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Significant constraints on the potential for ICTs to support sustainable development remain due to continued inequalities in access to the technologies. While there have been major improvements in basic access to ICTs, particularly through reduced cost of equipment (especially smart-phones and tablet computers), and greater availability of wireless broadband services, internet access costs continue to remain out of reach for the majority in most developing regions, particularly for more isolated and disenfranchised groups.

As a result, millions of people still lack affordable and reliable access to enable them to make full use of the power of networks. In many countries internet users are faced with slow broadband speeds, especially in areas outside major cities, traffic caps may limit the amount of data that can be exchanged, and complex tariff packages limit competition or the user's ability to manage costs. For those that cannot afford their own equipment and connectivity, public access facilities (e.g. in in public libraries) offer the only alternative, however, public investment in libraries, telecentres, and multi-purpose community centres is often very limited.

At the household level in 2012, by the end of 2014 the ITU estimates that internet penetration will reach 78% in developed countries, compared with 32% in developing countries. Globally, there are 4 billion people not yet using he Internet, and more than 90% of them are from the developing world. With regard to broadband access, the divide follows similar patterns, but inequalities are even more accentuated. Fixed-broadband penetration rates, for example, are only 6% in developing countries (and less than 1% in sub-Saharan Africa), compared with 27% in developed countries.

While mobile broadband has been rapidly adopted where available, speeds are comparatively low and costs are much higher. Average broadband speeds vary by a factor of more than 40 between developing and developed nations – from 256 Kbps to more than 10 Mbps on average. Similarly, access inequalities are more visible when disaggregated by disadvantaged groups – particularly women, vulnerable cultural groups, people living in remote small islands, and in the least developed countries generally, where the UN Broadband Commission reports that in 2013 more than 90% of the people in the 49 countries were without broadband2. #

At the industry level – internet providers often lack access to sufficient spectrum or competitively priced telecom infrastructure, ISP licensing and content control may be too onerous for small or new market entrants, and interconnection regulations usually favor the dominant providers. Conservative spectrum allocation policies, also continue to restrict the potential for entry of alternative operators, especially more efficient wireless broadband operators which can use newer, better technologies such as TV White Space, and other dynamic spectrum-use approaches.

A variety of indirect factors may also serve to limit internet accessibility; grid power may be unavailable, and high import duties may be levied on ICT equipment, which, along with luxury taxes on internet and voice services, further reduce their affordability.

To help improve this situation APC's access programme focusses on supporting policy and regulatory change to improve affordability and coverage of broadband networks,

particularly in the area of promoting investment in public access facilities, innovative uses of spectrum, local ownership of communications infrastructure and national broadband strategy development.

For example APC is supporting the Alliance for Affordable Internet (A4AI) in its work in highlighting the obstacles to improved internet affordability, and thereby better access. Conclusions from its research to produce the Affordability Index is that telecom market environments are still not competitive enough. Legacy incumbent fixed national operators and a few mobile operators continue to dominate the market for broadband, or increasingly, share it with a few mobile operators.

With regard to the development of indicators, the work of the A4AI in the use of its Affordability Index which measures the underlying factors affecting affordability, notes the impact of affordability on marginalised groups:
"Access challenges are felt more acutely among certain populations as a result of geographic, economic, gender and socio-cultural factors, with marginalised or vulnerable groups often the hardest hit. Rural Internet users have reduced access when compared with their urban counterparts; low-income populations are disproportionately underrepresented online; and persistent income gaps, coupled with engrained social and cultural norms, keep women and other marginalised populations both from being able to afford Internet services and from being able to use the Internet freely."

Overall the analysis suggests that three groups are the least likely to be able to access affordable Internet:

- Those living in extreme poverty
- Women
- Those living in rural areas

Addressing the Internet access gender gap is an area of particular interest for the APC Women's programme. The extent of the gap varies from region to region — in parts of Europe and Central Asia, research has found that 30% fewer women than men access the Internet; in Sub-Saharan Africa, this figure jumps to 45%. The gap widens in rural areas — in some rural and remote areas of Asia, for example, it was found that men's access to the Internet outnumbers women's access by 50%.

A simple analysis of the gender pay gap and its impact on women's ability to afford Internet services clearly illustrates that the price of entry-level mobile broadband service is significantly higher for women worldwide. For example, entry-level mobile broadband costs at least 8% of women's GNI per capita, compared with 5.6% for the average Nigerian. In Malawi, entry-level mobile broadband is at least 40% of women's GNI per capita, compared with 28% of the income of the average Malawian.

As the A4AI Affordability Report notes: "The implications of women's limited ICT access are significant — both for women, as well as for society at large. Limiting women's access denies them the tools, resources and opportunities available through the Internet, which in turn slows economic growth and social development opportunities. More than 70 % of Internet users surveyed for Intel's 2013 Women and the Web study consider the Internet "liberating", and 85 % believe that it "provides more freedom". Access to the Internet has been shown to have personal, social and market benefits — from improving education and digital literacy levels, to increasing individual productivity and earning power, household resources and social capital."

In the area of public access, APC has partnered with IFLA to support improved awareness of the need for policies to improve the availability of public access facilities. Support for provision of public access has unfortunately fallen off the agenda in most countries as a result of the rapid growth of internet-connected mobile phones, which has been combined with views that public access is just a stepping stone to private access. However, there is now a growing recognition that there will continue to be a need for public access for the foreseeable future. Large-format screens and high definition multimedia provide a more immersive learning, professional or entertainment experience, but may be too slow or costly via a mobile connection.

In-depth research carried out by the Technology & Social Change Group (TASCHA) at the University of Washington supports this view. Conducted over the last five years in low- and medium-income countries, the project found:

- At least one-third of the users had no other means of access to the internet, and most users (55%) would use computers less if public access were not available.
- Public access venues are the first point of contact with computers (50%) and the internet (62%) for most users.
- More users developed their computer (40%) and internet (50%) skills at a public access venue than at home or school.

These and other data support the conclusion that while public ICT access can function as a substitute for private access, it also acts as a complement to private access. It may take decades for some countries to reach high levels of household connectivity, and therefore public ICT access will remain a critically important service.

To support improved national broadband policies, APC recently commissioned a study on infrastructure sharing in emerging markets to support telecoms policy development, primarily in Africa. The report, called Unlocking Broadband for All, is based on a global review of infrastructure sharing experiences, and found that developing countries generally, can save billions and speed universal broadband access by sharing infrastructure. These savings can be obtained both through sharing telecom infrastructure (such as ducts, fibres and masts) as well as sharing with other utility infrastructure such as roads, power grids, fuel pipelines and rail lines (these are often also called linear, passive or alternative infrastructure). In urban environments water supply and sewage systems can also provide sharing opportunities.

Similar sharing strategies are also being applied to the towers used by wireless operators. This is an area where infrastructure sharing is probably most advanced, with growing numbers of mobile operators around the world selling off their tower infrastructure to specialist 'towercos' which lease space on the towers to multiple operators.

Other important areas are the establishment of Internet Exchange Points (IXPs) and transition to IPv6, which are all ongoing trends that need to see more rapid implementation.

Nevertheless, as a result of improvements in access to ICTs over the last decade, there has been substantial progress towards the development of a more connected society. In particular the use of social media has increased dramatically. However, this 'connected society' cannot yet be called inclusive, and many people are doubly excluded, firstly because they are already marginalised based on factors such as geographic location, poverty, or gender, and secondly because there is not yet equitable access to the ICT tools and platforms that are the primary means for accessing and sharing information. In

addition, it should be noted that there are efforts by some governments to restrict access to content from outside their territories and to suppress content originating in their territories, in contravention of international human rights instruments. These developments present, respectively, considerable opportunities for extending access to information and knowledge, and threats to such access.

At the same time, there have been significant improvements in multilingualism on the internet, but more needs to be done to increase the availability of content in languages which are not currently widespread on the internet if access to information is to become more effective to whole populations.