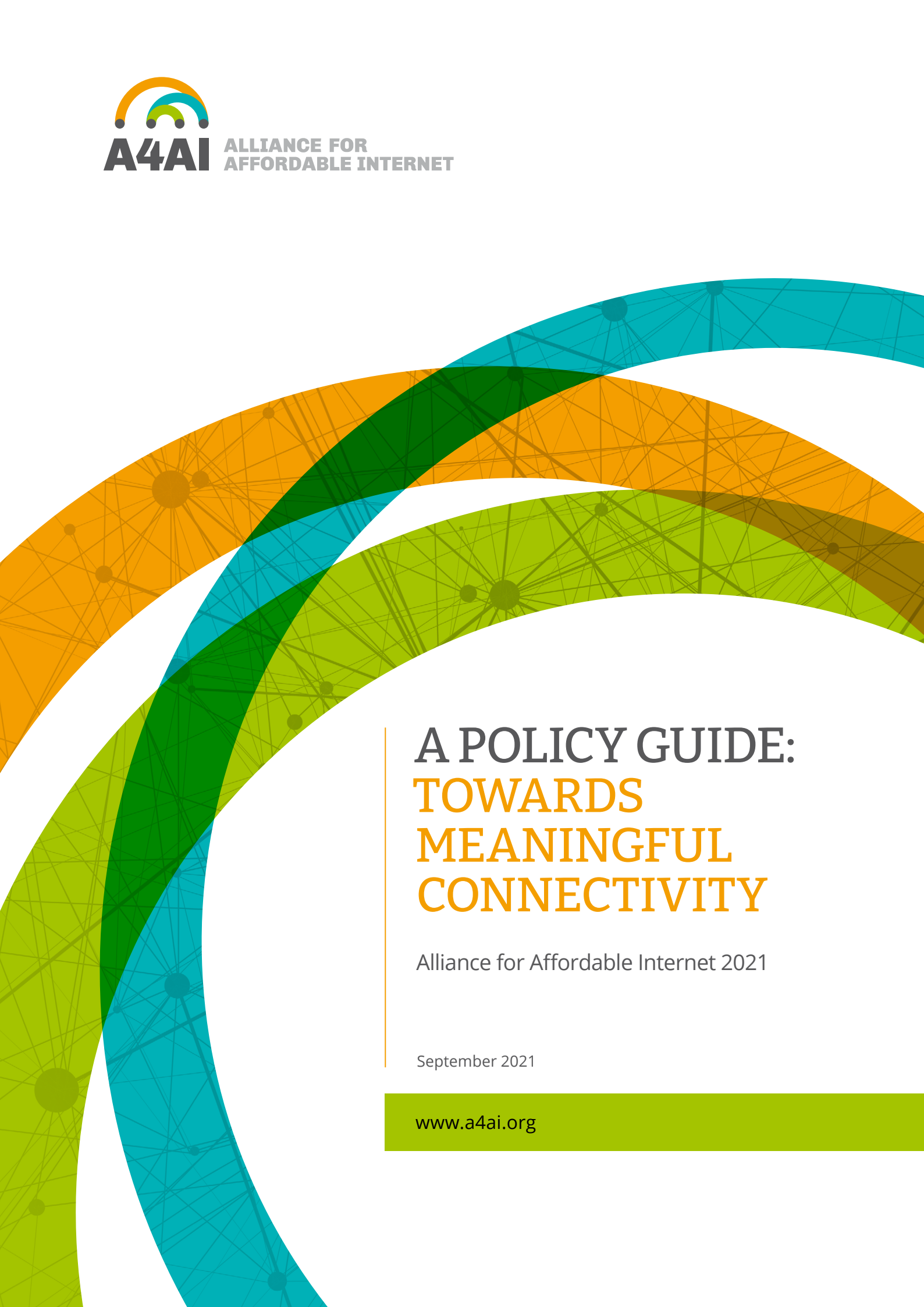

A POLICY GUIDE: TOWARDS MEANINGFUL CONNECTIVITY

Alliance for Affordable Internet 2021

September 2021

www.a4ai.org

Contents

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MEANINGFUL CONNECTIVITY - RAISING THE BAR FOR INTERNET ACCESS

We have meaningful connectivity when we can use the internet every day using an appropriate device with enough data and a fast connection.

In 2020 the COVID19 pandemic exposed the huge disparities in internet access as many services from health, education, commerce and more were forced online. Since then trends such as remote work, homeschooling , e-business, and e-health consultations have become the new normal and with these have emerged greater expectations from users of internet services.

During this period the **Alliance for Affordable Internet (A4AI)** launched the **Meaningful Connectivity** target **(A4AI, 2020a)** to unlock the full power of the internet. Meaningful Connectivity raises the bar on internet access by proposing a holistic approach to internet access, adoption and use, one where a minimum level of technical quality is foundational to providing the digital access opportunity that is necessary for the full enjoyment of the digital society.

Government policies and plans are often based on a limited understanding and definition of universal access, adoption and use, one that is often based on a binary understanding of access – online or offline. There's no distinction made between someone who checks an email account once a week and a super-user running their business online. This is simply inadequate. It is no longer sufficient to simply consider how many people are online. To improve internet access and tackle the digital divide, our policy goals must adapt to consider the quality of connectivity available to all. This implies access to the open internet, without excessive economic and/or political restrictions.

Meaningful Connectivity is a framework to track the components of connectivity that matter most to users and help decision- makers adopt the policies needed to connect people to an internet that is useful and empowering.

This playbook provides guidance and specific steps that can be taken to advance policy decisions with the end goal of having universal meaningful connectivity for everyone. We note that this playbook is not exhaustive, but rather a tool and a resource to assist policy makers across all regions, while they adapt this guidance to particular contexts as needed. **Section two** of this policy playbook provides an overview of the thresholds of the Meaningful Connectivity target, briefly covers elements of a comprehensive policy, and describes a timeline for the implementation of the suggested policies. **Section three** presents targeted actions addressing the specific thresholds of meaningful connectivity, each of them related to one or more of the policy areas. Some of these actions can be implemented in the **immediate and short terms**, and some others will require more time and can be implemented in the **medium and long terms** (see Figure 2 below). **Section four** of the document presents issues that are essential to all meaningful connectivity thresholds and deserve targeted strategies, namely gender and inclusion. Lastly, **Section five** presents a brief description of the roles that should be played by each stakeholder each stakeholder should play in implementing the recommendations of this policy playbook. This guide will be updated as new evidence emerge on the implementation of this framework.

Readers are encouraged to contact www.a4ai.org for more information and direct any questions or requests specific to this policy guide to a4ai@webfoundation.org.

Introduction

THE MEANINGFUL CONNECTIVITY TARGETS 01

Meaningful Connectivity (MC) means that a set of minimum thresholds must be met across four dimensions by every country committed to provide adequate levels of connectivity to its population.

What is meaningful connectivity?

It sets minimum thresholds across the four dimensions of internet access that matter most to users. These are:

- **Regular internet use** | minimum threshold: daily use
- **An appropriate device** | minimum threshold: access to a smartphone
- **Enough data** | minimum threshold: an unlimited broadband connection at home or a place of work or study
- **A fast connection** | minimum threshold: 4G equivalent mobile connectivity.[1]

Informed by robust research and analysis, including nationally representative surveys across three countries (Colombia, Ghana and Indonesia) as well as a series of multi-stakeholder consultations, MC advances an ambitious connectivity agenda, one that aims to secure the ability for everyone to **use the internet daily using an appropriate device with enough data and a fast connection** (see Figure 1).

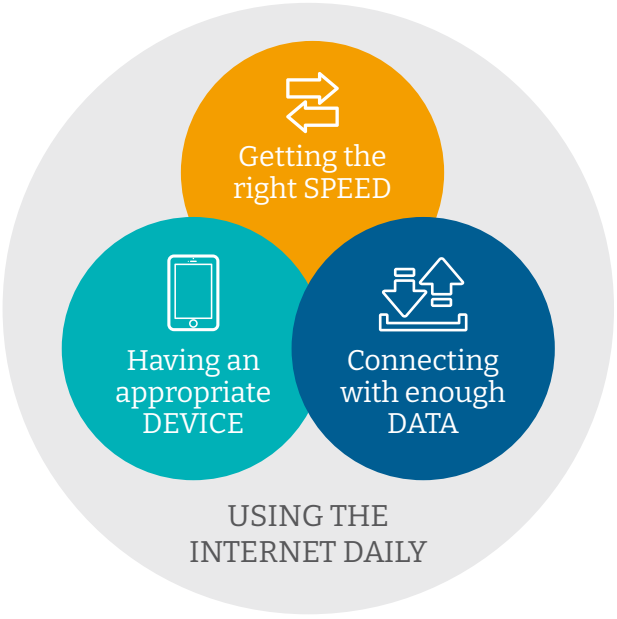

Figure 1: The Dimensions of Meaningful Connectivity

Source: A4AI

1. As per described in A4AI's Meaningful Connectivity Brief (A4AI. 2020a), the threshold is related to 4G equivalent speeds, but is not limited to mobile technology. 4G speeds are generally 10mbps for download, at a minimum.

While many take these thresholds for granted, the level of meaningful connectivity varies widely across countries and regions. There are also wide variations within countries and across sub-regions and population groups. Further, this is important because "basic" connectivity – the idea that one is simply online or offline – is no longer enough, as many internet uses require appropriate levels of speed, data and usage frequency and having an appropriate device. COVID-19 has made it obvious to the general population the sense of urgency that had been previously foreseen by the United Nations Sustainable Development Goals (UN SDGs) that building resilient digital infrastructure is a must.[2]

The SDGs also established that by **2020** we should "significantly increase access to information and communications technology and strive to provide universal and affordable access to the Internet in least developed countries" (SDGs, 9c). Yet, at the current rate of growth, universal affordable internet access will not be achieved until 2043 **(A4AI, 2020b)** — a failure to meet the **SDGs** target. According to the **United Nations Broadband Commission, 75%** of the global population should have access to broadband by **2025 (Broadband Commission, 2021)**. Finally, several efforts from international organizations have focused on the goal to achieve universal access by **2030**, as reported in the joint Broadband Commission and World Bank report Connecting Africa Through Broadband **(Broadband Commission, 2019)** and in the ITU-A4AI joint report Connecting Humanity: Assessing Investment Needs of Connecting Humanity to the Internet by 2030 **(ITU, 2020)**. To support a vision of universal Meaningful Connectivity, the guidance and recommendations provided hereunder are divided into "immediate/short term actions" (those to be accomplished by 2025) and "medium/long terms actions" (those to be accomplished by 2030), as **Figure 2** describes.

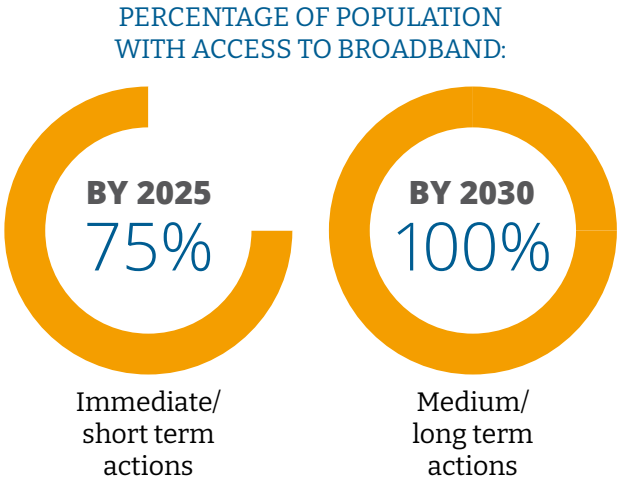

Figure 2: Targets for the implementation of universal access projects
Source: A4AI

While 2025 and 2030 seem like a distant future, connectivity projects require time, planning, financial resources, targeted policy efforts, and political commitment to digital development. The proposed division in "immediate/short" and "medium/long" terms provides a process to estimate which steps should be prioritized, but it is important to highlight that such division does not precisely describe how long it will take to accomplish them. The sequence of actions and development milestones achieved will vary depending on the country, as local realities vary, as well as on the state of development of the sector. Indeed, many low and middle-income countries are still struggling to build foundational infrastructures, such as electricity grids, which are fundamental to connectivity.

As technology and its use changes, the concept of meaningful connectivity should also change and evolve to ensure that the digital needs of users are supported. There is, therefore, a need to ensure that the MC target is truly people-centred and that it provides a framework for quality and empowering connectivity. The lack of access during COVID-19 has prevented billions from keeping children enrolled in school through virtual classes, maintaining business activity, and staying informed on the latest health information and advice. The global pandemic has once again amplified the need for meaningful connectivity to be embraced as a target and to serve as the minimum threshold that everyone must have to fully enjoy the benefits of digital access.

2. See UN SDGs' Goal 9: "Build resilient infrastructure, promote sustainable industrialization and foster innovation"

Adopting the MC target at the national level requires sound policies to be in place coupled with a real commitment from policymakers and other stakeholders, including public and private investors. A4AI's analysis shows that we need an investment of US$428 billion globally to achieve universal access[3] to 4G equivalent quality by 2030, which means downloads at a minimum of 10mbps. **Around 75% of the total investment cost to close the connectivity gap by 2030 corresponds to the investment needed in 25 "top" countries.**[4] These top 25 countries require at least US$3 billion in investments or more, and the top nine of these countries require USD10 billion or more each **(ITU, 2020)**.

In addition, and based on A4AI's experience, we note that policies that aim to be sustainable are designed and implemented through a process that generally follows specific steps:

(i) collecting evidence and understanding the local conditions that require and/or would benefit from a proposed change;

(ii) drafting the policy and/or regulatory instruments through a transparent and open process, with ample public consultations opportunities with all stakeholders to get diverse perspectives from the public, private sectors and civil society constituents; and

(iii) setting measurable goals, as well as a timeline for review and oversight mechanisms.

While these are not comprehensive guidelines of how the policy process should work, they are a good starting point for implementing what is described hereafter.

3. Universal access is defined in the study as 90% of the population older than 10 years.
4. Which are India; China; Indonesia; Bangladesh; Pakistan; Nigeria; Mexico; Ethiopia; Tanzania; Egypt; Brazil; Democratic Republic of the Congo; Vietnam; Mozambique; Myanmar; Afghanistan; Sudan; Turkey; Kenya; Uganda; Iraq; Uzbekistan; Colombia; Philippines and USA (ITU, 2020), based on A4AI and Xalam Analytics).

POLICIES TO ACHIEVE MEANINGFUL CONNECTIVITY

02

A Access to a smartphone

Our research shows that users considered portability, having the ability to use productive apps, and multifunctionality (such as voice calls, photo/video, and apps) as key features for a device. Accordingly, we focus on smartphones as they provide a key set of features that people want, and they are the most popular device choice. By smartphone, we are referring to a device that has a minimum screen size of 3", a touch screen, the ability to install apps (i.e., with no restriction on the number of apps by the app store), and a camera.

A report by **A4AI (2020c)** – From luxury to lifeline: Reducing the cost of mobile devices to reach universal internet access - has shown that low-cost smartphones cost 11.7% of the average monthly income in the Americas and 62.8% in Africa. Lack of appropriate device affordability leads users to select devices that are lower costs and have lower functionality compared to smartphones. Policymakers should understand these differences to ensure that policies support lowering the cost of smartphones. The policy recommendations outlined below follow the ones presented in the aforementioned report and add further recommendations.

Immediate/Short-Term Actions

- **Reduce taxes on smartphones.** Smartphones are no longer a luxury good. Tax systems should treat them as essential goods (this recommendation does not relate to high-end devices). Any tax incentive and/or reduction should be converted into direct benefits for citizens. Governments should be able to monitor related cost reductions to ensure they are transferred to citizens. Such reduction will particularly impact lower-income groups, including women and populations living in remote and rural areas.
- **Develop initiatives targeted to women.** First, programs should support women by providing them affordable and/or subsidized options for internet enabled devices. According to **GSMA (2020)**, despite the progress over the past years, "the gender gap in mobile internet use in low- and middle-income countries remains substantial, with over 300 million fewer women than men accessing the internet on a mobile" (p.3). Ownership is also a persistent problem. Women are 8% less likely than men to own a mobile phone and 20% less likely to own a smartphone (GSMA, 2020). Thus, creating initiatives targeting women specifically is key.

- Devices provided via these programs should follow key principles such as "privacy-by-design" and "safety-by-design"[5], as the usage of the Internet by women should not offer threats to their dignity or their rights;
- Initiatives targeting women should address social and cultural norms that prevent women from using technology, promoting their inclusion as active users as well as positive perceptions of ICT use by them (USAID et al., 2020).

- **Support the design of devices and applications that accommodate different user experiences and abilities.** There are various types of accessibility needs that should be considered. Persons with disabilities, for example, often require reasonable accommodation and/or assistive devices. Products and services should thus follow accessibility standards/requirements, and oversight mechanisms should be put in place to monitor compliance to them.[6] **See section 3 below for further information.**

The role of the USAF in Uganda

While over 70% of the population in Uganda owns mobile phones, less than 20% of them own smartphones, one the lowest in Africa.[7] Uganda's Second National Development Plan under Vision 2040 has established that "promoting production and use of low-cost locally assembled devices in collaboration with the private sector" is an action which the country's Universal Service and Access Funds (USAF), the Rural Communications Development Fund (RCDF), should implement in collaboration with other agencies.[8] Further, the country's National ICT Policy, the National Broadband Strategy (2016-2020) and the ICT Sector Investment Plan have set penetration and affordability targets. Among the missions of the six Key Results Areas (KRAs) of the RCDF is: "ensuring that the cost of access devices and the cost of services are not barriers to access." Reducing taxation is one of the ways this will be achieved,[9] and direct subsidies to devices through the RCFD are also being considered.[10]

5. For more information, check the European Commission's explainer on these two very important principles: https://ec.europa.eu/info/law/law-topic/data-protection/reform/rules-business-and-organisations/obligations/what-does-data-protection-design-and-default-mean_en
6. See the WomenConnect Challenge project with Mali Health, a voice-generated social network application. More information can be found at USAID (2021). See references below.
7. Ssonko et al (2020) citing Gillwald et al (2019).
8. UCC (2019)
9. Id.
10. According to information that A4AI has received from primary sources.

Medium/Long-Term Actions

- **Universal Service & Access Funds (USAFs) and/or other permanent funds should be used to make devices more affordable for the most vulnerable parts of the population.** While such funds have been motivated by and created primarily to support the deployment of infrastructure, they should evolve to have a broadened base of contributors and to support increasing demand-side needs and a wider range of beneficiaries. USAFs can also be used to promote measures that directly impact the affordability of internet services as well as devices required to access such services, including smartphones and other devices, and local production of devices should be incentivized. It is important that such funds have clear goals and that monitoring mechanisms are in place so that the implementation of policies and programs can be properly measured and that the allocation of funds and their management is transparent.
- **Develop pilot programs and projects to foster device affordability and innovative financing mechanisms.** Providing access to a device might also mean promoting affordable purchasing options through mechanisms such as microfinancing, the establishment of microloans and other financial and non-financial mechanisms.[11] **GSMA (2017)** describes different types of financing mechanisms that are possible, such as: (i) direct payment of citizens to providers; (ii) asset financing, through financial institutions or mobile operators; and (iii) when a third party, such as private or public institutions or non-profit organizations pay for the device. In any of these scenarios, access to the whole internet should be provided, and policies should refrain from promoting access to a restricted version of the internet, which does not allow for the full enjoyment of the whole body of knowledge available, as well as the applications and services.

Access to smartphones in Kenya

Kenya has implemented steps towards making it easier for devices to be purchased. In the context of the Vision 2030 plan,[12] the government of Kenya exempted mobile handset purchases from the 16% value-added tax (VAT) in 2009. By 2011, the number of handset purchases increased more than 200%, and teledensity reached 70% of the population. Moreover, a price war between the three mobile network operators started, leading to a dramatic decline in prices, an increase in network coverage, and revenue growth from mobile telecommunications. For more information, see the full case study on A4AI's Good Practices Database.[13]

Costa Rica's multi-pronged approach to digital inclusion

Costa Rica launched a national plan (CR Digital) in 2015, called Hogares Conectados[14] (connected homes), allowing eligible families to get up to 80% of the cost of internet connection, as well as up to 100% of laptop costs subsidized by the national telecommunications fund (FONATEL). Moreover, the cost-sharing approach to subsidies encouraged families to take excellent care of their ICT equipment since they were effectively part owners. Lastly, approximately 95% of the families who have participated in the program to date are female-headed households, which implies that more women — especially those in rural areas — are benefiting from being connected. For more information, see the case study on the A4AI's Good Practices Database.[15]

11. The World Bank is an example of an international organization which is developing new financial mechanisms to support device affordability and ownership in low and middle income countries. Information received by A4AI from a forthcoming document by the World Bank.
12. https://vision2030.go.ke/
13. A4AI (2019a)
14. https://sutel.go.cr/pagina/programa-2-hogares-conectados-0
15. A4AI (2019b)

B Unlimited broadband connection at home or a place of work or study

Access to an internet connection is key, but the level of data afforded with such connectivity is also crucial. Facing data limits is one of the main barriers to the full enjoyment of connectivity and different measures can be implemented to avoid their existence. Several parts of the population have limitations related to how much data can be used. The following actions can be embraced to avoid caps and support unlimited broadband connections.

Immediate/Short-Term Actions

- **Foster innovative regulatory approaches and competition.** Competition can be fostered by creating incentives for small and medium providers and developing rules and regulations that do not represent unnecessary burdens to them. Trying different approaches through mechanisms such as the "regulatory sandboxes" allows operators to experiment under the oversight of the regulator, reducing information asymmetries and regulatory costs **(Cornelli et al., 2020)**. Colombia and Brazil are examples of countries that are trying to implement such sandboxes in the telecommunications sector **(BnAmericas, 2021)**. Regulatory sandboxes are more common in the financial markets and have helped the so-called "fintechs" to raise capital **(Cornelli et al., 2020)** and can be used by regulators as a way to keep the oversight of emerging risks while allowing new entrants to experiment and innovate. In the case of telecommunications, they could help promote competition by helping smaller operators raise funding, for example, for connectivity offers with unlimited data with a business model that has not yet been fully tested. Competition also requires independent internet exchange points, choices in ability to connect to undersea cables, sufficient and robust data canter and fibre backbones, and other key inputs. Competition and telecom policy should also envision multiple technologies for access, and regulators should constantly and consistently focus on the growth of innovative access models and not seek to maximize the reach and adoption of a particular technology. Governments also should not pick or select "national champions" among service providers.
- **Promote the development of business models which offer unlimited data plans.** While hardline rules for plans with data limits should be avoided, business models with unlimited data should be supported and incentivized, and this should be a priority for regulators and policymakers. While costs increase whenever a user is added to the network, especially in mobile broadband, governments should find ways to promote offers with data plans that meet the ever increasing demand for data. This is crucial given the fact that data caps are still a barrier for many, especially for those in lower-income groups. The need for unlimited data is ever increasing, and crucial aspects of people's lives, such as education and health, now depend on having enough data.
- **Assess the need for intervening in less competitive markets.** Ex-post assessment is what competitive markets aim for. Nonetheless, data limits are a problem that might be worsened by the fact that many markets are highly concentrated. Given the lack of competition in many markets, policymakers and regulators should assess the implications of not applying ex-ante rules whenever the ex-post approach is not allowing for meaningful connectivity to become a reality.
- **Deploy and/or expand public Internet access points.** Public access facilities have been a key element of the traditional telecommunications landscape for some time. They remain critical both as a complement and often the only option for internet users. Nowadays, the notion of public access also encompasses public Wi-Fi access, not only via physical facilities. Providing public access in places like schools, libraries, community centres and university campuses are crucial to complementing private access offers.

Medium/Long-Term Actions

- **Promote public infrastructure investments that are aimed at addressing market failures.** Public investments can be used to finance infrastructure expansion to underserved areas and population groups that are not seen as a priority for the private sector. USAFs and Multilateral Development Banks are the main source of public funding for such infrastructural needs. Public Private Partnerships (PPPs) have also been used in countries such as Mexico, Rwanda, San Tomé and Príncipe to expand and leverage the country's infrastructure. These actions should always have the reduction of the digital gender gap as a priority. It is important to consider the specificities of each context in order to understand whether public investments and/or PPPs are the appropriate tools for the country when an intervention is being considered.
- **Simplify processes and procedures for obtaining access to rights-of-way, allow collocation of equipment on towers, facilitate the placement of telecommunications infrastructure on utility poles, encourage proactive deployment of conduit and dark fibre in other infrastructure projects, and promote infrastructure sharing arrangements.** Incentivizing such arrangements means, among other things, harmonizing standards across sectors, facilitating rights of way at more economically viable rates, and implementing a "dig once" policy to encourage duct sharing, among other infrastructure elements (e.g., poles). Examples of sectors that may have infrastructure sharing arrangements are the energy and utility sectors. Guidelines should be set and cover active sharing, including support for dispute resolution.

Financing Mechanisms

The report Connecting Africa Through Broadband: A Strategy for Doubling Connectivity by 2021 and reaching universal access by 2030 **(Broadband Commission, 2019)** notes that many governments have now recognized that their national development plans are highly dependent on the country's level of digital development and the policies supporting such efforts. As a result, governments have become more active in increasing investment incentives and investoring in needed digital infrastructure. Multilateral, regional and national development banks have increased their commitment to digital development projects. However, as the figure below illustrates, there is a role for public and private investors and stakeholders in the digital development ecosystem. In fact, the experience of partnerships is one that calls for greater cooperation among players, including in terms of capital investments and operating costs, where cost-sharing opportunities can increase the possibilities for new investment.

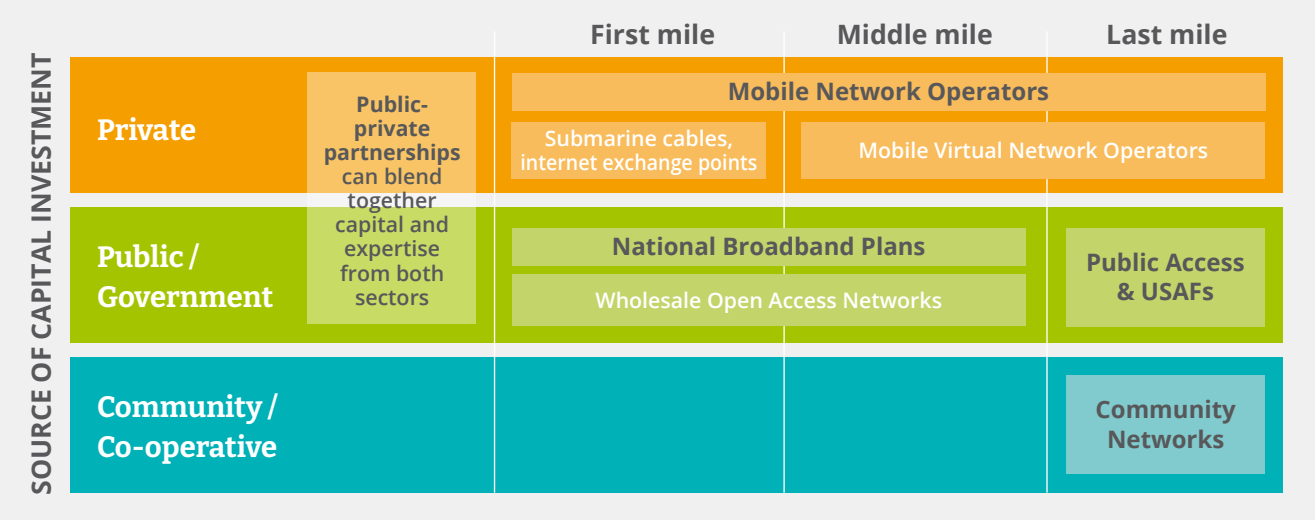

Figure 3: Sources of Capital Investment in Each Part of the Network. **Source: A4AI (2019c)**

- **Promote regulatory changes that support the use of unlicensed spectrum.** Open more frequencies in various bands for unlicensed use and foster their use as well as opportunistic reuse. Unlicensed spectrum often allows for new entrants, complimentary providers and promotes innovative ways of connecting to the internet, strengthening competition. To the extent possible, more frequencies in different types of bands should be made available for unlicensed users, as long as they do not cause harmful interference with licensed frequencies.
- **Create the right regulatory conditions for community networks to thrive.** Many community networks are already providing access to populations that would not have connectivity otherwise, but it is important to formally recognize them and eliminate regulatory barriers they might face. While some community networks might not necessarily be providing access to unlimited data, they are certainly helping their members get closer to this goal.

PPPs – The experience of São Tomé & Principe

PPPs can be used as vehicles to fund infrastructure in emerging markets, and several externalities of such arrangements might follow, an example of this is the case of São Tomé & Principe. The country has seen "the potential of PPPs to absorb early stage project risk and provide a bridge to substantial private investment, both initially through the PPP, and subsequently, by facilitating the construction of key infrastructure needed by new entrants" **(A4AI, 2015)**. In 2011 and 2012, the incumbent local fixed and mobile telecommunications service provider and the government of São Tomé & Principe partnered to invest in access to a submarine fibre optic cable and a submarine cable landing station. After that, through the support of the World Bank, a new operator was attracted to São Tomé & Principe due to the expanded and international connectivity and access to the incumbent's infrastructure at cost-based prices. By 2014, a license was issued to a new mobile phone company, which has invested in network infrastructure and started offering telecommunications and Internet services. This ultimately led to decreases in prices for most services. For more information, see **A4AI (2015)**.

C 4G Mobile connectivity

The reference of universal access to IMT-Advanced 4G (ITU, 2008) as a minimum threshold for meaningful connectivity is intended to establish a minimum speed level, which is normally associated with 4G technology. As 3G was limited in its ability to stream video to a mobile device, both by technical and spectrum limitations, and several audiences identified this and other changes brought about by 4G as a remarkable upgrade. Indeed, 4G and its connectivity potential is a term that is easily understood by various audiences. We note that this does not imply that such connectivity should be mobile only, but it is a reference of speed and latency that allows, for example, children to attend online classes or download audiovisual content to further their education.

Immediate/Short-Term Actions

- **Commit to technology and service neutral, transparent, accountable, timely, and efficient spectrum assignment and allocation processes.** Ensure the neutrality of allocation as well as allow for the reallocation of spectrum over time and consequently to reaching proper speeds and quality levels of service provision.
- **Establish ex-ante regulatory measures only to the extent necessary to foster market competition.** Ex-post measures should be the norm to avoid unnecessary regulatory burden. Ex-ante mechanisms such as establishing spectrum caps, for example, should be put in place whenever market conditions are leading towards diminishing competition between private sector stakeholders and new entrants are facing difficulties to enter the market.
- **Spectrum assignment should be competitive in most cases, as well as non-discriminatory and transparent.** The process of spectrum assignment should be designed to allow for the greatest societal

benefit to be extracted, which in most cases corresponds to a competitive process. In any situation, nonetheless, it should follow the principles of transparency and non-discrimination.

Medium/Long-Term Actions

- **Adopt or update accountable and realistic National Broadband Plans with clear and evidence-based policies and regulations.** Provide the public and private sectors with clear guidance and a roadmap to sector development, aiming to achieve universal access to 4G equivalent or higher connectivity. Having clear and transparent public policies provides regulatory guidance and certainty, and makes clear how plans and associated targets incentivize and support network development and expand internet access.
- **Create a secondary market for spectrum as well as mechanisms to avoid spectrum hoarding and/or underutilization.** The amount of spectrum available influences the level of connectivity. Thus, spectrum should not be hoarded and/or unutilized. Mechanisms should be created with the goal of inhibiting such behaviour. Further, the creation of a secondary market of spectrum would create incentives for more efficient uses of spectrum [16] As the **ITU and World Bank (2020)** highlight, license terms that contain "use it or lose it" policies are already applied in different countries, establishing dates after which operators no longer have the same rights over their license. **Figure 3 below** provides a visual representation as an example of how recommendations like these would be implemented.
- **Foster the deployment of backhaul and backbone infrastructure, as well as submarine cable landing stations and IXPs.** Backhaul can be a costly part of the infrastructure and demands high investments and sound planning from policymakers and regulators. However, given the predictions of an ever-increasing demand for capacity, planning what approach will be taken to foster such parts of the network infrastructure are crucial for achieving the proper network capacity. Further, submarine cable landing stations and internet exchange points (IXPs) should be fostered by governments as they are essential for cross-border networking.
- **Promote Innovations in Technology and Network Equipment.** Interoperable technologies like open radio access network technology have lower CapEx and OpEx that could present significant opportunities to expand the footprint of networks in developing countries. Countries should encourage the deployment of these new approaches – e.g., ensure that import duties and processes do not delay purchase or encourage service providers to trial or use this technology in their deployments. [17]

Backbone and backhaul deployment: The cases of Uganda and Vanuatu

Examples of good practices related to backbone and backhaul deployment can be seen in Uganda and Vanuatu. The deployment of a fibre backbone in Uganda was possible due to the persistence of policymakers that have addressed deficiencies technical and security deficiencies from previous attempts. Ultimately the extension of the national backbone was very beneficial for the country, with a reduction in internet costs, access to e-government services from a larger percentage of the population, an increase of governmental authorities connected to the internet and even revenue generation for the Government.[18] The case of Uganda illustrates the importance of deploying fibre optic backbone infrastructure and shows that infrastructure projects take some time to be designed and implemented. Vanuatu, an archipelago nation in the South Pacific, was physically connected to the internet for the first time only in 2014, through the deployment of one of the most important transpacific cables (ICN1). Such deployment was made possible due to a Public Private Partnership (PPP), resulting in increased international bandwidth capacity, faster connection speeds and more affordable internet prices **(Broadband Commission, 2018)**. For more information, check out the A4AI's Good Practices Database **(A4AI, 2019d)**.

16. Various types of secondary markets might be created. Indeed, there might be partition; disaggregation and/or leases of spectrum. Partition relates to dividing the spectrum license geographically; disaggregation relates to the assignment of channels or bands of spectrum in the entire geographic area associated with a specific license. Leases relate to the use of the spectrum without the assignment to the lessee.
17. One example comes from Ghana, as the country's USAF contracted with open RAN vendor Parallel Wireless to use open RAN to build rural networks, and other countries e.g. the USA are looking at encouraging use of open RAN in their USF.
18. See NITA Uganda. https://www.nita.go.ug/projects/national-backbone-infrastructure-project-nbiegi

The change in Tanzania's telecommunications market

Until the late '90s, Tanzania used to have a teledensity that was much lower than the one in the neighbouring countries. In 2001, the government sold a 35% stake in the state-owned Telecommunications Company Limited (TTCL) to a foreign company, and the two other operators started investing more in the mobile service offerings. A National ICT Policy was introduced two years later, and the Tanzania Communications Regulatory Authority (TCRA) Act was enacted, creating the sector regulator. In early 2005, a Converged Licensing Framework (CLF) was introduced, reducing the number of licensing categories and making it possible for any operator to bring services to the market by using the licensed network facilities of another provider. Prior to this change, third-party service providers had to use TTCL's facilities. Tanzania quickly experienced a change in the telecommunications market, as the country is now ranked among the most competitive telecommunications markets in Africa, and the price paid per 1GB as a percentage of the average monthly income is also one of the lowest in the continent. For more information, check out the A4AI's Good Practices Database **(A4AI, 2019e)**.

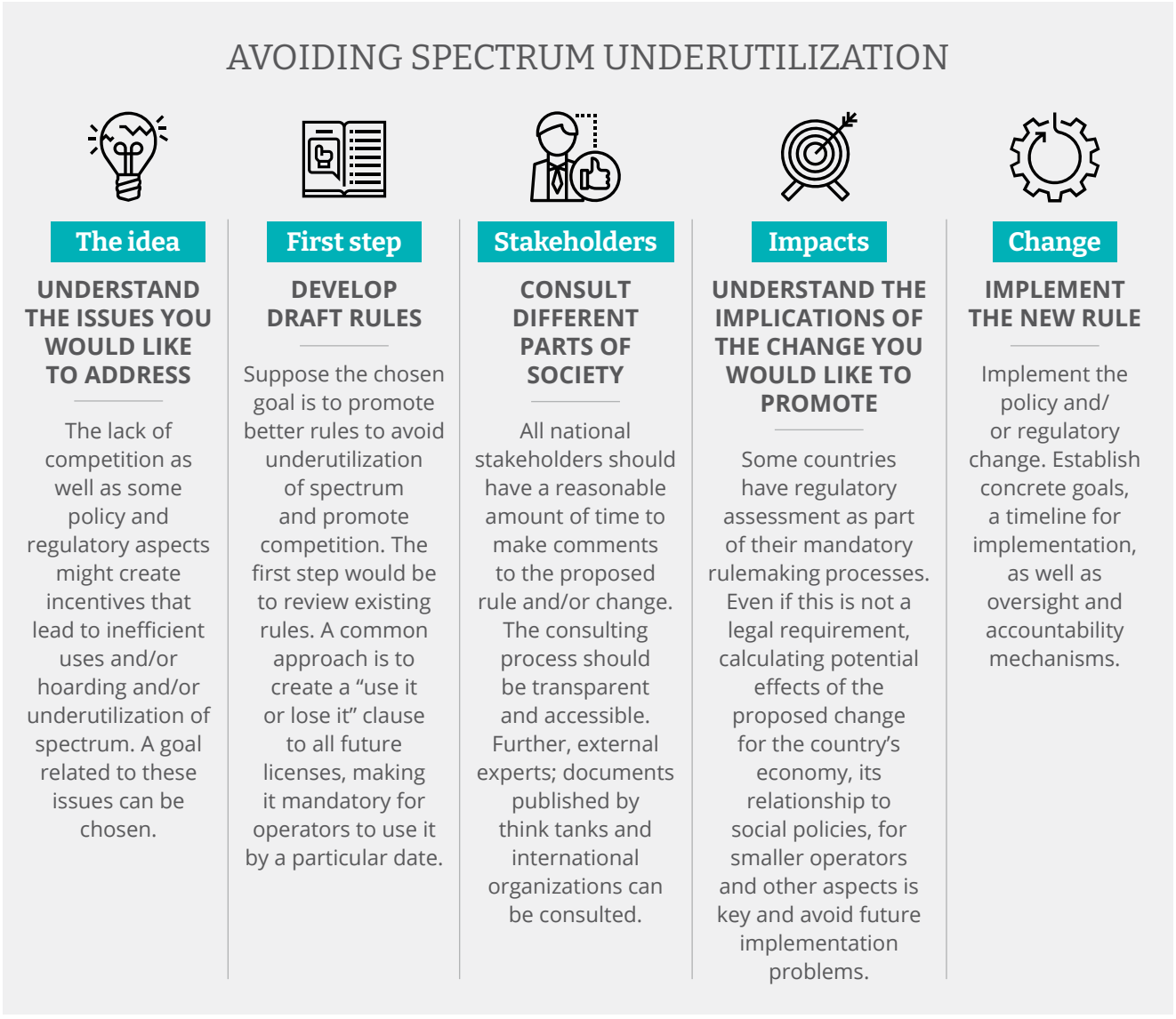

Figure 4: Visualizing how the recommendations are implemented. **Source: A4AI**

D Daily use

Using the internet daily is a threshold that crosses all the above cited thresholds. Accessing a smart device is crucial for daily use. Having adequate speed that supports different types of use, and having amounts of data that enable the enjoyment of a wide variety of contents and services, are also key. Thus, all other recommendations are ultimately targeting the daily use of the internet. Daily use is crucial, for example, to use online public services such as online education. The following recommendations allow for such a goal to be reached.

Immediate/Short-Term Actions

- **Foster digital literacy and skill-building.** Ensure that people have the right skillset to enjoy the benefits of connecting daily. As technologies evolve, new skills are needed. Fostering digital literacy also means educating and empowering citizens to make the right choices and understand the implications of using the internet for their privacy, security and digital rights. Risks are becoming more complex than they were a decade ago, while the number of activities that can be done online has rampantly increased over the years. Further, it is important to recognize the existence of gender gaps related to digital access, adoption and use, as mentioned above. Gender equality is also closely related to having the adequate skills to be part of society culturally, economically and in all different parts of it.
- **Foster the development of local content.** Basic literacy programs should target at least one person per household and focus on supporting the creation of local content and the development of a digital contents' ecosystem **(Broadband Commission, 2019)**. USAFs can foster local communities and content creators to create content adapted to the local languages, local realities and contexts. This would help communities maintain their own cultural identity and contribute towards a better understanding and appreciation of the benefits that connectivity can bring.

Medium/Long-Term Actions

- **Create mechanisms to track regulatory and policy impact.** Tracking the actual implementation of policies and regulations is key to achieving the expected goals. While this would be a recommendation to any other sectors, it is even more important in the case of sectors that have been developing so quickly and have a direct impact on the development of countries and society as a whole.

Public Access and daily use in Southeast Asia

The Governments of Malaysia, Thailand, Philippines, Indonesia and Vietnam have been deploying and funding options of public access to ICTs, supporting the goal of daily use. In the case of Thailand, "Digital Community Centres" are managed by a "community champion" and include not only access to the internet but skill-building programs to support the development of local digital economies. In Malaysia, the "Pusat Centres" are owned and operated by licensed telecom operators but selected via a competitive process and funded by the country's universal service fund. In the Philippines, beyond telecentres, the government is also introducing public Wi-Fi hotspots. The universal service fund in Indonesia has been providing internet access on a mobile basis through large trucks or vans equipped with computers and Internet connectivity capabilities. In Vietnam, besides promoting rural public access centres, 76 per cent of the rural population is reached by Cultural Post Offices (CPOs), which provide, through a state-owned model, basic post and telecommunications services. More details about these experiences can be found at A4AI's "Guide to Southeast Asia Agenda on Public Access". [19]

19. A4AI (2019c).

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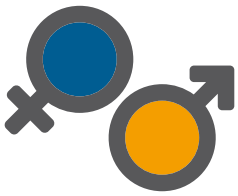


A Gender

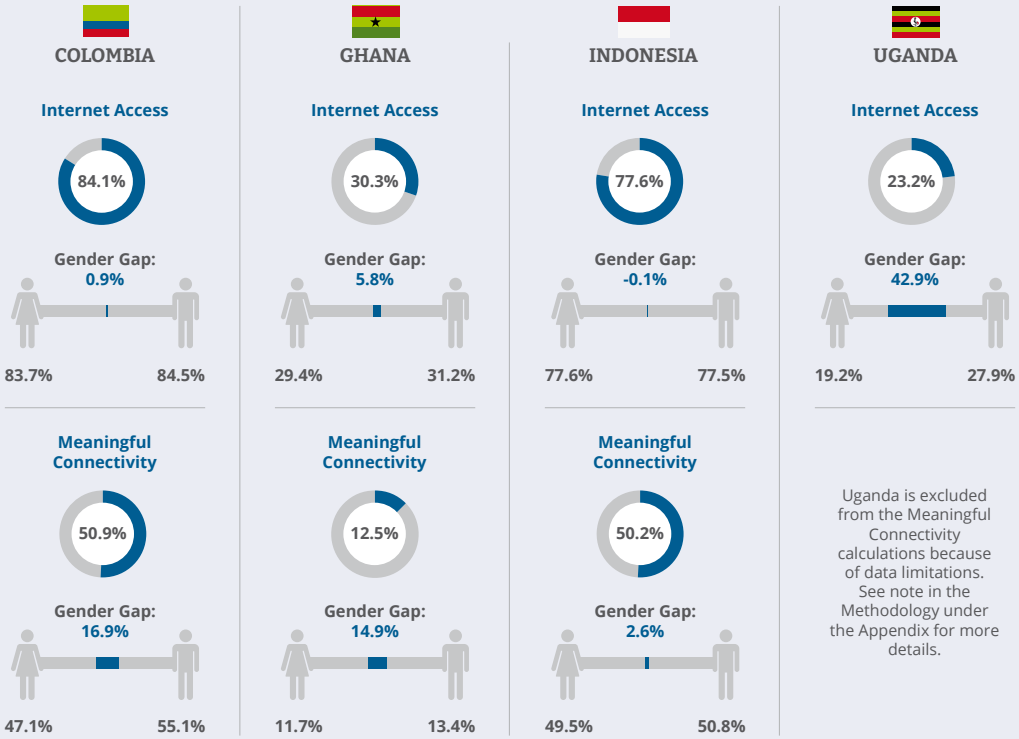
Gender and inclusion are aspects that have been included in all the recommendations thus far. It is also important to highlight the need for specific strategies to address these issues. There is a wide range of aspects related to gender and meaningful connectivity. While the gender mobile usage gap has narrowed in recent years, several gaps persist, such as the gaps in smartphone ownership and digital literacy **(GSMA, 2020)**. Gender gaps in digital literacy can affect, for example, the use of online banking and other important smartphone features **(IDB, 2020)**. According to what has been mentioned above, social norms and culture also play a role in supporting or preventing gender inequalities **(USAID, 2020)**. Here are some practical steps that can be taken towards addressing gender issues regarding meaningful connectivity.

- **Create a high-level and comprehensive gender strategy aligned with the telecom and internet policy and regulatory approaches.** Concrete and specific gender goals should be embedded in the broadband plans and ICT policies. While persistent gender gaps are starting to be recognized by policymakers, a comprehensive approach is only seen in a few countries such as Costa Rica, which has developed a gender strategy within its Ministry of Science, Technology and Telecommunications **(MICITT, 2019)**–having such a strategy allows for understanding gaps and opportunities in a consistent and thorough manner.
- **USAFs and other permanent funds should have specific goals focused on gender.** Most countries with USAFs do not explicitly establish gender goals. Such funds should be used not only for access provision but also for the promotion of digital literacy, which is crucial for full enjoyment of the benefits the internet brings, as well as the creation of content addressing issues such as cybersafety for women. Specific attention should be given to women in remote areas, as well as women from vulnerable groups. Check A4AI's Untapped Resource to Close the Gender Digital Divide report for further information **(A4AI, 2018)**.
- **Foster community networks and other women-led initiatives.** Provide special support for community networks and other initiatives governed by women or with a strong presence of women.[20]
- **Subsidize smartphone and laptop devices.** Women's cooperatives and women in low income and underserved communities and/or rural areas should receive special attention regarding meaningful connectivity. Further, business models with reduced tariff data plans for women's groups and cooperatives and/or other features and business models that enable them to communicate easily and safely. In such a model, a differentiated pricing arrangement provided by operators exists and is offered to persons associated with a particular closed group.

20. The USAID has been supporting various women-centric programmes over the past years. The WomenConnect Challenge (WCC) has been supporting various initiatives since 2018. For example, "WCC grantee AFCHIX is creating four female-led community networks (CNs) to bring Internet services to their home communities where network connectivity was either non-existent or too cost-prohibitive to be accessible". See https://www.usaid.gov/sites/default/files/documents/15396/ClosingGenderDigitalDivide_Round1r.pdf For more information on the WomenConnect Challenge (WCC), see www.womenconnectchallenge.org. USAID has also partnered with Microsoft to address the gender divide. For more information, check https://www.usaid.gov/news-information/videos/w-gdp-microsoft-womens-digital-inclusion-partnership

The Gender Gap in Meaningful Connectivity

The report "Women's Rights Online Report: Closing the digital gender gap for a more equal world" **(Web Foundation 2020)** provided a set of key recommendations that are relevant to any policymakers committed to closing the digital gender divide. Based on research to assess whether and how women use the internet, it brings insightful conclusions about their experiences.[21] To advance digital equality, we need to understand not only inequalities in internet access (as the binary on/offline) but get a full understanding of how women's experiences online diverge from men. By using meaningful connectivity as the analytical framework in 3 countries, the research found that the gender gap is far greater than as measured by internet access (see table below), and the magnitude of the work that needs to be done to close the digital gender gap and fight for gender equality remains enormous. A women-centric policy approach not only requires adequate gender-based data to inform policy but also the participation and expertise of gender specialists in policy processes. For more details, see the report.



Source: A4AI 2020 | 2020 Web Foundation nationally representative household survey data in Colombia, Ghana, Uganda and Indonesia

Uganda is excluded from the Meaningful Connectivity calculations because of data limitations. See note in the Methodology under the Appendix for more details.

B Inclusion

Thinking about universal access also means understanding contextual needs. The case of persons with disabilities, for example, demands specific attention. Although important legal and political instruments are in place, such as the **UN Convention on the Rights of Persons with Disabilities**,[22] which entered into force in 2008, gaps related to access and usage remain. Principles such as the **"universal design"** and **"accessibility"** and the provision of access to **assistive technologies** should be embedded in policies related to connectivity. Indeed, "with the increased focus on mobile devices and other situational limitations, mainstream interests are motivating development of solutions that can inform advances in assistive technologies and other solutions for people with disabilities" **(Henry et al., 2014)**.[23]

21. The 2020 "Women's Rights Online Report: Closing the digital gender gap for a more equal world" has surveyed almost 10,000 women and men across Colombia, Ghana, Indonesia and Uganda. See http://webfoundation.org/docs/2020/10/Womens-Rights-Online-Report-1.pdf World Wide Web Foundation (2020).
22. United Nations. Convention on the Rights of Persons with Disabilities (CRPD). www.un.org/development/desa/disabilities/convention-on-the-rights-of-persons-with-disabilities.html
23. Check, moreover, World Wide Web Consortium - W3C's work on "accessibility, usability, and inclusion", and their work on the "rationale for organizations to address accessibility". W3C Web Accessibility. Web Accessibility Initiative (WAI). "The Business Case for Digital Accessibility".

KEY STAKEHOLDERS AND THEIR ROLES

04

The description below provides examples of the roles of the different types of stakeholders involved in the process of reaching meaningful connectivity, which will not be possible without a concerted effort between various stakeholders.

KEY STAKEHOLDERS AND SOME OF THEIR ROLES

Governments

- Understanding that fostering internet connectivity is a key element for socio-economic development
- Establishing clear goals / timelines and being accountable
- Promoting transparency and participatory processes
- Creating and enforcing rules and regulations / evaluating policies
- Collecting disaggregated data and protecting personal data

Private sector / companies

- Respecting consumer rights, compliance and transparency
- Contributing to the public dialogue
- Creating / delivering / maintaining services and products that are safe, private and resilient

Academia

- Researching and evaluating policies and regulations
- Predicting the future

Civil society

- Overseeing the public and private sectors and advocating for changes

International Development Organisations and MDBs

- Serving as trusted advisors / knowledge partners
- Lending money with the focus of promoting development

Source: A4AI

A Governments

Understanding that fostering internet connectivity is a key element for socio-economic development

Governments should recognize that fostering meaningful connectivity provides benefits that go beyond ICT access to citizens. Indeed, it is a tool that is crucial for socio-economic development. All sectors are now dependent on connectivity, as well as education, health and several dimensions of society. Widening the connectivity gap in comparison to other countries and/or regions in the world has a direct impact on widening the development gap.

Establishing clear goals/timelines and being accountable

Governments are the ones responsible for the policymaking and regulatory processes, and the sense of urgency to promote meaningful connectivity has become even more evident with the COVID-19 crisis. Nevertheless, several countries are still lacking clear policy and regulatory goals towards addressing meaningful connectivity thresholds. In some cases, goals exist, but accountability is lacking. Accountability means observing and complying with the goals that were set in policies. Lack of accountability might mean, for example, making use of USAFs resources towards purposes that are not related to the primary goals of the funds. Mechanisms should be in place to avoid such behaviours to happen.

Promoting transparency and participatory processes

Governments should be transparent, accountable and responsive to the demands and requests made by the population. Transparency means, for example, disclosing the data and resources used for choosing policies, rules and regulations. Participatory processes are crucial for creating legitimate policies. Engaging various stakeholders is also part of the challenge of policymakers and regulators. Meaningful connectivity affects all parts of society, and for this reason, a wide variety of stakeholders should be heard and included in the policymaking processes.

Enforcing rules and regulations / evaluating policies

Enforcement is a key role of any government. If operators are throttling traffic, for example, and doing so against established rules, mechanisms should be in place not only to make such conduct stop but also to establish proportionate penalties to avoid repetition of the same or other conducts. Enforcement might also rely on ex-post assessment, which generally happens in competition related issues.

Evaluating policies is also crucial for their success and continuity. There are several challenges deriving from the way the telecommunications and internet sectors are developing since systems in place are not always ready to address all challenges that arise. Further, since the internet has become so crucial for all aspects of society, regulatory evaluations should not be purely based on economic grounds but also on other drivers such as the continuity and/or availability of internet and telecommunication services. All these aspects should be considered by enforcement and evaluation authorities.

Collecting disaggregated data and protecting personal data

One of the challenges for policymakers and researchers trying to design good targeted policies and regulations is to have accurate and disaggregated data on the situations that need to be tackled. Disaggregated data related to **gender** and **rural/urban divides** in access and connectivity are two of the main examples.[24] Policymakers should find ways to get such disaggregated data and use it for the purpose of improving policy making. Recent trends, such as the use of big data in policymaking, might positively impact the ability of governments to acquire such goals.

24. See A4AI et al (2020).

B Private sector/ Companies

Respecting consumer rights, compliance and transparency

Operators should respect the consumer rights already established in each country, be fully transparent in regards to their practices and be compliant to all regulations they are subjected to. Active and passive transparency are key and should be strengthened. For example, connection speeds should be made available, as well as any traffic management practices that might impact the way certain services and/or contents are received by the end users.

Contributing to the public dialogue

Engaging in public consultations; contributing to standard-setting processes; and respecting the opinions of competitors. These are some of the roles of the private sector towards reaching meaningful connectivity.

Creating services and products that are safe, private and resilient

Companies should develop, to the extent possible, products and services that respect the privacy and the security of users. Concepts like "privacy-by-design" and "privacy-by-default" **(European Commission, 2021)** should be followed, even when they are not strictly mandated by the country's regulatory framework. Operators and internet companies should, for example, refrain from collecting data from users beyond what is strictly needed for their operations. Further, security is a key issue. As new geopolitical disputes arise and some of the main ones relate to the telecommunications and internet sectors, the issue will increasingly become relevant, and countries need to understand how to protect their critical infrastructures.

C Academia

Researching and evaluating policies and regulations

Academia plays a key role. Meaningful connectivity requires that all stakeholders understand the complexities of designing and implementing policies with resources and budgets that are generally smaller than they should be. The abilities of academia of researching and critically analyzing the past and present is also crucial and serve as valid resources for all stakeholders.

Predicting the future

The academy analyzes the world through rigorous analysis based on theories and methodologies. Such independent analyzes serve as a powerful way of understanding the course of different socio-economic dynamics.

D Civil Society

Overseeing the public and private sectors and advocating for changes

The oversight role of civil society lies in its ability to show the social and political implications of actions or omissions by the governments, making such implications visible to larger parts of society. One of the ways such oversight roles can be strengthened is through an establishment of collaborations and/or coalitions between different organizations. Further, civil society is a key part of multistakeholder governance, which is a way to make policy decisions in regards to internet and telecommunications policies by engaging involved stakeholders from all sectors. According to the Internet Society, multistakeholder governance is informed by "opened-ended unleashed innovation"; (ii) "decentralized governance institutions"; and (iii) "open and inclusive processes (human)" and has been considered effective, and which has been used both at the national and international levels.[25]

25. See ISOC (2016).

E International Development Organizations and Multilateral Development Banks (MDBs)

Serving as a trusted advisors/ knowledge partners

Many development organizations were founded right after the Second World War as a way to help countries rebuild their infrastructures and societies. Over the years, several national, regional and international organizations have additionally started providing funding for development projects. Other organizations have always been serving as references of knowledge and content, as they never had the ability to support countries through financial resources. International Development Organizations and Multilateral Development Banks (MDBs), therefore, have increasingly started serving as trusted knowledge partners. These organizations are able to convene various countries and either agree on or establish aligned policies and goals. Further, the way this is done has shifted from top-down to a different approach in which countries are able to demand support from these institutions and institutions with their own limitations.

Lending money with the focus of promoting development

The telecommunications sector used to be considered out of scope for many multilateral development banks (MDBs), as the private sector was expected to have the proper incentives to meet the local demands. In recent years, however, it has become clear that the access, adoption and usage gaps would not be addressed without the support of governments. Such governments frequently rely on MDBs to help them design development projects for such fields, although MDBs could invest a much larger percentage of their total commitments in ICT projects.[26]

26. As of 2018: "despite increasing recognition of the importance of digital access to the realisation of the Sustainable Development Goals, MDBs are investing just 1% of their total commitments in ICT projects". (A4AI, 2018)

An example of the role of each stakeholder in the policy and rulemaking process

The Example

If the goal is to address the gender gap in meaningful connectivity, what is the role of each stakeholder?

Governments

Establishing clear goals / timelines and being accountable
Creating a comprehensive gender focused policy, securing resources and ensuring gender goals are time-bound and clear.

Promoting transparency and participatory processes
Promoting active and passive transparency. Receiving feedback from various civil society groups, academia, citizens etc.

Creating and enforcing rules and regulations / evaluating policies
Establishing evaluation and enforcement mechanisms that account for gender gaps specifically.

Collecting disaggregated data and protecting personal data
Making efforts to understanding disparities in gender depends on disaggregated data. Nonetheless, personal data should be protected and this requires both governance and technical efforts.

Private sector / companies

Respecting consumer rights, compliance and transparency
Ensuring advertisements are not misleading and/or misrepresenting women; refraining from and/or being actively transparent about decisions that might affect consumers e.g. filtering specific contents.

Contributing to the public dialogue
Participating in public consultations about gender policies; sharing relevant knowledge/contents with policy makers.

Creating / delivering / maintaining services and products that are safe, private and resilient
Supporting women through specific services and/or applications and/or business plans; providing literacy training.

Academia / Civil Society

Evaluating policies and regulations; predicting the future and advocating for changes
Providing evidence based gender analysis that can support policy development; assessing future demands related to access, literacy and other gender gaps; actively pushing governments for a concrete stance in regards to gender.

Overseeing the public and private sectors
Critically assessing the work developed by the public and private sectors and keeping them accountable through various mechanisms, such as ensuring gender goals are met.

International Development Organisations and MDBs

Serving as trusted advisors / knowledge partners
Providing international evidence of the benefit of gender policies; convening various governments and types of stakeholders to discuss gender issues.

Lending money with the focus of promoting development
Adding the component of gender to each project and using meaningful connectivity as a reference to all ICT related projects.

CONCLUSION

By bundling everyone together, we mask the true nature of the digital divide — which lies not only between the connected and the unconnected, but in the starkly varied online experience people have.

It is no longer sufficient to simply consider how many people are online. To improve internet access and tackle the digital divide, our policy goals must adapt to consider the quality of connectivity available to all.

GLOSSARY

A4AI Alliance for Affordable Internet
CapEx Capital Expenditures
COVID-19 Coronavirus Disease 2019
GSMA GSM Association
ICT Information and Communication Technologies
IDB Inter-American Development Bank
OpEx Operational Expenditures
RBPF Rural Broadband Policy Frameworks
SDGs Sustainable Development Goals
UN United Nations
USAF/USF Universal Service and Access Funds
WEF World Economic Forum
WF The World Wide Web Foundation

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