellectual property regimes; the appropriate transmission and protection of their traditional knowledge to present and future generations; and the protection, preservation, and maintenance of their ancestral, cultural, intangible and tangible heritage inclusive of genetic heritage. Here the importance of human rights and the inclusive participatory character of knowledge societies in the Information Age cannot be undervalued or ignored.

## Action Line C8

The 2003 Geneva Plan of Action identified eighteen areas of activity in which governments, civil society entities, Indigenous Peoples, businesses, and international organizations could work together toward achieving the potential of ICTs for development. Although Indigenous Peoples should be interested in, and considered full partners across all of the Plan's Action Lines, implementation of Action Line C8, presents an ongoing opportunity for partnership with UNESCO, as it focuses on specific issues of mutual concern, including cultural diversity and identity, linguistic diversity, and local content. Ultimately, Action Line C8 seeks to ensure that access to technology, information and knowledge is inclusive of everyone including Indigenous Peoples.

As revealed by a review of Indigenous Peoples' position statements made throughout the WSIS process and beyond, access to technology, information, and knowledge is a priority, albeit on their own terms. Moreover, the value of, and respect for human, linguistic, and cultural rights and media pluralism lies at the heart of Indigenous Peoples' concerns with regard to their full, effective, and meaningful participation in the Information Age. As UNESCO also emphasizes the value of cultural and linguistic diversity in all its work, the potential for renewed and equitable partnerships with Indigenous Peoples is a logical conclusion, especially as WSIS achievements post-2015 is now a focus of attention and serious dialogue. Additionally, as the C8 Action Line specifically notes its importance to sustainable development, there is also a clear opportunity to engage Indigenous Peoples in harnessing the potential of ICTs to promote and realize the United Nations Sustainable Development Goals and the post 2030 Agenda.<sup>19</sup>

<sup>19</sup> See SDG Matrix: Linking WSIS Action Lines with the Sustainable Development Goals:  
[www.itu.int/net4/wsis/sdg/Content/wsis-sdg\\_matrix\\_document.pdf](http://www.itu.int/net4/wsis/sdg/Content/wsis-sdg_matrix_document.pdf)

# Innovation & Indigenous Peoples

Within policy-oriented and or theoretical discussions in relation to ICTs, emphasis is often placed on innovation and emerging technologies. In this context, innovation could be the result of new technical knowledge, a heightened level of awareness, and/or new ways of responding to community needs and wants using new technologies, traditional media, or their combination. As studies suggest, innovative perspectives can encompass content, interaction, services and production (Heeks, 2009). In connection with ICT policies and programs affecting Indigenous Peoples, there is a need to assess innovation perspectives and emerging trends with a view toward understanding who is doing the innovating.

Broadly focusing on impoverished groups, Professor of Development Informatics at the University of Manchester, Richard Heeks, for instance, assesses different innovation perspectives across three categories of “laboratory” (pro-poor), “collaborative” (para-poor), and “grassroots” (per-poor) efforts (2009). As Indigenous Peoples are often recognized as among the “poorest of the poor,” as well as some of the most marginalized communities on the planet, this model is easily adapted to assess strategies, projects, programmes, and policies relating to Indigenous Peoples in the following format:

- a) **Pro-indigenous** (for Indigenous Peoples)
- b) **Para-indigenous** (with Indigenous Peoples)
- c) **Per-indigenous** (by Indigenous Peoples)

Using this adaptation, Heeks’s model can be further elaborated, defining *pro-indigenous* innovations as deriving from outside of the targeted communities, but are undertaken on behalf of Indigenous Peoples; *para-indigenous* initiatives as undertaken alongside Indigenous Peoples’ communities; and *per-indigenous* efforts marking innovations around processes, new products and business models that are devised by Indigenous Peoples in relation to their own self-defined needs and wants (Heeks 2009, p. 15). It is clear from the positions presented during the WSIS process, that in general Indigenous Peoples are demanding para and per-indigenous initiatives. Viewing innovation and emerging trends through this lens will assist in the ongoing development and much needed evaluation of ICT related projects and policies that seek to benefit Indigenous Peoples around the world.<sup>20</sup>

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<sup>20</sup> Heeks’ Model is consistent with human rights-based approaches that speak to the empowerment of rights-holders becoming actors on their own behalf (i.e. The Human Rights-Based Approach (HRBA) to Development Planning Toolkit, [Socorro Diokno 2013]).

# Case Study Briefs

There are various examples around the world, whether emerging trends or innovative, ongoing initiatives, that highlight the diversity and dynamism of Indigenous Peoples' engagement with ICTs. While Indigenous Peoples in developed countries seem to have more opportunities for ICT access and resources than those in developing countries, the reality is that disparities are found everywhere, especially in rural and more remote areas (Resta, 2011; ICTMN, 2011). Creativity and enthusiasm, however, know no boundaries and indicators suggest that local content is on the rise, though state-sponsored support can be inconsistent or even non-existent. Some gaps are narrowed, however, by partnerships with intergovernmental organizations, NGOs, Indigenous-to-Indigenous initiatives, or the private sector. Various programmes of note include innovations or emerging trends in Indigenous media including television broadcasting, film and video making, community radio, and journalism, as well as Indigenous community mapping, mobile technologies, language, and education.

These case studies are not comprehensive but are representative samples within an immensely diverse panorama of innovative trends. They are highlighted not only for their noteworthy response to local needs or wants, but also for their human rights-based approaches and potential applicability across the "developing and developed" national landscapes wherever Indigenous Peoples call home. The cases were gleaned in collaboration with the IITF, via recommendations, relevant substantive reports, and a review of post-WSIS Indigenous Communication Networks. Because there is generally a lack of systematic collection and documentation of disaggregated data concerning Indigenous Peoples and ICTs, analysis is at times theoretical and ideological as well as empirical.<sup>21</sup>

## Indigenous Media

Despite advances in the promotion of Indigenous Peoples' media and rights, around the world there are many examples affirming mainstream media generally continues to exclude the voices of, and in many cases discriminate against Indigenous Peoples (Graham, 2010; Korff, 2015). However, interest in media pluralism is increasing at the international and local levels, offering significant opportunities to focus on Indigenous media and communications. For example, a per-indigenous initiative, the first *Continental Summit of Indigenous Communication* held in Cauca, Colombia, in 2010, designated 2012 as the "International Year of Indigenous Communication." Consistent with Article 16 of the Declaration on the Rights of Indigenous Peoples, this Summit's Declaration affirmed Indigenous Media as a right, and linked communication to the advancement of self-determination (CSICAY, 2010).

<sup>21</sup> The lack of disaggregated data concerning Indigenous Peoples and ICTs should be a concern of initiatives such as the UNESCO Institute for Statistics (UIS), the UN Group on the Information Society (UNGIS) and others.

Planning efforts toward a related effort, the *V Continental Summit Abya Yala* also held in Cauca, Columbia, highlighted similar issues including strengthening Indigenous communications networks and alliances with other social movements (Chantlaca, 2013). Additionally, the organizers of *V Continental Summit* highlighted the reality that while human rights mechanisms to facilitate deployment of these goals exist such as the United Nations Declaration on the Rights of Indigenous Peoples and ILO Convention 169, around the world implementation of these norms and standards remain allusive especially at the local and national level. Following these initiatives, the *Second Continental Summit on Indigenous Communication* held in Oaxaca, Mexico from October 7–13, 2013, advanced similar goals (González, 2013). WSIS follow-up mechanisms and other inter-governmental processes, governments, and other relevant and potential partners of Indigenous Peoples actors should take note of these demands and aspirations as they represent an underserved area within the post-WSIS environment and can support the implementation of Article 16 of the United Nations Declaration on the Rights of Indigenous Peoples, among others.

Indeed, Indigenous media generally encompasses a diverse range of communication products and processes, including radio and television, feature film, documentary, animation, video art, Internet, digital archiving, and journalism. The distinguishing factor here is that this form of media expression is per-indigenous – conceptualized, produced, and created by, and often for, Indigenous Peoples themselves. As observed by Manuela Picq (2012), media created by Indigenous Peoples is informed by "alternative world-views, transcending borders," contributing "new perspectives to read the past... [and] imagine the future." In a world full of structural and societal inequalities, Indigenous media often challenges mainstream and official state narratives, demands political inclusion, transparency, and accountability, strengthens international solidarity, and brings critical attention to human rights violations (Wilson and Stewart, 2008). The significant role of Indigenous media is highlighted within the United Nations Declaration on the Rights of Indigenous Peoples (Article 16) and it was the focus of the 9 August 2012 commemoration of the International Day of the World Indigenous Peoples held at UN Headquarters in New York.

## Television Broadcasting

Among the special presentations made during the 2012 International Day of the World's Indigenous Peoples was a summary of the World Indigenous Television Broadcasters Network's (WITBN) work to date, given by its president and Saami journalist, Nils Johan Heatta. A per-indigenous initiative founded in 2008, WITBN has members in at least ten countries, and has organized several international conferences. WITBN seeks to unify television broadcasters

worldwide to retain and promote Indigenous languages and cultures through media broadcasting. Patagaw Talimalaw, then WITBN's Secretary General states, "We develop collaborative relationships among Indigenous television broadcasters in order to create opportunities that help improve our members' media service in scheduling, knowledge sharing, accessibility to resources, etc." (pers. comm., 11 December 2012).<sup>22</sup>

While WITBN's membership is open to Indigenous broadcasters from all regions, membership does not currently extend into Central and South America, or Africa. Highlighting this disparity, Talimalaw affirms that, "...not all Indigenous groups receive the same support from governments, financially and politically, to establish national Indigenous media/television" (pers. comm., 11 December 2012). Nevertheless, Talimalaw asserts that "WITBN does endeavor to understand the media environments in [all] regions and initiate conversations with local groups in order to share media knowledge and strategies."<sup>23</sup> Recognizing current gaps, she also observes that Indigenous television services generally rely on dedicated public funding, and there is a crucial need for training, as well as supportive government policies. As Indigenous television supports media pluralism, multilingualism, cultural diversity, indigenous knowledge transfer, and community empowerment, Talimalaw suggests that concerted intergovernmental support is welcome, and meaningful partnerships need to be explored.

Beyond traditional broadcasting initiatives, the potential of digital media to improve public participation in an indigenous language was recently demonstrated to the Nunavut Impact Review Board (NIRB) by IsumaTV's Digital Indigenous Democracy web portal. Launched by Inuit filmmaker Zacharias Kunuk, the website, a per-indigenous initiative, streamed live call-in radio shows, used Skype and collected video testimonies of Elders and Youth to promote region-wide community discussion in *Inuktitut* on Baffinland development (IsumaTV, 2012). As a result of this initiative, the NIRB formally recommended using new media technology to inform, consult and connect indigenous Inuit communities in its Final Hearing Report on Baffinland's Mary River Project released September 2012 (IsumaTV, 2012). The use of live-streamed radio to web, as well as collected video testimony in Indigenous languages, to increase Indigenous participation in decision-making are relevant approaches that can be considered in both developed and developing countries.

## Film and Video production

Indigenous cinema continues to see growth worldwide as more physical and virtual outlets for distribution continue to appear locally, nationally, and internationally. As suggested by researchers, film- and video-making appeals to the visual strengths of Indigenous Peoples, and is generally considered a culturally appropriate technology that can

be used to target cultural preservation, intergenerational or intercultural dialogue, and stereotypes outside communities (Córdova and Zamorano, 2004; Dyson et al., 2006; Picq, 2012).

Various indigenous film festivals held in Latin America in 2012, including in Mexico, Argentina, Chile, Columbia, and Ecuador. A number of these para- and per-indigenous regional initiatives are featured on *Yepan*,<sup>24</sup> an online portal based in Chile, dedicated to indigenous filmmaking and communication. The site features film festival, workshop, and conference announcements, as well as film trailers, interviews, and news related to indigenous communications and media. These approaches, a majority being per or para-indigenous, are consistent with the UNDRIP Article 16 as well as WSIS Action Line C8.

In 2012 the Indigenous Film Fellowship (IFF) was launched by the International Sámi Film Centre (ISF) in Norway. The ISF seeks to provide indigenous Sámi people with technical skills and economic opportunities to develop, produce, and distribute Sámi films in the Sámi language. The IFF is overseen by the Indigenous Film Circle, an international group of representatives from cultural and media organizations (Svenson et al. 2011). A two-year program, the IFF partners emerging indigenous film talent with established filmmakers worldwide, with a focus on script development, production, marketing and financing. The IFF program is consistent with the ISF's goal of promoting international cooperation, encouraging productions with other indigenous filmmakers and organizations. This per-indigenous initiative highlights the desire for Indigenous-to-Indigenous engagement.

While film and video initiatives have the potential to empower Indigenous communities, facilitate intercultural dialogue, and expand knowledge societies, many projects lack sustainability as a result of their short duration or the need for comprehensive participant training. Indeed, UNESCO has implemented several generally successful film and documentary pilot projects in Africa and Latin America under the heading of ICT4ID; however, post-project evaluation provides another example that sustained investment would be needed to achieve some of the project's long-term goals (Dyson et al., 2006). Additional findings revealed that in a few cases, Indigenous peoples taking part in these programmes did not receive a comprehensive training that would allow them to complete a similar project – unaided – in the future (Dyson et al., 2006). These results are in contrast to a comparable initiative undertaken by UNICEF in Vanuatu, Kiribati, and the Solomon Islands entitled *One Minutes Juniors*. In this programme, participating youth received comprehensive training in development, production, and post-production of video shorts as a way to address relevant local issues (Schuepp, 2011).

<sup>22</sup> UNESCO Case Study. Email to: Roberto Borrero. 11 December 2012. Personal communication.

<sup>23</sup> *Ibid.*

<sup>24</sup> [www.yepan.cl](http://www.yepan.cl)

## Community Radio

While much attention is paid to new technologies, for many Indigenous and other marginalized peoples, community radio still represents the most effective way to disseminate relevant local content. Community radio can support media pluralism, increase access to education, knowledge transfer, and empowerment, especially in rural and remote communities. Direct and meaningful involvement in operations and programming allows communities to experience a sense of ownership while facilitating platforms for public debate, expression of opinions and dialogue in a culturally appropriate manner.

UNESCO, for example, recognizes the importance of community radio; since 2000, at least 27 Indigenous People's projects have received funding from its International Programme for the Development of Communication (IPDC). Every biennium, UNESCO supports on average 50 community radio stations (UNESCO, 2008). The UNESCO Office in Phnom Penh, Cambodia has organized and provided trainings on implementing community media projects and indigenous language radio programs since 2007. UNESCO also donated essential radio equipment and young indigenous producers were trained to design radio programs, which are being broadcast on a daily basis for one hour/day in the Kreung, Tompon, Jarai and Brao languages. In response to the success of the project, an additional partner donated over 100 solar battery-powered radio receivers to the indigenous communities in May 2010. The radio receivers were donated to the Kreung, Brao, Tompon and Jarai villages, which have between 200 and 400 families, allowing them to engage community radio and national channels without purchasing batteries.

In a para-indigenous initiative, Cultural Survival has developed a network of 80 independent and autonomous community radio stations across Guatemala. Eighteen of these stations are operating as hub stations that produce or distribute programming in the Mayan and Spanish languages (Cultural Survival, 2012). Ongoing capacity building workshops and exchanges assist operations. As noted by Cultural Survival (2012), however, depending on its "particular situation and history," each station has unique "strengths and weaknesses." The *Xobil Yol* station, for example, has an effective board of directors, but difficulty with youth participation (Cultural Survival, 2012).

While the importance of community radio is highlighted within the United Nations system, and beyond, as one of the most effectual way to disseminate relevant local content to Indigenous communities, defend human rights, and promote the use of Indigenous languages, significant implementation gaps remain. While Indigenous Peoples' right to their own media is recognized in the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP), nevertheless, a number of countries still do not provide equitable access to the airwaves. For example, at the time of this review India continues its ban on local radio news and

Guatemalan telecommunications law does not allow licenses for nonprofit community radio to operate legally.<sup>25</sup>

## Indigenous Community Mapping

Indigenous mapping or community participatory mapping projects which use various forms of geospatial methodologies and technologies continue to gain momentum worldwide. Participatory mapping is increasingly playing a role in the empowerment of Indigenous Peoples to reach a variety of aims, such as addressing land rights and tenure issues, natural resources management, the development of national forest policies, and to strengthen their cultures. Generally, these initiatives seem to fall under the para-indigenous category and maps produced go beyond physical topographies depicted in traditional-style maps, to include social, cultural, and economic features, which can be represented in spatial terms, harnessing local knowledge and stimulating social change (NOAA, 2009; IFAD, 2010). Global Positioning System (GPS) and Geographic Information Systems (GIS) are some technologies being integrated into grass-roots mapping plans.

Commenting on geospatial technologies, Victoria Tauli-Corpuz, Executive Director of the Tebtebba Foundation, stated "community participatory mapping and resource inventory would be useful in establishing... baseline information from which participatory monitoring processes could be based" (Tebtebba, 2012). In an article produced by the Indigenous organization Tebtebba in 2012, former member of the UN Permanent Forum on Indigenous Issues, Tauli-Corpuz additionally noted "Such monitoring can include the vitality of biodiversity resources, land use and land use changes, traditional knowledge and customary ecosystem management."

Indeed, Tebtebba organized a three-day training workshop on "Community Participatory Mapping and Resource Inventory of Indigenous Peoples' Territories" in Bangkok, Thailand in August 2012. Thirty-four indigenous participants from Asia, Latin America and Africa participated in the training, which included an orientation on participatory mapping and resource inventory and examples of successful projects from Asia and around the world. Dave de Vera, executive director of the Philippine Association for Intercultural Development (PAFID), stated when presenting at the workshop "The lesson is participatory community mapping can empower local communities to assert their land rights... and define the extents of their interactions with the landscape from their own points of view and based on their own unique experiences." (Tebtebba 2012). In conjunction with land claims and land management issues, using community mapping as a way to address the issue of encroachment into indigenous territories by illegal occupants was also

<sup>25</sup> See, for example, *Recognizing Indigenous Women Leader at Community Radio Stations in Guatemala*, Cultural Survival, 26 February 2015, [www.culturalsurvival.org/news/recognizing-women-leaders-community-radio-stations-guatemala](http://www.culturalsurvival.org/news/recognizing-women-leaders-community-radio-stations-guatemala); and *Government may lift ban on private and community radio news*, 5 January 2014, <http://timesofindia.indiatimes.com/india/Govt-may-lift-ban-on-private-and-community-radio-news/articleshow/28415712.cms>

recognized at the workshop. These particular issues are sources of concern, especially in Amazonia and in Africa.

Recognizing these concerns, US technology giant, Google and the Indigenous Mapping Network partnered in 2010 to facilitate a two-day workshop on the Google campus to train people from native communities in the use of Google's mapping technologies. The Google Tribal Geo Tech Workshop focused on the technical aspects of using Google Earth, Google Maps, Sketchup, Android mobile phones, and Open Data Kit, and other technologies. Special attention was given to mobile data collection, data conversion from proprietary to open formats, using Google Earth as a "new storytelling medium" to create compelling, narrative-driven visualizations, and several case studies blending geospatial technologies and traditional knowledge (NDN News, 2010).

The indigenous Surui community of Brazil, for instance, partnered with Google, to train community members on mobile phone technology and Open Data Kit to record instances of illegal logging. Surui tribe leader Chief Almir learned about Google Earth in 2008 while at an internet café (Hannan, 2014). He wanted to use the technology to document illegal logging and mining in the tribe's territory. Chief Almir commented on this para-indigenous initiative stating, "Since the Surui and other Indigenous People were given training tools by Google, our land has received more visibility. All the information is shedding light on the invasion of our land... and giving our people the responsibility for their own future" (quoted in Ustinova, 2008). The Surui can now capture GPS-located photos and videos of illegal deforestation for immediate upload to Google's mapping tools. The culmination of Google's five-year project with the Surui, a cultural map featuring a collection of photos and videos mapping historical sites and offering 3-D visualization of Surui territory in the northwestern Brazilian state of Rondonia, was unveiled at a side-event during UN Rio +20 held in Brazil 2012.

In Africa, the Rainforest Foundation UK Mapping for Rights programme has supported over 300 forest dependent communities, who have produced geo-referenced maps of their lands and resources covering around two million hectares of forest in the Congo Basin. In an email to the author, Joe Eisen, a Policy Coordinator for Rainforest Foundation UK, "These maps have been used in a number of ways including supporting the creation of community forests, helping to mitigate the impacts of potentially harmful infrastructure projects, and securing rights for communities in protected areas" (pers. comm., 10 December 2012).<sup>26</sup> A para-indigenous initiative, the programme emerged from common needs expressed by the communities themselves through participatory problem ranking exercises regarding their access and ownership of traditional lands in the face of other competing land use claims (e.g. logging concessions, mining permits and protected areas). Eisen observes that "Without clear evidence of land tenure and resource use, forests can appear 'empty' of human habitation and thus free for other land use allocations – leading to inevitable

land and resource related conflict." This problem is especially critical among semi-nomadic, indigenous "pygmy" communities such as the BaAka.

According to Eisen, one of the lessons learned from Mapping for Rights speaks to the importance of the community's sense of ownership. Indeed, communities participating in the successful programme maintain the intellectual property rights to the data collected and no data can be reproduced without their free, prior, and informed consent. Moreover, Eisen suggests that it is crucial that participatory mapping is not seen as an "end in itself but as part of a wider strategy" to achieve the overall goals identified by the community.<sup>27</sup>

In addition, Rainforest Foundation UK hosts a scaled up affiliate web portal focusing solely on the Mapping for Rights project that includes mapping tutorials, policy tools, the Forest Zone blog and others resources for communities, NGOs, government agencies and others involved in forest and spatial governance issues.<sup>28</sup> The online database is the first of its kind for Africa, which allows authorized users to view and analyze local and indigenous communities' occupation and forest usage in the context of other claims on the forest, such as logging activities and strictly protected areas. At the Mapping for Rights website, the Rainforest Foundation UK shares a number of reports focusing on the management of natural resources and the rights of forest communities and Indigenous Peoples in the Congo Basin, and related subjects including reports and studies from their partners in the region. The organization has also produced a film highlighting how indigenous BaAka communities in the Central African Republic (CAR) used participatory mapping to secure rights in a protected area there.

While an increasing number of local, national and international organizations have engaged Community Participatory Mapping projects in partnership with Indigenous Peoples around the world, Eisen feels there are additional opportunities for partnership yet to be explored. Eisen observes, for instance, that as UNESCO is concerned with the sustainability of areas that it declares World Heritage Sites, properly recording and recognizing local community rights and interests should also be a concern. Within this context, Eisen suggests that participatory mapping is a technique that can make visible what UNESCO refers to as the intangible heritage of indigenous peoples and local communities (pers. comm., 10 December 2012).

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## Mobile Technologies

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The mass proliferation of mobile technologies continues to improve the quality of life of many Indigenous Peoples in various ways. Mobile innovations are increasing income opportunities and improving health and safety by bringing government services into reach (Kim et al. 2012). Indeed, mobile technology is relaying critical information during times of crisis as well as expanding services such as citizen registration. The use of mobile technology

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<sup>26</sup> *Questions Concerning Mapping for Rights*. Email to: Roberto Borrero. 10 December 2012. Personal communication.

<sup>27</sup> *Ibid.*

<sup>28</sup> See [www.mappingforrights.org](http://www.mappingforrights.org)

in these ways can assist in addressing social exclusion, potentially reduce discrimination, and restore human dignity and rights (Kim et al. 2012). Even in remote areas lacking electricity, mobiles display their versatility and portability, as they are recharged using solar panels or diesel generators (Santos, 2010). It is clear that mobile telephony is, in many cases, delivering much needed access to some of the most marginalized communities in the world (Deninson, 2008; Kim et al., 2012).

A combination pro and para-indigenous initiative, the island nation of Vanuatu, for instance, collaborated with Nokia and UNICEF to implement an innovative mobile birth registration system using SMS (Short Message Service) and basic Nokia handsets. Using an application called iCount, health care workers or parents can send the family name and baby name to a specific phone number, advertised throughout the island. The pilot project resulted in registration of close to 17,000 children in Tafea Province, or 87 percent of all children 0-18 years. The national average rate of children 0-5 years registered is 25.6 percent with Tafea Province at 12.5 percent (UNICEF, 2010). Based on the pilot, the system has achieved widespread adoption by health care workers on the main islands. A similar birth registration program called Governance out of the Box (GooB) has also shown success in Liberia and Kenya (Toivanen & Kotipelto, 2011). As Latin America has the highest number of undocumented births outside of Africa (Kim et al., 2012), the portability of these initiatives warrant further consideration and research.

In Central India, Knight International Journalism Fellow Shubhranshu Choudhary's innovative mobile news service CGnet Swara is changing how Tribal Peoples in remote areas receive and share independent news. This freely accessible, interactive, voice-based mobile platform, developed with the Massachusetts Institute of Technology, allows users to send and listen to audio reports in their local language. A combination pro and para-indigenous initiative, CGnet Swara circumvents India's ban on private radio news to reach communities that have never before had access to local news (Simon, 2010). Initiated at the grass-roots level in consultation with local leaders, the program trains a core set of community members in the production of audio news reports in local languages. These trainees are then tasked to train other community members.

The system distributed close to 1400 news reports verified by professional journalists. The CGNet website posts the stories, providing global exposure for the local content. "This system democratizes communication and facilitates rural to urban exchange where little existed previously," stated Choudhary (pers. comm., 7 December 2012).<sup>29</sup> Early gaps in the process included outreach and language barriers. However, in evaluating the programme, Choudhary suggests that some of these gaps existed as a result of a fluctuating volunteer base; a lack of long-term funding limited the ability to implement full-time or even part-time staffing. Choudhary sees the success of the program linked to the reality of communications in Tribal communities, and of the poor in general, as primarily "oral communication."

<sup>29</sup> Interview with Roberto Borrero. 07 December 2012. Personal communication: Phone.

While the technology to build interactive voice services (IVR) is not new, CGNet Swara is innovative as callers can contribute information to the system. IVR platforms are usually designed as listening platforms; however, CGNet Swara listeners can record their own messages that can be heard by others. The software underlying CGNet Swara is open-source and its server can be easily replicated. Choudhary is also available to offer guidance to other organizations who are seeking to establish similar services around the world (pers. comm., 2012). CGNet Swara's focus on local content, Indigenous languages, gender balance, and equitable knowledge transfer should be of interest to potential multi-sector partners. In addition, the applicability of this platform merits further consideration, especially in developing countries where the proliferation of mobiles continues to penetrate even remote communities.

In Africa, mobile networking and software development in drought torn Kenya, for instance, provides significant examples of emerging trends and innovation that also merit attention. The Kenyan government uses mobile devices to assist pastoralists identify suitable locations for their cattle (Santos, 2010). Mozambique, South Africa, and Ethiopia have implemented similar pro-indigenous climate-related mobile initiatives (Esipisu, 2011). An increasing number of pastoralists and other farmers are also engaging a recently developed per-indigenous mobile-phone application called iCow (Baldauf, 2011). This award winning application allows farmers to register individual cows, and to receive individualized text messages, including advice for veterinary care and feeding schedules, a database of experts, and updated market rates on cattle prices. Assessing some of these innovations as pro-indigenous or pro-poor initiatives seems appropriate; yet, there are indications that they achieve levels of para-indigenous engagement.

Addressing economic disadvantage, Safaricom's mobile money transfer system called M-Pesa is impacting many impoverished and marginalized communities including traditional Maasai peoples in remote locations (Santos, 2010; ILRI News, 2011). Complimenting this service is a mobile banking program called M-Kesho that allows the use of SMS to manage and transfer money to M-Pesa accounts, pay bills, and open micro credits. Services like these are finding utility among nomadic pastoralists who often far from commercial banking facilities. Indeed, the success of these systems is particularly relevant to note as it highlights remote area availability of mobile network coverage, as well as the investment and commitment of Safaricom, the readiness of the business sector, and supportive government policy (Reinke & Sperandini, 2012).

While these reports are promising, additional consideration needs to focus on the mobile phone gender gap. As recent reports suggest, women worldwide are 21% less likely to own a mobile phone than men, and there are "hundreds of men stopping women from owning phones" in a number of African countries (Hick, 2012). To address this issue, GSMA's mWomen programme, a global public-private partnership, seeks to reduce the Mobile gender gap by 50% in 2014 by bringing mobile connectivity and

services to more than 150 million women in emerging markets, including all African countries and many Asian countries (Burchell, 2011). Research identifying how the mobile phone gender gap impacts Indigenous women, particularly in developing countries is needed.

Mobile technology is no silver bullet; however, it continues to exponentially impact Indigenous communities in developing countries even in remote areas, and should be leveraged to its full potential. As research suggests, despite the scale of affordable mobile telephony, in many developing countries infrastructure and institutional capacity continues to inhibit efforts to improve access, equity and quality (Wilson et al., 2005; Lugo and Schurmann, 2012). Indeed, the ever-expanding possibilities for mobile technologies to improve the lives of diverse Indigenous Peoples should be cause to place additional emphasis on assessing and scaling existing applications, which are already benefiting diverse communities.

## Indigenous Languages

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During the WSIS process, Indigenous Peoples, and others, linked language barriers to digital and social exclusion, calling for and supporting concerted action toward a multi-linguistic Internet. Moreover, Indigenous Peoples recognized that cyberspace is not the only ICT area that requires attention to multilingualism. Traditional ICTs such as mobile, radio, and TV can also support the promotion and revivalism of Indigenous languages and *Universal Indigenous Connectivity* (Universal Access). According to Indigenous positions on the subject, there is a need to promote more substantive linkages between language preservation initiatives and ICT deployment platforms (GFIPIS, 2003).<sup>30</sup>

A per-indigenous initiative, Thornton Media, Inc. (TMI), for example, creates custom hi-tech tools to help preserve endangered Indigenous languages. TMI President Don Thornton states, "As far as we know, TMI is the only hi-tech language tool company in the world devoted to Indigenous languages" (pers. comm., 2012).<sup>31</sup> The company has developed applications for over 200 American Indian Tribes and Canadian First Nations including Apple Apps, Android Apps, Nintendo Apps, handheld translators and Smart-Toys. Clients retain ownership of all of their cultural property. According to Thornton, "As a Cherokee-owned company, we understand that ownership of cultural property is an important issue with traditional communities."<sup>32</sup> The company claims to be able to produce a 'host of apps for any endangered language' (IndianCountryNews.com, 2009). The implications of these applications are significant when considering the increasing accessibility of mobile telephony and the state of Indigenous languages worldwide.

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<sup>30</sup> See also, generally, Deer and Håkansson's 2006 paper "*Indigenous Peoples and ICTs: Millennium Development Goal 8 and the Information Society*".

<sup>31</sup> Email to Roberto Borrero, 16 December 2012. Personal communication.

<sup>32</sup> *Ibid.*

In a related para-indigenous initiative, Raindrop Games and the United Confederation of Taíno People (UCTP), a Caribbean indigenous organization, successfully collaborated on an interactive iOS game for iPod, iPad, and iPhone. Village Kasike focuses on historic and cultural aspects of indigenous Taíno peoples (UCTP Taíno News, 2012). Elements of Taíno language, culture, and philosophy are introduced throughout the game levels, although the platform is presented primarily in an English language format. Game developer Josh Samuels notes that post-release analysis highlighted an accessibility issue as community members in the Caribbean and Diaspora seemed to be linked to more affordable Android systems rather than iPhone (pers. comm., 2012).<sup>33</sup> Nevertheless, the collaborators also acknowledged that video games are a competitive force in the entertainment industry, presenting unique opportunities for education and language revitalization, especially when juxtaposed with the ubiquity of mobile technologies and reality of many Indigenous Peoples living in, or continuing to migrate to urban areas, where language loss is often accelerated.

Indeed, one such programme that has acknowledged the connection between Indigenous language preservation and urban migration is the per-indigenous, online community project, *Jaqi Aru*; dedicated to increasing the presence of Aymara on the internet. *Aymara* is an indigenous Andean language with over two million estimated speakers (Jaqi Aru, 2012). Based in El Alto, Bolivia, Jaqi Aru has partnered with Wikimedia Bolivia to increase the number of articles available in the Aymara version of Wikipedia (Avila, 2010). Members of the Jaqi Aru team have also been working with Global Voices Online to produce the first indigenous language version of the GV site, as well as using web 2.0 tools like Facebook, Flickr, and YouTube (Jaqi Aru, 2012). Jaqi Aru sustains its activities with the sale of handmade laptop covers crafted from the typical textile called *aguay* with 100% of the profits supporting their initiatives.

## Education

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In 2011, UNESCO released an important policy brief on Indigenous Peoples, ICTs, and Education (Resta, 2011). Writing for UNESCO, Paul Resta addressed the importance of Indigenous knowledge, current policy options, ICT connection to the erosion of culture, and various ways ICTs reinforced Indigenous culture and knowledge. Resta also provided innovative case examples that affirm ICT support of educational initiatives in developing and developed countries. Observations and recommendations found in this report support, and at times, overlap with Resta's findings and recommendations. These connections highlight the reality that established targets for ICT deployment run alongside other development goals, presenting opportunities to concentrate attention in specific areas, which can foster meaningful joint actions for the benefit of Indigenous Peoples.

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<sup>33</sup> Interview with Roberto Borrero. 07 December 2012. Personal communication: Phone.

# Recommendations

Any discussion focusing on policy and programme development and Indigenous Peoples should begin with the acknowledgment that United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) sets out the principles of partnership and mutual respect that should guide relationships between Indigenous Peoples and other parties. With this in mind, the following recommendations, congruent with the UNDRIP and supported by other international instruments, are offered for the consideration of governments, inter-governmental and non-governmental organizations, the private sector, and Indigenous Peoples. An overarching principle herein is to ensure the full and effective participation of Indigenous Peoples at all stages of strategy and programme development, as well as in implementation, evaluation, and monitoring.

## **1 Foster policies and projects that enable approaches to ICTs that are developed with or by (para and per) Indigenous Peoples**

Para and per-indigenous methodologies should, whenever possible, be the basis for the development of best practices under the guidance of the UNDRIP's general regime. Within this framework, emerging programmes and policies should seek to move beyond pro-indigenous approaches, which can be viewed as paternalistic, toward para- and per-indigenous initiatives that enable Indigenous Peoples to develop, control, and maintain culturally appropriate approaches to ICT usage on their own, or in partnership with other stakeholders. Indeed, Indigenous Peoples need to be prioritized as the preferred stakeholder in such arrangements.

## **2 Expansion of wireless capacity to increase locations and quality of access for Indigenous People is critical**

Universal Indigenous Connectivity (Universal Access) was a central theme promoted by Indigenous Peoples during both phases of the WSIS process, and beyond. Within this framework, basic infrastructure, affordability, literacy skills, and relevant content are key barriers and enablers. As programmes and policies are developed to support and promote the social inclusion of Indigenous Peoples by addressing barriers and enablers, particular attention needs to be given to the expansion of wireless capacity employing new wireless standard for Wireless Regional Area Networks (WRAN). Expanding wireless capacity should be a priority when considering the reality of the market-led roll out of next-generation access (NGA).<sup>34</sup> Without sound deployment strategies that address key barriers and enablers such as basic infrastructure in Indigenous communities,

**34** According to Roger Darlington (2009), NGA is commonly known as "fast broadband," where the speed of access to the Internet is technically measured in terms of bits per second. In this case, NGA is anything over 25 Mbit/s, compared to broadband – up to around 25 Mbit/s – and narrowband – up to 512 Kbit/s (Darlington, 2009).

there is a substantial risk their digital disadvantage will be exacerbated and prolonged in relation to NGA, reinforcing divides, as is the case with current-generation broadband.<sup>35</sup>

## **3 Foster policies and programmes that promote media pluralism inclusive of Indigenous media**

As a pre-requisite to the equitable development and promotion of knowledge societies is freedom of expression, media pluralism inclusive of Indigenous media should be prioritized. Within this context, Indigenous Peoples have stressed that programmes and policies are needed that: democratize communication by encouraging and supporting sustainable Indigenous media development; ensure adequate protection of traditional knowledge and the safety of Indigenous journalists; and remove policies, legislation, or regulations which deny Indigenous Peoples access and control of communications networks and frequencies (GFIPIS 2003; CSICAY 2010; Picq 2012). Where access is available and conducive to Indigenous inclusion, particular attention should be given to the full and effective participation of Indigenous Peoples in the public service broadcasting sector, and to the support of local, national, and international Indigenous-to-Indigenous media strategies. Subsidies for media entities broadcasting in Indigenous languages, or to assist Indigenous media entities faced with difficulties or are obliged to adapt to structural or technological changes should be considered. Within this framework, as policymakers and negotiators seek to facilitate the equitable inclusion of Indigenous Peoples within the Information Society, it is critical that national and international legislation and regulation<sup>36</sup> continue to provide for an open and accessible Internet that promotes and protects the right of all peoples to communicate and access critical communications infrastructure.

**35** Commenting on the implications of NGA roll-out, Matt Yardley (2010) of Analysys Mason highlights, for instance, potential disparities that will occur between rural and urban communities in the UK. Additionally, Heeks (2009: p.7) observes that broadband is already an integral part of ICT usage in the global North. In the US, for example, 55% of households had broadband service by 2008, contrasted to African countries such as Ethiopia, Ghana, Kenya, and Uganda where this service reached under 0.1% of the population (Heeks, 2009: p.7). Indeed, the ITU has found that broadband services remain too expensive in many countries – especially Africa – where the cost of exceeds average monthly earnings (Chirgwin, 2012). With this in mind, and considering issues around basic infrastructure within Indigenous communities in both developed and developing countries, the ramifications of NGA for Indigenous Peoples are clear.

**36** As Indigenous Peoples around the world share a common history of injustice, concerns over proposals that would allow Internet access to be cut off more easily, threaten privacy, legitimize monitoring and traffic-blocking, and introduce new fees to access content online, are justified from an Indigenous perspective. Recent articles highlighting these issues are an indicator that these concerns are widespread (Cerf, 2012; Kiss, 2012).

#### **4** Consideration of all types of ICTs, including radio, TV, and mobile telephony, in service design development could increase engagement of some Indigenous Peoples

While access to the Internet is increasing around the world, other forms of technology, such as mobile telephony, are clearly more accessible to Indigenous Peoples. Indeed, accessibility seems to be a factor in the engagement of Indigenous Peoples with more “traditional” forms of technology such as SMS, radio, and TV.<sup>37</sup> Considering the ubiquity of mobile technologies, in particular, there is cause to develop policies and programmes that place more emphasis on assessing and scaling existing applications that are already benefiting Indigenous communities. Full and effective local consultation and participation to assess needs, wants, and appropriate strategies, e/m-initiatives, interactive voice platforms, affordable alternative power sources, and e-waste disposal issues, for instance, should all be considered in service design development intended to improve the quality of life of Indigenous Peoples.

#### **5** Undertake research and relevant action to address the lack of disaggregated data concerning Indigenous Peoples and ICTs

Accurate and disaggregated measurements of ICT adoption, usage, digital divide between diverse Indigenous Peoples, and other impacts are needed to aid policymakers and programme developers make well-informed decisions. In collaboration with Indigenous Peoples, International organizations concerned with statistics should prioritize data collection and analysis concerning Indigenous Peoples and ICTs to help facilitate implementation of WSIS outcomes. Meaningful partnerships between governmental and international data collection initiatives with local, national, regional, and global Indigenous Peoples entities concerned with media and ICT usage should be encouraged to develop and implement strategies for research, collection, and analysis of disaggregated data focusing on Indigenous Peoples and ICTs. Strategies to mainstream findings across sectors should include consultations, deployment policies, conferences, and programmes inclusive of, and with the full and effective participation of, Indigenous Peoples. Such strategies could include, for example, supporting Indigenous-to-Indigenous contacts, relations, and cooperation beyond local, regional, or international borders.

#### **6** Long-term goals need to include long-term support strategies

A consistent concern of Indigenous Peoples throughout the WSIS process, and beyond, is the prevalence of outside programme partners linking long-term goals with short-term projects. From the perspective of Indigenous Peoples who participated in the WSIS process, it is clear that long-term goals are harder to achieve over the short duration of pilot projects. In the case of ICT related training initiatives, in particular, Indigenous Peoples are sometimes not trained holistically, resulting in skill or competency levels that do not make possible, for example, a goal of unaided sustainability. Long-term views, or more importantly, long-term commitments to support capacity building, secure sustainable funding resources, as well as on-going monitoring and evaluation need to be prioritized.

#### **7** Appropriate and culturally sensitive E-government and E-community initiatives should be expanded

National and international e-strategies should consider that socially and economically disadvantaged Indigenous Peoples, and others, who could benefit most by accessing e-government services will be the least likely to use, or be able to use, digital/electronic means to access such services.<sup>38</sup> In response, programmes and policies emphasizing multifaceted approaches, such as using new technologies in conjunction with traditional ICTs (i.e. radio, mobile, etc.) to provide alternative ways for Indigenous Peoples to access e-services should be a priority. These strategies need to incorporate culturally appropriate, and whenever possible, indigenous-controlled literacy initiatives, which could not only assist in increasing skills capacity, but in shifting attitudinal barriers limiting ICT engagement. Training programmes emphasizing peer to peer or Indigenous-to-Indigenous deployment, as well as proper orientation of outside actors with regard to community protocols are additional factors that could help to shift negative attitudes of Indigenous Peoples toward ICT usage.

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**37** Trends need to be monitored, however, as mobiles are beginning to substitute as portable radios, televisions, Web devices, etc.

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**38** E-services should be viewed as enablers, but not replacements for face to face services, especially health services in Indigenous communities.

# Concluding Remarks

Today, mainstream discussions and priorities relative to the Information Society may not be the same as they were in the WSIS environment of 2003; however, it seems the same cannot be said for a majority of the world's Indigenous Peoples, whether in developing or developed countries. Indeed, positive developments have occurred, but it is evident that social, economic, and digital disadvantage among Indigenous Peoples still persists. WSIS implementation and other internationally agreed development goals have been limited in many Indigenous communities, yet technology and market driven development advance, and social and legislative frameworks often remain barriers to Universal Indigenous Connectivity. At first glance, the overall situation can seem bleak, but local creativity and innovation, juxtaposed with the adoption of the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP), provide a basis for international action toward the achievement of the principles and objectives agreed to at WSIS.

The post-WSIS dialogue suggests that the international community understands that governments or UN agencies cannot achieve the WSIS goals alone, and multi-stakeholder partnerships are being welcomed with the private sector, and NGOs. Within this context, Indigenous Peoples need to be seen as key actors and a part of the solution, and "partnerships" need to move beyond pilot programming to assessing and scaling existing approaches already impacting Indigenous communities. It is no coincidence that emerging uses of ICTS among Indigenous Peoples are running alongside the recognition of rights and efforts to assert more local control over development, access, and deployment. Long-range synergies, real-time implementation, and political will, however, are still needed to secure the full, effective, and meaningful participation of Indigenous Peoples in the Information Society.

# References

- Avila, E.** (2010). Session Notes: Indigenous languages online – challenges and opportunities. *Global Voices* [online]. 01 June. [Accessed 13 December 2012]. Available from: <http://summit2010.globalvoicesonline.org/2010/06/session-notes-indigenous-languages-online-challenges-and-opportunities/>
- Australian Communications Consumer Action Network Report** (2010) “Home Internet for Remote Indigenous Communities”, July 2010. Available from: [http://accan.org.au/index.php?option=com\\_content&view=article&id=345:home-internet-for-remote-indigenous-communities&catid=96:broadband&Itemid=208](http://accan.org.au/index.php?option=com_content&view=article&id=345:home-internet-for-remote-indigenous-communities&catid=96:broadband&Itemid=208)
- Baldauf, S.** (2011) *iCow: Kenyans now manage their herds via mobile phone*. Christian Science Monitor. [online] 11 November. [Accessed: 10 December 2012]. Available from: [www.csmonitor.com/World/Africa/2011/1111/iCow-Kenyans-now-manage-their-herds-via-mobile-phone](http://www.csmonitor.com/World/Africa/2011/1111/iCow-Kenyans-now-manage-their-herds-via-mobile-phone)
- Berry, John W.** (2006) The World Summit on the Information Society: A Global Challenge in the New Millennium [PDF]: Available from: <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.308.1621&rep=rep1&type=pdf>
- Brown, J. and Tidwell Cullen, T.** (2005). *Indigenous Peoples at the World Summit on the Information Society*. Cultural Survival Quarterly [online]. 29.2, N.P. [Accessed 13 December 2012]. Available from: [www.culturalsurvival.org/publications/cultural-survival-quarterly/canada/indigenous-peoples-world-summit-information-society](http://www.culturalsurvival.org/publications/cultural-survival-quarterly/canada/indigenous-peoples-world-summit-information-society)
- Burchell, J.** (2011). *mWomen goals in the news*. N.D. GSMA mWomen [online]. [Accessed 10 December 2012]. Available from: [www.mwomen.org/News/mwomen-goals-in-the-news](http://www.mwomen.org/News/mwomen-goals-in-the-news)
- Cerf, V.** (2012). *Keep the Internet Open* [online]. [Accessed: 10 December 2012]. Available from: [www.nytimes.com/2012/05/25/opinion/keep-the-internet-open.html?\\_r=2&](http://www.nytimes.com/2012/05/25/opinion/keep-the-internet-open.html?_r=2&)
- Chantlaca.** (2013) *V Continental Summit – Abya Yala*, Indigenous Peoples Forum on the Impact of the Doctrine of Discovery [online]. September 23. [Accessed 02/03/2016]. Available from: <http://doctrineofdiscoveryforum.blogspot.com/2013/09/v-continental-summit-abya-yala-cauca.html>
- Chirgwin, R.** (2012). Broadband too costly in developing countries, says ITU. 24th September 2012. *The Register* [online]. [Accessed 12 December 2012]. Available from: [www.theregister.co.uk/2012/09/24/itu\\_2012\\_broadband\\_report](http://www.theregister.co.uk/2012/09/24/itu_2012_broadband_report)
- Córdova, A. and Zamorano, G.** (2004). Mapping Mexican media: Indigenous and community video and radio. [online] *Native Networks*. [Accessed 09 December 2012] Available from: [www.nativenetworks.si.edu/eng/rose/mexico.htm](http://www.nativenetworks.si.edu/eng/rose/mexico.htm); <http://nmai.si.edu/explore/film-media/native-media-topics/mapping-mexican-media>
- CSICAY** (2010). Declaration of the 1st Continental Summit of Indigenous Communication. 8–12 November 2010, La Maria Piendamó, Cauca, Colombia. [online]. [Accessed 08 February 2016]. Available from: <http://fubarandgrill.org/node/760>
- Cultural Survival** (c 2012). Promoting Indigenous voices and rights on community radio. n.d. *Cultural Survival* [online]. [Accessed 12 December 2012]. Available from: [www.culturalsurvival.org/grp](http://www.culturalsurvival.org/grp)
- Darlington, R.** (2009). *The Slow arrival of fast broadband*. [online]. [Accessed 10 December 2012]. Available from: [www.rogerdarlington.me.uk/SAFB.html](http://www.rogerdarlington.me.uk/SAFB.html)
- Deer, K. & Håkansson, A.** (2006). *Indigenous Peoples and ICTs: Millennium Development Goal 8 and the Information Society*, Global Alliance for ICT and Development
- Deninson, N.** (2008). 10 Ways Cell Phones Help People Living in Poverty. n.d. *Discovery* [online]. [Accessed 13 December 2012]. Available from: <https://www.newsday.co.zw/2013/02/14/10-ways-cellphones-help-people-living-in-poverty/>
- Dyson, L. E., Salazar, J. F., Hendriks, M., Underwood, J. & Kay, R.** (2006), ‘ICTs for Intercultural Dialogue: An Overview of UNESCO’s Indigenous Communications Project’, in Sudweeks, F., Hrachovec, H. & Ess. C. (eds.), *Fifth International Conference on Cultural Attitudes towards Technology and Communication (CATaC)*, Tartu, Estonia, 28 June – 1 July 2006, pp. 340–359
- GFIPIIS** (2003) *Geneva Declaration of the Global Forum of Indigenous Peoples and the Information Society*. [PDF] Geneva: United Nations Permanent Forum on Indigenous Issues. p.1–10. [Accessed: 13 December 2012]. Available from: [www.un.org/esa/socdev/unpfii/documents/ips\\_genderand\\_icts\\_en.pdf](http://www.un.org/esa/socdev/unpfii/documents/ips_genderand_icts_en.pdf)
- González, María del Rosario Sul.** (2013). Strengthening Indigenous Communication in Abya Yala, Cultural Survival, [online], December. Available from: [www.culturalsurvival.org/publications/cultural-survival-quarterly/strengthening-indigenous-communication-abya-yala](http://www.culturalsurvival.org/publications/cultural-survival-quarterly/strengthening-indigenous-communication-abya-yala)
- Graham, Lorie M.** (2010) *A Right to Media?* Columbia Human Rights Law Review, Vol 41.2, 429–507
- Hannan, Jessica** (2014). *Changing the World through Rebecca Moore’s Google Outreach Earth* [online]. Technology News. October 18 [Accessed 05 February 2016]. Available from: [www.i4u.com/2014/10/83355/changing-world-through-rebecca-moores-google-outreach-earth](http://www.i4u.com/2014/10/83355/changing-world-through-rebecca-moores-google-outreach-earth)
- Heeks, R.** (2009). *The ICT4D 2.0 Manifesto: Where Next for ICTs and International Development?* (42). Manchester Centre for Development Informatics, Manchester, UK. Available from: <https://www.oecd.org/ict/4d/43602651.pdf>. Accessed: 09 December 2012.
- Helsper, E.** (2008). *Digital Inclusion: An Analysis of Social Disadvantage and the Information Society*. Department for Communities and Local Government. London: Queen’s Printer and Controller of Her Majesty’s Stationery Office.

- Hick, M.** (2012). *Husbands Stop Women Owning Mobile Phones*. 03 August 2012. Huffington Post UK [online]. [Accessed 10 December 2012]. Available from: [www.huffingtonpost.co.uk/2012/03/08/husbands-stop-women-owning-phones\\_n\\_1332432.html](http://www.huffingtonpost.co.uk/2012/03/08/husbands-stop-women-owning-phones_n_1332432.html)
- ICTMN** (2011). *Digital Exclusion High in Indian Country*. 06 June 2011. Indian Country Today Media Network [online]. [Accessed 12 December 2011]. Available from: <http://indiancountrytodaymedianetwork.com/article/digital-exclusion-high-in-indian-country-37136>
- IFAD** (2010). *Participatory mapping and communication: A guide to developing a participatory communication strategy to support participatory mapping*. International Fund for Agricultural Development (IFAD): Rome, Italy.
- IISC** (2005) *Report of the Second Phase of WSIS Parallel Event Indigenous Peoples and the Information Society*. [PDF] New York: United Nations Permanent Forum on Indigenous Issues. p.1–6. Available through: [www.un.org/esa/socdev/unpfii/documents/report\\_en.pdf](http://www.un.org/esa/socdev/unpfii/documents/report_en.pdf)
- ILO** (2004). *The perspective of information received and collected within the context of ILO Conventions Nos. 107 and 169, and other relevant ILO Conventions*. Department of Economic and Social Affairs, Division for Social Policy and Development, Secretariat of the Permanent Forum on Indigenous Issues: New York.
- ILRI News** (2011). *Kenyans mobilize phone/web technologies to end famine: But can m- and e-philanthropy rescue the starving nomads in the north?* 30 July 2011. ILRI News [online]. [Accessed 10 December 2012]. Available from: [www.ilri.org/ilrinews/index.php/archives/6829](http://www.ilri.org/ilrinews/index.php/archives/6829)
- IsumaTV / Digital Indigenous Democracy** (2012). *NIRB Baffinland Decision Recommends Digital Indigenous Democracy*. Press release, issued 25 September 2012.
- Jaqi Aru** [online]. (2012). Accessed 10 December 2012. Available from: <http://en.jaqi-aru.org>
- Kamira, R.** (2002). *Te mata o te tai – The edge of the tide: Rising capacity in information technology of Maori in Aotearoa*. Information Technology in Regional Areas, 27–29 August 2002, Rockhampton. pp.1–31.
- Kim, P., Alfaro, K. and Gilbert, L.** (2012, July). *Economic Innovation for Indigenous People in Latin America*. (011). CDDR, Stanford University, Stanford, CA.
- Kiss, J.** (2012). *ITU and Google face off at Dubai conference over future of the internet*. Available from: [www.guardian.co.uk/technology/2012/dec/03/telecoms-UnitedNations](http://www.guardian.co.uk/technology/2012/dec/03/telecoms-UnitedNations). Last accessed 10 December 2012.
- Korff, Jens.** *Mainstream Media Coverage of Aboriginal Issues* [online]. Aboriginal culture – Politics & media. [Accessed 06 February 2016]. Available from [www.creativespirits.info/aboriginalculture/politics/media-coverage-of-aboriginal-issues#ixzz3zP7fEqcx](http://www.creativespirits.info/aboriginalculture/politics/media-coverage-of-aboriginal-issues#ixzz3zP7fEqcx)
- Lugo, M. and Schurmann, S.** (2012). *Turning on Mobile Learning: Illustrative initiatives and policy implications*. [online]. Paris: United Nations Educational, Scientific and Cultural Organization (UNESCO). [Accessed 12 December 2012]. Available from: <http://unesdoc.unesco.org/images/0021/002160/216080e.pdf>
- IndianCountryNews.com** (2009). *Endangered languages using new technology*. 09 September 2009. News from Indian Country [online]. [Accessed 12 December 2012]. Available from: <http://indiancountrynews.com/index.php/news/education-life/7448-endangered-languages-using-new-technology>
- NDN News** (2010) *Google Offers Tribal Geo Tech Workshop* [online], January 6 [Accessed 03 February 2016]. Available from: <http://ndnnews.com/2010/01/google-offers-tribal-geo-tech-workshop>
- NOAA** (2009). *Stakeholder engagement strategies for participatory mapping*. Charleston, SC: NOAA Coastal Services Center. [Accessed 13 December 2012]. Available from: [www.csc.noaa.gov/digitalcoast/\\_pdf/participatory-mapping.pdf](http://www.csc.noaa.gov/digitalcoast/_pdf/participatory-mapping.pdf)
- Picq, M.** (2012). *A dynamic year of indigenous communication*. 19 October. [online] *Aljazeera*. [Accessed: 10 December 2012]. Available from: [www.aljazeera.com/indepth/opinion/2012/10/201210101017176645.html](http://www.aljazeera.com/indepth/opinion/2012/10/201210101017176645.html)
- Reinke, E. and Sperandini, S.** (2012). *M-PESA: The power of mobile technology in livestock marketing. Kenya Learning Route, case 3*. 4 March. IFAD social reporting blog [online]. [Accessed 10 December 2012]. Available from: <http://ifad-un.blogspot.com/2012/03/m-pesa-power-of-mobile-technology-in.html>
- Resta, P.** (2011). *ICTs and Indigenous People: UNESCO Institute for Information Technologies in Education Policy Brief* (June 2011). Moscow, Russian Federation.
- Samaras, K.** (2005). *Indigenous Australians and the 'digital divide'*. Libri, 55 p.84–954.
- Santos, R.** (2010). *The Maasai tribe goes mobile*. [blog] 2010 Global Marketing, 24 July. [Accessed: 10 December 2012]. Available from: <http://2010globalmarketing.wordpress.com/2010/07/24/695>
- Schuepp, C.** (2011). *The One Minutes Jr Vanuatu*. 13 July 2011. *UNICEF Pacific Island Countries* [online]. [Accessed 12 December 2012]. Available from: [www.unicef.org/pacificislands/9596\\_16443.html](http://www.unicef.org/pacificislands/9596_16443.html)
- Shirley, J.** (2005) *Address to the WSIS Tunisia on behalf of indigenous peoples and the information society*. [PDF] Tunis: International Telecommunications Union. p.1–2. [Accessed: 13 December 2012]. Available from: [www.itu.int/wsis/tunis/statements/docs/pe-indigenous/1.pdf](http://www.itu.int/wsis/tunis/statements/docs/pe-indigenous/1.pdf)
- Simon, J.** (2010). *Circumventing India's radio news ban*. 23 March 2010. Committee to Protect Journalists [online]. [Accessed 09 December 2012]. Available from: <http://cpj.org/blog/2010/03/circumventing-indias-radio-news-ban.php>
- Souter, D.** (2010). *Towards Inclusive Knowledge Societies: A review of UNESCO's action in implementing the WSIS outcomes*. United Nations Educational, Scientific and Cultural Organization: Paris, France.
- Socorro Diokno, M.** (2013). *The Human Rights-Based Approach (HRBA) to Development Planning Toolkit* [online]. [Accessed 15 March 2013]. Available from: <http://hrbaportal.org/wp-content/files/1265751171vnhrbafinaltoolkit.doc>; [www.ombudsman.gov.ph/UNDP4/human-rights-based-approach-to-development-planning/index.html](http://www.ombudsman.gov.ph/UNDP4/human-rights-based-approach-to-development-planning/index.html)

- Stec, Steve.** (2015) Putting Rio Principle 10 into Action: An Implementation Guide for the UNEP Bali Guidelines for the Development of National Legislation on Access to Information, Public Participation, and Access to Justice in Environmental Matters, United Nations Environmental Programme: Nairobi
- Svenson, M., Simma, A., and Utsi, A.** (2011). Indigenous film fellowship: About. n.d. *Indigenous Film Fellowship* [online]. [Accessed 2 December 2012]. Available from: [www.facebook.com/pages/Indigenous-Film-Fellowship/256948590991472?sk=info](http://www.facebook.com/pages/Indigenous-Film-Fellowship/256948590991472?sk=info)
- Tebtebba** (2012). *Community maps can empower Indigenous Peoples to assert their land rights*, [online]. September 12 [Accessed 03 February 2016]. Available from: [www.rightsandresources.org/en/news/tebtebba-community-maps-can-empower-indigenous-peoples-to-assert-land-rights](http://www.rightsandresources.org/en/news/tebtebba-community-maps-can-empower-indigenous-peoples-to-assert-land-rights)
- TMI, Inc.** (2012). *Language Tools for Indian Country* [online]. [Accessed 12 December 2012]. Available from: [www.ndnlanguage.com/index.html](http://www.ndnlanguage.com/index.html)
- Toivanen, H., and Kotipelto, H.** (2011). Birth registration using mobile phones advances civil rights in developing countries. [online] *Crisis Management Initiative and VTT Technical Research Centre of Finland*. [Accessed: 10 December 2012]. Available from: <http://phys.org/news/2010-10-birth-registration-mobile-advances-civil.html>
- UCTP Taíno News** (2012). Taíno-themed game released for iPhone, iPad, and iPod Touch. 17 November 2012. *The Voice of the Taíno People Online* [online]. [Accessed 12 December 2012]. Available from: <http://uctp.blogspot.com/2012/11/taino-themed-game-released-for-iphone.html>
- UNESCO** (2002). *UNESCO Universal Declaration on Cultural Diversity*. Adopted by the 31st Session of the General Conference of UNESCO, 2 November 2001: Paris.
- UNESCO** (2005) *Towards knowledge societies*. [e-book] Paris: United Nations Educational, Scientific and Cultural Organization. [Accessed 10 December 2012] Available from: <http://unesdoc.unesco.org/images/0014/001418/141843e.pdf>
- UNESCO** (2008) *UNESCO's IPDC supports pioneering community radio in Nepal*. [online] [Accessed: 22 Apr 2013]. Available from: [http://portal.unesco.org/ci/en/ev.php-URL\\_ID=26418&URL\\_DO=DO\\_TOPIC&URL\\_SECTION=201.html](http://portal.unesco.org/ci/en/ev.php-URL_ID=26418&URL_DO=DO_TOPIC&URL_SECTION=201.html)
- UNICEF** (2010). *Looking Back, Moving Forward: A Review and Update on UNICEF's Work for Pacific Island Children*. 2009/2010. [PDF] [Accessed 10 December 2012]. Available from: [www.unicef.org/pacificislands/Looking\\_Back\\_Moving\\_Forward\\_2009-2010.pdf](http://www.unicef.org/pacificislands/Looking_Back_Moving_Forward_2009-2010.pdf)
- Ustinova, A.** (2008). *Google breaks Amazon tribe's isolation*. 03 July 2008. *SFGate* [online]. [Accessed 3 February 2016]. Available from: [www.sfgate.com/business/article/Google-breaks-Amazon-tribe-s-isolation-3278226.php#photo-2427848](http://www.sfgate.com/business/article/Google-breaks-Amazon-tribe-s-isolation-3278226.php#photo-2427848)
- Wilson, E.J., Best, M., and Kleine, D.** (2005). Moving beyond "The real digital divide". *Information Technologies and International Development*. 2.2, pp.3–5.
- Wilson, P. and Stewart, M.** (eds). (2008). *Global Indigenous Media: Cultures, Poetics, and Politics*. Durham, NC: Duke University Press.
- WSIS** (2003). *Declaration of Principles* [online]. [Accessed 20 December 2015]. Available from: [www.itu.int/net/wsis/docs/geneva/official/dop.html](http://www.itu.int/net/wsis/docs/geneva/official/dop.html)
- WSIS** (2005) *Tunis Commitment* [online]. [Accessed 20 December 2015]. Available from: [www.itu.int/net/wsis/docs2/tunis/off/7.html](http://www.itu.int/net/wsis/docs2/tunis/off/7.html)
- Yardley, M.** (2010). *Will NGA resolve or reinforce digital disadvantage?* [online]. [Accessed 09 December 2012] Available from: [www.analysismason.com/About-Us/News/Newsletter/Newsletter-article-archive/Will-NGA-resolve-or-reinforce-digital-disadvantage/#26%20April%202010](http://www.analysismason.com/About-Us/News/Newsletter/Newsletter-article-archive/Will-NGA-resolve-or-reinforce-digital-disadvantage/#26%20April%202010)

# List of Acronyms

<b>ACCAN</b>	Australian Communications Consumer Action Network
<b>CAR</b>	Central African Republic
<b>GFIPIS</b>	Global Forum of Indigenous Peoples and the Information Society
<b>GIS</b>	Geographic Information Systems
<b>GooB</b>	Governance out of the Box
<b>GPS</b>	Global Positioning System
<b>HRBA</b>	Human Rights-Based Approach
<b>ICTs</b>	Information and communication technologies
<b>IFF</b>	Indigenous Film Fellowship
<b>IISC</b>	International Indigenous Steering Committee
<b>IJAGR</b>	International Journal of Applied Geospatial Research
<b>ILO</b>	International Labour Organization
<b>ISF</b>	International Sámi Film Centre
<b>ITTF</b>	International Indigenous ICT Task Force
<b>ITU</b>	International Telecommunications Office
<b>IVR</b>	Interactive voice services
<b>LDCs</b>	Least Developed Countries
<b>NGA</b>	Next-generation access
<b>NGOs</b>	Non-government organizations
<b>NIRB</b>	Nunavut Impact Review Board
<b>PAFID</b>	Philippine Association for Intercultural Development
<b>SMS</b>	Short Message Service
<b>TMI</b>	Thornton Media, Inc.
<b>WITBN</b>	World Indigenous Television Broadcasters Network
<b>WRAN</b>	Wireless Regional Area Networks
<b>WSIS</b>	World Summit on the Information Society
<b>UNDP</b>	United Nations Development Programme
<b>UNDRIP</b>	United Nations Declaration on the Rights of Indigenous Peoples
<b>UNESCO</b>	United Nations Educational, Scientific and Cultural Organization
<b>UNGIS</b>	United Nations Group on the Information Society
<b>UNICEF</b>	United Nations Children's Fund
<b>UNPFII</b>	United Nations Permanent Forum on Indigenous Issues

