Ending digital exclusion: Why the access divide persists and how to close it

APC policy paper on access to the internet
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1. The nature of the problem

Affordable and reliable internet access has become a vital means to exercise fundamental human rights and to support economic, social and human development. As observed by the former UN Special Rapporteur on the promotion and protection of the right to freedom of opinion and expression, Frank La Rue, "the internet is one of the most powerful instruments of the 21st century for increasing transparency in the conduct of the powerful, access to information, and for facilitating active citizen participation in building democratic societies."[1]

However, as the internet becomes more ubiquitous, less is being heard from those who are unconnected – the less wealthy and more marginalised – who are unable to exercise their rights on the same footing as those who are connected. This includes access to basic services from governments and businesses which now use the internet as a platform for day-to-day transactions. Those who do not have access are doubly excluded: excluded from the "new" world of information and communications that the internet delivers, and also excluded from the "old" analogue world they used to have access to – even if imperfectly – because so many of those services and opportunities are increasingly only available online.

Connecting the unconnected will therefore require a major and concerted effort to address a variety of factors which are highlighted below. In this respect, APC observes that equal efforts are necessary, not only to connect more people, but also to move the billions who are "barely connected" into a fully pervasive and affordable connectivity environment.

At the outset it is important to observe that to effectively measure and analyse access inequalities, one has to look further than internet penetration rates. One cannot speak simply of those who are either connected or unconnected. There is actually a wide spectrum of connectivity levels ranging from complete disconnection up to those connected on high-bandwidth unlimited connections, with the majority of people somewhere in between – most of them being irregularly connected on high-cost, low-speed metered mobile broadband links.

Clearly there have been major improvements in access for many, particularly through reduced costs of equipment (e.g. smartphones and tablets), and greater availability of wireless broadband services (e.g. WiFi and 3/4G). But high internet access costs continue to be among the biggest factors limiting connectivity in most developing regions,[2]. Inequalities in access are more visible when disaggregated by disadvantaged groups – particularly women (who are often concentrated in low-income groups). The access gap is also much more prevalent in cultural minorities, people living in remote small islands, and in the least developed countries generally.

The digital divide is also particularly evident along the urban/rural axis. In most developing countries, and even some developed countries, internet users in rural areas are often faced with limited coverage and much slower internet speeds.

In addition, those restricted to mobile services experience broadband speeds that are comparatively low, while latencies and costs are usually much higher than fixed wireless (e.g. WiFi) or cable-based services.

[1]La Rue, F. (2011). Report of the Special Rapporteur to the Human Rights Council on key trends and challenges to the right of all individuals to seek, receive and impart information and ideas of all kinds through the Internet. United Nations document A/HRC/17/27, para 2.

[2]The Alliance for Affordable Internet notes in its latest report that about 60% of the world's population – most of whom live in developing countries – are offline, and that the cost of fixed broadband remains about 40% of an average citizen's monthly income across the 51 countries surveyed. a4ai.org/affordability-report/report

Mobile links also usually have metered access and traffic caps which constrain the amount of data that can be exchanged affordably, and restrict the user’s ability to manage costs of access effectively. When costs cannot be predicted, this creates a strong chilling effect on use.

Therefore ending digital exclusion is not simply a matter of improving the coverage of mobile broadband services, but also of improving the affordability and coverage of both fixed and mobile services, along with building the technical and human capacity to ensure reliability, the ability to deploy low-cost locally owned networks, and to use the applications and content effectively. The key to affordable access is giving local people the skills and tools to solve their own connectivity challenges. The Internet is built and managed by people – we need fewer 'satellite and balloon' projects, and more human development.

In the current context, it is also necessary to take into account the extent to which broadband and broadcast media are converging technically, and at an ownership level are becoming more vertically and horizontally more concentrated. This has serious implications for the free flow of information, the diversity and plurality of content, and the conditions of access to service provision.

But there is also an overarching point, that is evident when looking at access data in a disaggregated manner - many initiatives to bridge the divide do not to take social inequalities adequately into account:those with the least connectivity are by and large also those who are most excluded economically, socially and politically. Their lack of access is first and foremost a result of this exclusion and while the internet may present opportunities for some social advancement, it will not alter the structural social and economic processes that causes inequality and exclusion in the first place.

Efforts to end the digital divide that are not linked to efforts to address broader social divides are not likely to produce the circumstances in which people are truly able to enjoy the benefits of the internet. Activities to increase access to infrastructure should be therefore be coupled with efforts to address political, economic, social, and cultural barriers to internet access. And for access to the internet to fully enable human rights, it should be free of censorship, surveillance, and discrimination.

2. The underlying causes of limited connectivity

The main reason the internet is still poorly dispersed and unaffordable for many, especially in rural and remote areas, is the poor distribution of basic telecommunications infrastructure. There are insufficient affordable international and national backbones and last-mile/local networks. In addition, the level of demand is low, due to limited digital literacy and lack of relevant local applications and content.

There are a large variety of factors that cause this, and local conditions vary considerably from country to country, which underlines the fact that there is no universal “silver bullet” that will end digital exclusion.

2.1. Market access and network provisioning models

Among the most common factors reasons for poor levels of access are the lack of competitive open the markets burdens on market entry for basic infrastructure providers, along with limited access to sufficient radio spectrum. Legacy incumbent fixed-line national operators and a few mobile operators continue to dominate markets for broadband in many countries. This affects availability, cost, and quality of access services. National governments often continue to protect legacy fixed-line operators and existing mobile operators from players wishing to use innovative new technologies and business models. Moreover, these 'new incumbents' are usually subsidiaries of large international companies and are able to use their

superior resources to influence the regulatory environment so that it favours their investments in older technologies over potential new entrants. For example, in many cases licensing requirements and fees can be too onerous for smaller private operators and community-driven initiatives such as 'village fibre' or municipal WiFi.

2.2. Spectrum use

Conservative spectrum allocation policies also continue to restrict the potential for new providers looking to make use of the latest technologies. For example, fixed broadband operators can use new wireless systems such as TV white space (TVWS) and other dynamic spectrum-sharing approaches, but so far only the Philippines has had the vision to make it a national priority to use these systems to help address connectivity issues. In many countries the regulators are not aware that most of the frequencies in these wavebands are unoccupied, and traditional occupants of the frequencies – the broadcasters – often do not understand the technology that makes it possible to share the frequencies without interference. In addition incumbent operators can use their high spectrum license fees as a way of obtaining commitment from regulators to maintain their exclusivity over wireless markets.

2.3. Content controls

Content controls can be a major burden in some countries with restrictive policies on open access to the internet, which also limit freedom of expression. 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 norms.

These include laws and regulations that restrict free discussion on internet forums and social media, as well as requirements to limit access to some websites, or for news sites to apply for licensces. There is often a lack of protections from liability for intermediaries. Surveillance can also lead to a chilling effect on freedom of expression and loss of trust in the internet as a means for secure and private communications.

For people who cannot afford their own equipment and connectivity, or who only have access in their place of work, public access facilities could offer an effective alternative. However, there is limited investment in libraries, telecentres and multi-purpose community centres amenable to provision of public internet access. 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 reinforced the widely held view that public access is just a stepping stone to private access.

However, there is now growing recognition[3] 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 addition, it may take many years for some countries to reach high levels of household connectivity, and therefore public ICT access will remain a critically important service.

A variety of indirect factors may also serve to limit internet accessibility. Grid power is often unavailable or costly, basic ICT literacy may be lacking, and high import duties may be levied on ICT equipment,

[3]In-depth research carried out by the University of Washington found at least one-third of the users had no other means of access to the internet than public access, most users (55%) would use computers less if public access were not available, and public access venues are the first point of contact with the internet for most users. For further details see: APC, IFLA and TASCHA. (2014). Public access: Supporting digital inclusion for all. https://www.apc.org/en/pubs/public-access-supporting-digital-inclusion-all

which, along with luxury taxes on internet and voice services, further reduces their affordability. In addition, lack of relevant local content and applications limits demand for the internet.

3. Needed policy responses to the access gap

Significant resources will be needed, along with the political will to support national policy and regulatory changes which improve affordability and coverage of broadband networks. Aside from lack of political will, needed changes are often not being implemented due to lack of transparency, corruption, lobbying from vested interests in older technologies, and the adoption of policy and regulatory models that are more appropriate in developed country contexts.

The most important policy initiatives required are listed below, and could be encapsulated in the formulation or updating of comprehensive national broadband strategies. Again it should be emphasised that there is no “one-size-fits-all” solution and that national broadband strategies need to be developed through extensive public consultation that includes all stakeholder groups – national and regional government structures, the private sector and civil society.

Broadband strategies also need to be efficiently and rapidly implemented, and not just “sit on the shelf” – a phenomenon which happens to many good policies. International initiatives and conferences may be able to contribute, through either through providing inspiration, but ultimately these are processes that have to be owned, driven, and monitored locally rather than globally.

Key policy strategies to address the access gap:

- Eliminating market protections for incumbent operators and levelling the playing field where markets are encumbered by dominant operators.
- Increased government investment in public access facilities and awareness raising of their value to disenfranchised groups in particular.
- Allowing innovative uses of spectrum and new dynamic spectrum-sharing techniques such as TV white space (TVWS).
- Promoting community and municipal ownership of small-scale communications infrastructure.
- Using public funds and utility infrastructure to ensure national fibre networks are extended into remote and sparsely populated areas.
- Adopting effective infrastructure-sharing guidelines and regulations.
- Reducing taxes on ICT goods and services.
- Adopting regulations that promote the net neutrality principle, and provide a mechanism to monitor and limit abuse of the principle, particularly in relation to the provision of internet access services targeted to the poor.
- Adopting regulations that limit potential market abuses from corporate concentration, cross-ownership and business relationships between infrastructure providers and content producers.

The benefits of these strategies in ending the digital divide are largely self-evident, with the possible exception of infrastructure sharing, the impact of which is often underestimated. To support improved awareness of the benefits of infrastructure sharing policies to national broadband plans, APC recently commissioned a study on infrastructure sharing in emerging markets. The report *Unlocking Broadband for*

All[4] found in its global review of infrastructure-sharing experiences that developing countries 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. In urban environments water supply and sewage systems can also provide sharing opportunities. If governments ensure that ducts or fibre are incorporated in all new road building and power line projects, this can make the difference between a sustainable and a loss making investment in backbone infrastructure for a private operator. The benefits of this for encouraging private investment in broadband for remote and rural areas are clear.

There are a wide variety of other policy strategies for "connecting the unconnected" that could also be mentioned, but this document has focused on the above for the sake of clarity on the key priorities. Overall however, activities that address connectivity challenges must be rooted in addressing the broader development challenges while taking into consideration the need for an integrated ecosystem approach to ensuring the various components of the connectivity chain work seamlessly together.

In an effort to provide a framework for helping to ensuring that all the policy needs are addressed for a digitally inclusive enabling environment, a *Broadband Infrastructure Development Readiness Checklist* is included as an appendix.

4. Targets

Policies to promote connectivity require measurable targets by which to judge their effectiveness. Measures also need to be pragmatic, rather than exhaustively accurate – they need to be easily obtained, objective, comparable and up to date. In this respect the following few simple measures are proposed, aiming to provide not only an indication of the numbers connected but also the level of internet utilisation.

- Number of broadband subscriptions per capita (%), "broadband" being defined as a connection of at least 512 Kbps today but growing to the higher rates available in developed countries. Data should be disaggregated according to gender, age, geographic area and minority groups. Full data disaggregation may only be feasible on an annual basis.
- Data traffic per capita (bps), defined as the total of domestic network data traffic generated by broadband users divided by the total population.

These two measures when taken together are all that is necessary to provide a general indication of the status of the local connectivity environment. A number of additional indicators can be useful in helping to determine the cause of problems. These are:

- Network coverage (% of geographic territory in which connectivity is available).
- Cost of 10 Gb/month of broadband data traffic, relative to average income levels (% of GNI/capita). 10 Gb is a common tariff package and on a monthly basis is a desired minimal level of utilisation, corresponding to 10-20 hours per month of video.
- Average download and upload speed per subscriber (Mbps).
- Autonomous System Numbers (ASNs) per capita. AS numbers are used by IP networks that are reliable – they are needed if the network has more than one connection to the rest of the internet.

[4]APC. (2015). *Unlocking Broadband for All*. South Africa: APC. https://www.apc.org/en/node/20382

As such they provide a reliable indication of the extent of independent network development in the country.

Comparison between countries can be useful in identifying effective strategies, but the key aim with the use of indicators is to be able to measure progress over time within a country. Therefore the data points should ideally be updatable on a quarterly basis and authorities may need regulations to ensure that network operators provide the necessary data in a timely fashion.

5. Summary

In summary the key points are:

1. Access inequalities are more visible when disaggregated by disadvantaged groups – particularly women, the poor, rural populations and the less abled.
2. Expansion of mobile broadband by itself will not meet the connectivity needs of the rest.
3. High internet access costs continue to be the biggest factor stopping the rest from getting connected.
4. Implementing policies for connecting the rest will also vastly improve the connectivity of those who are already connected but are constrained in their use of the internet by slow speeds, high costs or other barriers.
5. The main reason the internet is still poorly dispersed and unaffordable for many is the poor distribution of basic telecommunications infrastructure.
6. There is no universal “silver bullet” that will address these issues and connect the rest.
7. The two most common factors are the lack of competitive open markets for basic infrastructure, and limited access to sufficient radio spectrum.
8. Content controls can also be a major burden in some countries with restrictive policies on open access to the internet.
9. Public access facilities are also an important means of addressing the connectivity needs of the rest, but there is limited investment in libraries, telecentres and multi-purpose community centres.
10. Indirect factors also limit access to the internet, including limited energy supply, lack of basic ICT literacy, few applications and content of local relevance, and high import duties or other taxes on ICT services.
11. Comprehensive and up-to-date national broadband strategies which address the policy barriers are needed, which should include effective infrastructure sharing policies.
12. Clear targets and monitoring are needed to ensure that the effectiveness of policies can be measured.