A4AI ALLIANCE FOR AFFORDABLE INTERNET

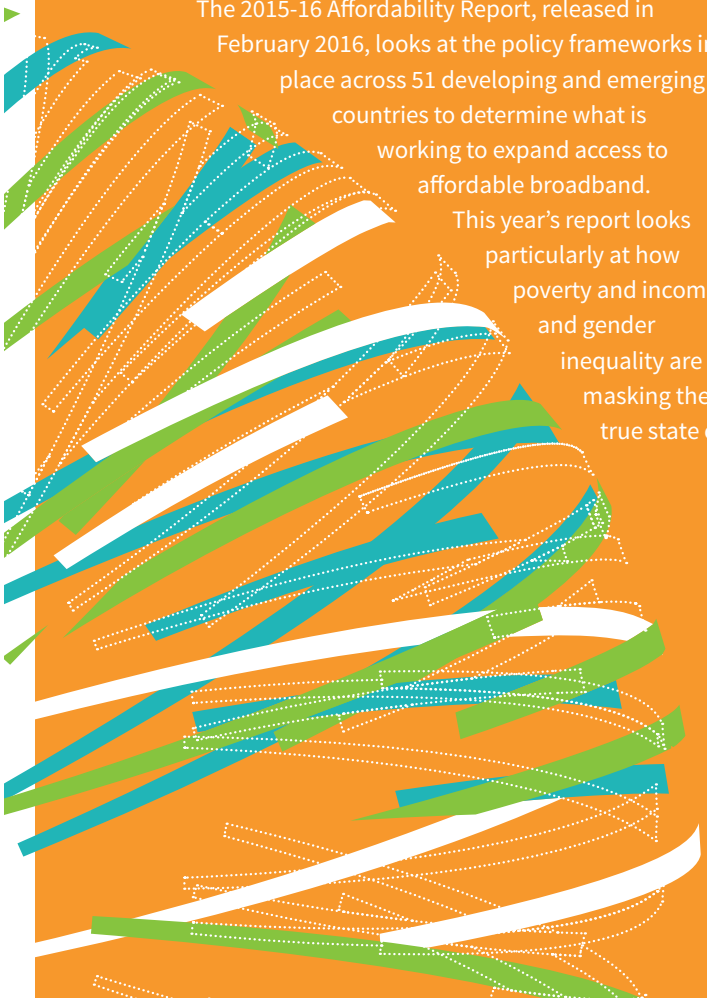
AFFORDABILITY REPORT 2015/16

www.a4ai.org

WELCOME

Welcome to the Affordability Report – an in-depth annual research initiative produced by the Alliance for Affordable Internet. The report is part of our ongoing efforts to understand why some countries have succeeded in making Internet access more affordable, accessible and universal, and what others can do to catch up quickly.

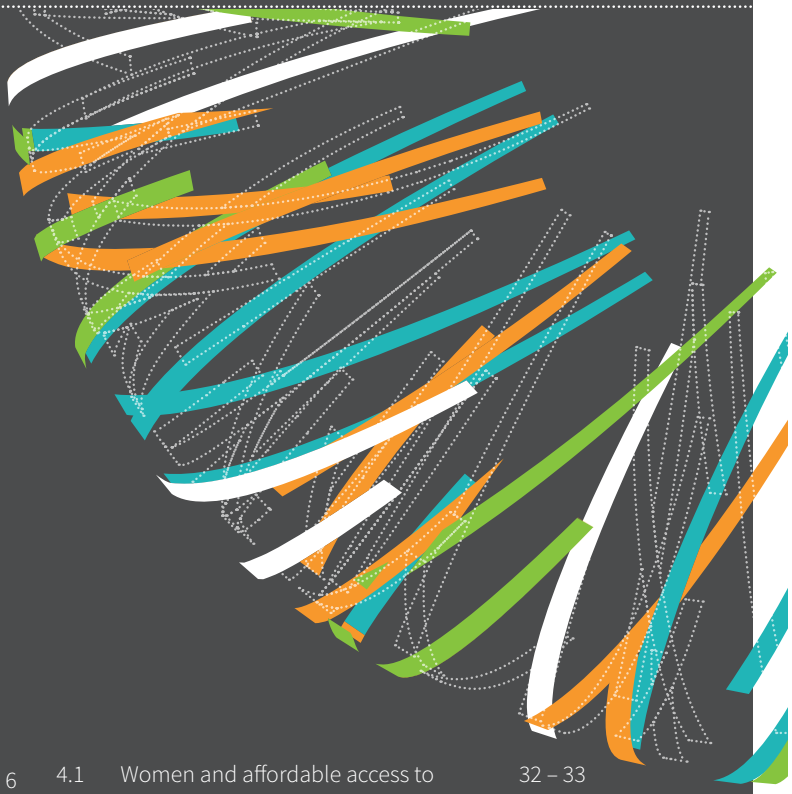
The 2015-16 Affordability Report, released in February 2016, looks at the policy frameworks in place across 51 developing and emerging countries to determine what is working to expand access to affordable broadband. This year's report looks particularly at how poverty and income and gender inequality are masking the true state of affordability. What actions must policymakers take to overcome these barriers to access and make affordable universal access a reality?



We hope you enjoy this year's report, and that the findings contained within prove valuable to your work. We also encourage you to check out our dedicated online portal at www.a4ai.org/affordability-report, where you'll find an interactive data explorer covering all 51 countries.

To achieve the new global goal of affordable and universal Internet access by 2020 will require bold and collective action to advocate for the adoption of a new "1 for 2" affordability target, gender-responsive broadband and ICT policies, and greater focus on public access solutions. We hope you'll join us in our efforts to bring the life-changing benefit of affordable Internet access to billions more around the globe.

Sonia N. Jorge
Executive Director, A4AI



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"Everyone should have access to the Internet." So concluded the 193 member states of the United Nations when they agreed on a new set of Sustainable Development Goals (SDGs) in September 2015. Underscoring the potential of the Internet to contribute to global development and empowerment, SDG target 9c calls for universal and affordable access in the world's least developed countries by 2020.

Reaching this goal will require bold and immediate action. On our current trajectory, A4AI predicts that we'll only hit this target in 2042 – 22 years after the target date set by the global community. Without urgent reform, in 2020 we will see just 16% of people in the world's poorest countries, and 53% of the world as a whole, connected. We won't just miss the target, we'll miss by a mile. This connectivity lag will undermine global development across the board, contributing to lost opportunities for economic growth and denying hundreds of millions access to online education, health services, political voice, and much, much more.

Intended as a contribution to help leaders set us on a path to achieve this goal, the 2015-16 Affordability Report looks at the affordability environment across 51 countries, considers the effects of poverty and income inequality and takes a close look at gender inequality in access.

Top 5: Overall ADI Rankings	Top 5: Least Developed Countries
Costa Rica	Rwanda
Colombia	Uganda
Turkey	Gambia
Malaysia	Myanmar
Peru	Tanzania

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The Affordability Drivers Index

Our Affordability Drivers Index (ADI) looks at the policies, incentives, and infrastructure investments in place across 51 developing and emerging countries, and assesses the extent to which they are being implemented. This includes policies which we believe drive progress towards more affordable Internet. Countries that do well on the ADI also tend to have lower broadband prices for their citizens, although the ADI does not measure price directly.

Colombia and Costa Rica once again top the rankings, with scores that reflect improved infrastructure and access indicators. Myanmar achieved the largest jump in its ADI ranking, moving up nine places to 27th position, thanks to the successful opening of the previously state-owned telecoms market to new operators (2013), and the recent introduction of broadband services (2014). However, on the whole, scores on the ADI are low, meaning much hard work lies ahead for countries to create the right environment to drive prices down and connection rates up.

Poverty and Inequality

Despite falling prices, **not one of the 51 countries included in our analysis has met the 5% affordability target for those living in poverty.** This is not an issue affecting small numbers of people – 1.9 billion people in the countries covered by the ADI live in poverty (i.e., under $3.10 per day).

Income inequality also plays a role, and may make progress appear faster than it is. Although 25 of 51 countries have met the UN's 5% affordability target for those earning the average national income, just nine of these countries meet the affordability target for the bottom 20% of income earners. The means that millions continue to be priced out of the digital revolution in countries which have met the 5% target. However, when costs drop to 2% or less of monthly incomes, access tends to be affordable for all income groups.

While the report does not consider device costs in detail, it does note that the cost of getting an internet-enabled phone can play a large role in determining who can afford to be online. **When we add the price of a hypothetical low-cost US$48 smartphone to the price of a 500MB broadband plan, the total population in almost all countries that can actually afford both a broadband plan and a low-cost smartphone drops by 20%. We also note that 500MB per month offers only very limited opportunities to use the Internet meaningfully.**

The Gender Gap in Access

As stark as the affordability picture appears for those living in poverty and at the bottom of the income pyramid, the cost to connect is even higher for women in these groups. The gender wage gap diminishes the ability of women – and female-headed households in particular – to afford Internet access. Recent research by the Web Foundation shows that poor urban women are 50% less likely to be connected to the Internet than men in the same age group with similar levels of education and household income.

SDG targets 9c (affordable universal access) and 5b (enhancing the use ICT to promote the empowerment of women) might be found under different overarching goals, but they are inextricably linked. Universal access cannot be achieved without concrete and focused efforts to bring women online, just as full gender equality cannot be achieved without enabling women's access to an affordable, open, and safe Internet. Access to education, and skill building and training opportunities is key to support women's effective participation in a digital society, and must be considered and integrated as part of a comprehensive strategy.

Recommendations

1. **Develop and work toward a more ambitious affordability target.** We propose a new "1 for 2" target: 1GB of data priced at 2% or less of average monthly income.
2. **Reduce the cost of mobile phones and ICT devices.** Governments must work to reform tax and patent regimes so that ICT device costs can come down. They will also need to incentivise the

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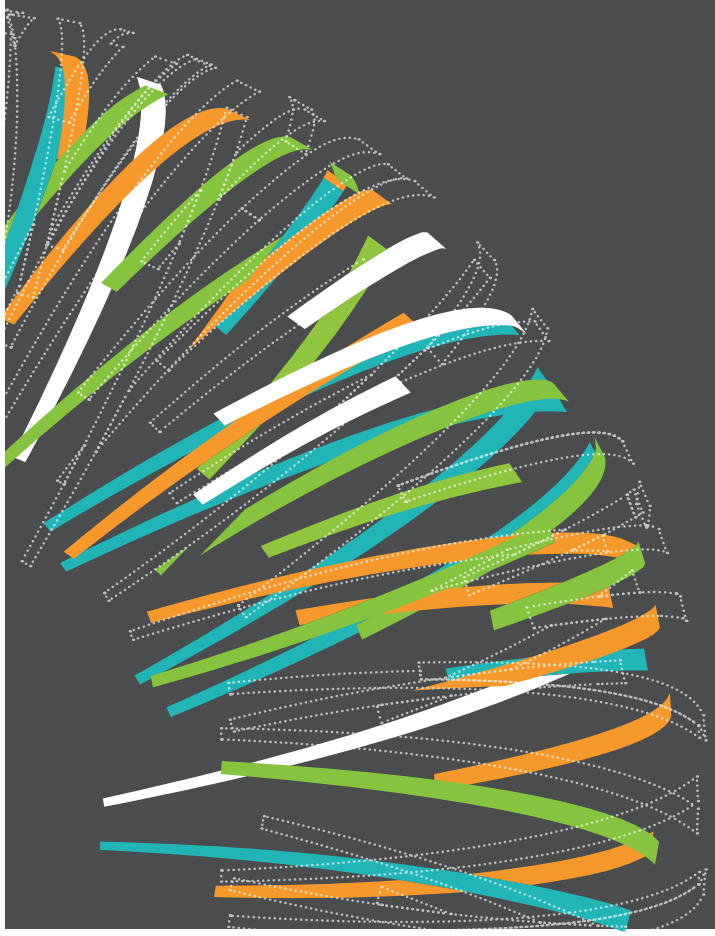
private sector to develop high quality, low-cost smartphones.

3. **Increase investment in and availability of public, subsidised access.** There are always groups that will be excluded by the market and for whom access costs will still remain out of reach. Public access via libraries, community centres, and municipal WiFi schemes – funded by well-run Universal Service and Access Funds – is critical to deliver access to these populations.
4. **Create specific, time-bound targets to close the gender digital divide**. Across much of the developing world, the gender gap in Internet use is staggering – for example, there is just one woman online for every three men online in Kampala, Uganda. Governments must set concrete targets to achieve gender equity in digital adoption, skills and empowerment, and back these with specific programs and budget allocations. Gender-disaggregated data must be collected to monitor progress. This should be done through more gender responsive national broadband planning.
5. **Integrated approach to policymaking.** Getting everyone online requires balanced policies that address demand as well as supply; regulation as well as competition; fixed-line as well as mobile broadband; public access as well as individual subscriptions. Government ministers and others must spearhead efforts to convene all actors and develop a clear, coherent plan for sequencing reforms and stimulating the investments needed to enable reduced costs and wider access. Donors and aid agencies must come to the party with financial and practical support.

"EVERYONE SHOULD HAVE ACCESS TO THE INTERNET."

1

INTRODUCTION



1 INTRODUCTION

"Everyone should have access to the Internet." That was the agreement in September 2015, when the 193 member states of the United Nations agreed on a new set of Sustainable Development Goals (SDGs), which set the global development agenda for the next 15 years. With an explicit target in SDG 9c of universal and affordable access across the world's Least Developed Countries (LDCs) by 2020, it implicitly assumes universal and affordable access at the global level – access for everyone, everywhere by 2020. Yet on current trends, it will take LDCs nearly 30 years to reach this target.

To reach this goal will require bold action. Unless we dramatically accelerate progress, only 16% of people in the world's poorest countries, and 53% of the world as a whole, will be connected by 2020. This connectivity lag will not only result in a huge amount of lost economic growth – it will also deny hundreds of millions of people access to education, health services, political voice, and employment opportunities through the Internet.

This report identifies critical barriers that must be overcome in just four short years to achieve the SDG connectivity target, and sets out the steps governments, regulators, businesses and civil society organisations must take now.

The status quo

Today, over four billion people – some 56% of the world – are still not using the Internet. The majority of this offline population are women. Most live in LDCs and other developing countries.

One of the key obstacles countries face in the race to expand access is affordability – the vast majority of those without Internet access today are offline simply because they cannot afford a basic connection. For Norwegians, constant access to fast, uncapped broadband costs little more than the latte many buy every day on the way to the office. For Nigerians, just 500MB of mobile prepaid data can cost more than they spend on their children's education.

The UN Broadband Commission defines broadband as affordable if an entry-level (500MB) package is available at 5% or less of average monthly income (i.e., GNI per capita). Yet, in 2014, the average cost of a 500MB prepaid bundle was 15.2% of GNI per capita in LDCs and 6.5% across developing countries.

Internet prices appear to be dropping, and affordability, as defined by the UN, is increasing – last year the ITU reported that 67 out of 116 developing countries had actually achieved the UN's 5% affordability target. Why, then, is growth in Internet use actually slowing? Use across the globe grew by 7.4% in 2014, but just by 6.9% in 2015.

What is holding back progress?

This report argues that growth in connectivity is lagging due to the failure of policymakers to tackle the combined effects of poverty and income inequality.

While poverty on the whole is falling (both in absolute numbers and as a percentage of population), there are still over two billion people living in absolute poverty across the developing world (i.e., on less than US$3.10/day), many of whom live in LDCs. For these people, affordable Internet access remains a very distant reality.

Economic growth in the developing world has not been evenly distributed. According to the UN, more than 75% of developing country households live today in societies where income is more unequally distributed than it was in the 1990s. When a few people earn a lot while others earn very little, the "average" per capita income – the benchmark the UN uses to assess affordability – will be much higher than what most people actually

[1] For purposes of this report, we define "universal access" as an Internet penetration rate of 90%. This definition draws on the WSIS declaration, which defines universal access as "Universal, ubiquitous, equitable and affordable access to ICT infrastructure and services".

[2] ITU (2015), Measuring the Information Society Report 2015. http://www.itu.int/en/ITU-D/Statistics/Pages/publications/mis2015.aspx

[3] ITU (2015), Measuring the Information Society Report 2015. http://www.itu.int/en/ITU-D/Statistics/Pages/publications/mis2015.aspx

[4] Throughout this report, all price measurements for 500MB plans are for prepaid, mobile plans (unless otherwise noted). All price measurements for 1GB are for postpaid, computer-based plans (unless otherwise noted).

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earn. In South Africa, for example, the average income is US$6,800 (GNI per capita, 2014), but 60% of the population actually earn less than half of that amount. In practice this means that for almost half the South African population, a seemingly affordable mobile Internet connection (priced at about 1.5% of "average" monthly income) actually costs anywhere between. 7-15% of their income. The idea of a national "average" income is further skewed by gender inequality in earnings. This means that a nation can meet the UN's top-level affordability target, but still see huge swathes of its people unable to afford to connect to the Internet. We explore these themes and their impacts in detail in Chapter 3.

The time for action is now

Time is short. In order to bring over four billion people online in under five years, we must act now, and at a scale and speed never seen before. Governments, the private sector, donors, and civil society must come together to take the bold steps that will enable those offline to afford and access a free and open Internet.

The digital divide is a poverty and gender divide. The very high cost of data and devices hits hardest those who earn the least, particularly women and rural dwellers. Unless specific steps are taken to make the Internet affordable and accessible to these groups, blanket initiatives to *"connect everyone"* risk deepening existing male/female and urban/rural disparities.

Achieving the universal and affordable access called for in SDG 9c will require specific and urgent measures to overcome the barriers presented by poverty and income inequality. These include:

1. **Develop and work toward a more ambitious affordability target.** To achieve universal access, we must drive prices well below the current established target of entry-level (i.e., 500MB) broadband priced at 5% or less of average monthly income. We propose a new "1 for 2" target: 1GB of data priced at 2% or less of average monthly income.

2. **Reduce the cost of mobile phones and ICT devices**. For Internet access to be affordable to those currently priced out, it is important to reduce device costs. Prices of mobile phones and other devices can be inflated by high import taxes and excessive patent and royalty fees. Governments must work to reform tax and patent regimes so that ICT device costs can come down, and will need to incentivise the private sector to develop high-quality, low-cost smartphones.

3. **Increase investment in and availability of public, subsidised access.** A strong, competitive broadband market can go a long way towards driving prices down and – in tandem with cheaper devices – connecting the unconnected. However, there are always groups that will be excluded by the market and for whom access costs will still remain out of reach. Public access via libraries, community centres, and municipal WiFi schemes – funded by well-run Universal Service and Access Funds – is critical to deliver access to these populations.

4. **Create specific, time-bound targets to close the gender digital divide.** Across much of the developing world, the gender gap in Internet use is staggering – in Kampala, Uganda, for example, there is just one woman online for every three men online. Yet acknowledgement of this digital gender gap is largely invisible in national broadband plans and in official statistics. Governments must set concrete targets to achieve gender equity in digital adoption, skills, and empowerment, and must support these targets with specific programmes and budget allocations. Gender-disaggregated data must be collected to monitor progress.

[5] ITU (2015), Measuring the Information Society Report 2015. http://www.itu.int/en/ITU-D/Statistics/Pages/publications/mis2015.aspx
[6] ITU (2015), Measuring the Information Society Report 2015. http://www.itu.int/en/ ITU-D/Statistics/Pages/publications/mis2015.aspx
[7] World Bank (2015). Poverty Overview. http://www.worldbank.org/en/topic/poverty/overview

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5. **Integrated approach to policymaking.** Getting everyone online requires balanced policies that address demand as well as supply; regulation as well as competition; fixed-line broadband as well as mobile; public access as well as consumer affordability. This demands cooperation across ministries, between geographic units (local, state and national), and among private sector stakeholders, whose business interests may be very different. Government (e.g., the communications minister or the office of a head of state) must take the lead in convening these actors and developing a clear, coherent plan for sequencing reforms and marshalling the investments needed. Donor agencies and governments must support this process by stepping up investment in broadband infrastructure and low-cost connectivity models, as well as in digital skills, local content, and public access initiatives.

THE TIME FOR ACTION IS NOW

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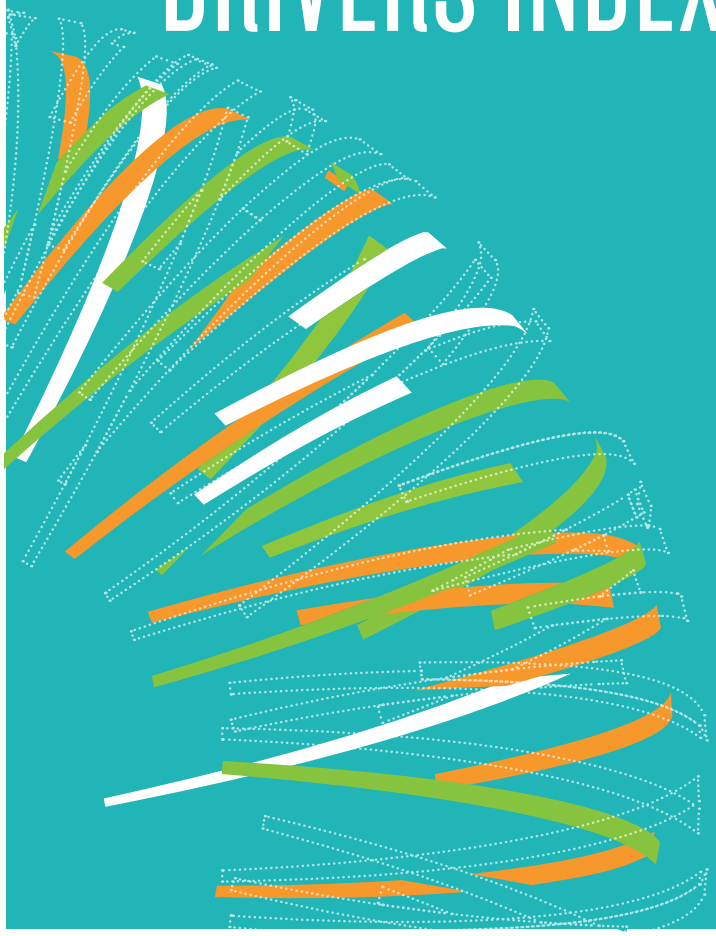
THE AFFORDABILITY DRIVERS INDEX (ADI)



2 THE AFFORDABILITY DRIVERS INDEX (ADI)

Overcoming the affordability challenge is critical to achieving universal access. The technology to provide low-cost access is widely available, with new technological advances emerging all the time. Yet outdated or ill-conceived policies that artificially inflate costs – for example, by inhibiting competition or imposing cumbersome licensing requirements – contribute to prices that remain stubbornly high.

Efforts to expand access must be driven by a flexible, progressive set of policies and regulations that enable consumer prices to drop, quickly. What are these policies, who has them in place, and how are they working?

Our Affordability Drivers Index (ADI) looks at the policies, incentives, and infrastructure environment in place across 51 developing and emerging countries, including those policies which we believe drive progress towards more affordable Internet. It then assesses the extent to which these policies are being implemented. The ADI deliberately does not measure price directly – but there is a correlation between better scores on the ADI and lower broadband prices relative to income. In short, countries that do well on the ADI also tend to have lower broadband prices for their citizens, and are likely to be able to drive prices down further and faster in the future.

Though the past year has seen some marginal progress on the affordability front, the generally low scores across the board on the ADI show just how far we still have to travel on the road to universal access. On our current trajectory, we will not even come close to reaching the goal of universal access by 2020. Policy reform is a necessary and critical first step toward expanding access.

In this section, we look in more detail at what countries are doing to make Internet access more affordable for more of their people, and which of these policies seem to be working.

WHAT IS THE AFFORDABILITY DRIVERS INDEX (ADI)?

This year, the A4AI Affordability Index has been renamed the Affordability Drivers Index (ADI). Why? We feel this name more accurately describes what the Index is measuring – that is, the combination of policy measures and other vital factors that determine how likely a country will be able to drive broadband prices down.

The ADI examines factors across two sub-index areas – infrastructure and access:

1. The infrastructure sub-index measures the current extent of infrastructure deployment and operations, alongside the policy and regulatory frameworks in place to incentivise and enable cost-effective investment in future infrastructure expansion. Variables included in this sub-index include, for example, the amount of international bandwidth available in a particular country, and an assessment of a nation's spectrum policy.
2. The access sub-index measures current broadband adoption rates and the policy and regulatory frameworks in place to encourage growth and ensure provision of affordable and equitable access. This sub-index includes variables such as current Internet penetration rates and an assessment of the effectiveness of a country's Universal Service Funds.

Each country is scored across a range of variables within each sub-index, and is then ranked against the other countries in the ADI, with the highest scoring country receiving a score of 100 and the lowest a score of zero. (Note: Although we gathered data for 88 countries, including developed nations, we only analyse developing and emerging nations; this is why Colombia, the top-ranked country on this year's ADI only scores 65, not 100.) Higher scores indicate the existence of a combination of factors which contribute to lower industry costs and lower broadband prices, including high broadband penetration, sufficient infrastructure, and effective policies and regulations. (For more detail on the methodology used for the ADI, please see Appendix 1.)

Indeed, a higher ADI score is correlated with more affordable broadband Internet. This is illustrated in Figure 1, which shows that as the ADI score of a country increases, the price of a 500MB data plan relative to average income declines. This relationship also holds for a larger 1GB plan (Figure 2).

This year's ADI covers the same 51 countries included in our 2014-15 index and uses the same methodology as last year. However, while all the data sources were the same we did not conduct a new set of policy surveys for 2015. This was based on the assumption that policy and regulatory environments tend to change slowly, and was confirmed by a review of survey responses by several policy experts who participated in the 2014 survey (see Annex A). Thus, updates in ADI scores are based on new secondary data only.

2 THE AFFORDABILITY DRIVERS INDEX (ADI)

Figure 1. Relationship between ADI score and price of a 500MB prepaid, mobile plan (as a % of GNI per capita, 2014)

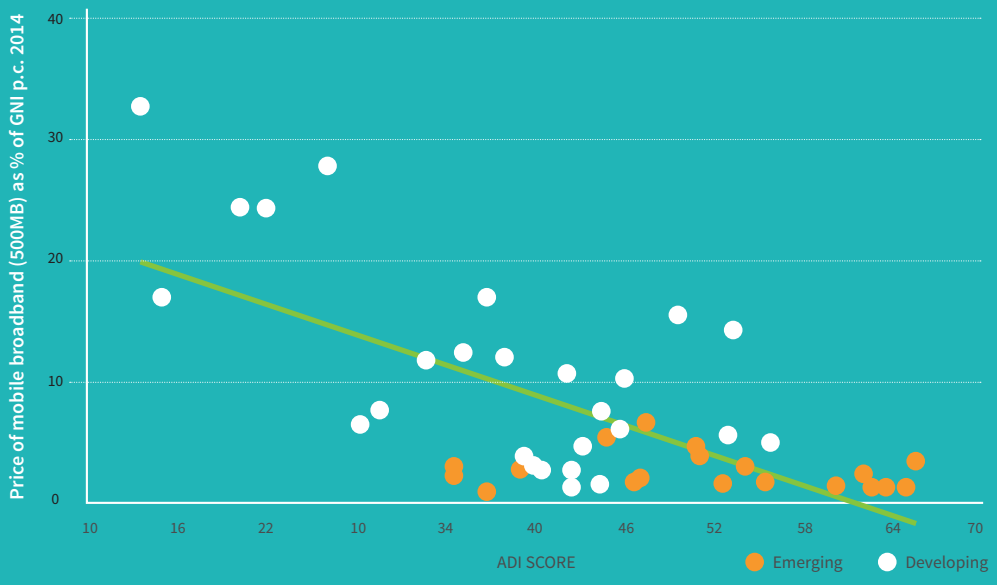
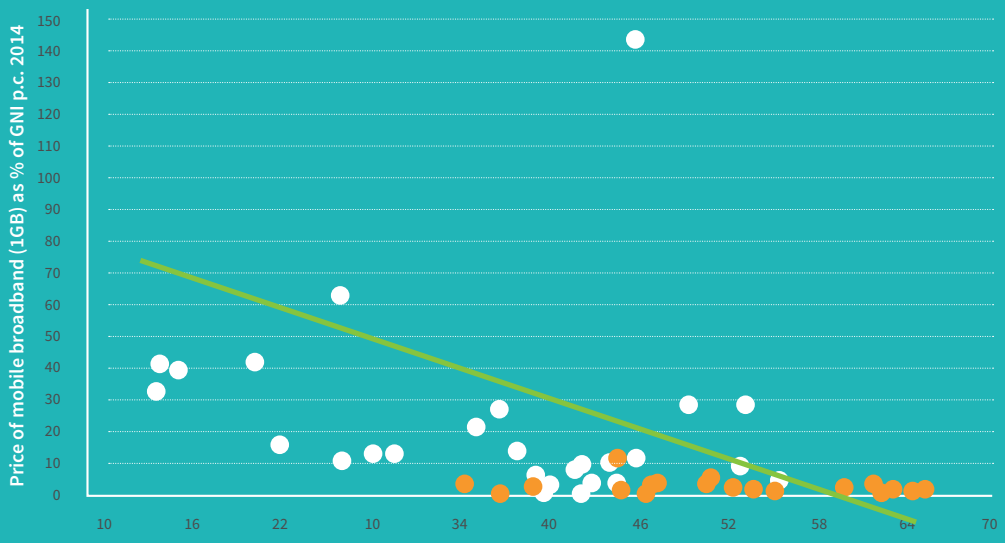


Figure 2. Relationship between ADI score and price of a 1GB postpaid, computer-based plan (as a % of GNI per capita, 2014)



2 THE AFFORDABILITY DRIVERS INDEX (ADI)

Table 1: The Affordability Drivers Index

Rank 2015	Country	Access Sub-Index Score	Infrastructure Sub-Index Score	ADI Composite Score	Rank 2014
1	Colombia	69.45	60.85	65.32	2
2	Costa Rica	78.88	50.00	64.60	1
3	Malaysia	69.57	56.69	63.28	4
4	Turkey	65.85	58.60	62.35	3
5	Peru	61.93	61.48	61.82	5
6	Brazil	59.28	60.35	59.90	6
7	Morocco	61.67	49.32	55.51	12
8	Mauritius	65.58	44.81	55.20	7
9	Mexico	56.68	51.05	53.85	14
10	Argentina	57.16	49.58	53.35	9
11	Rwanda	54.42	51.90	53.13	10
12	Nigeria	57.83	47.93	52.85	11
13	Thailand	60.72	44.13	52.39	13
14	Jamaica	59.02	42.79	50.84	16
15	Ecuador	53.99	47.35	50.60	8
16	Uganda	56.53	42.44	49.40	15
17	Dominican Rep.	53.07	41.63	47.23	18
18	Tunisia	46.80	47.11	46.83	17
19	South Africa	54.57	38.59	46.44	20
20	The Gambia	49.12	42.81	45.82	21
21	Kenya	52.00	39.27	45.48	19
22	China	47.99	41.82	44.74	23
23	Botswana	48.82	40.54	44.51	24
24	Viet Nam	56.74	32.33	44.37	22
25	Pakistan	43.60	44.97	44.11	25
26	Ghana	47.15	38.92	42.84	26
27	Myanmar	31.88	53.67	42.57	36
28	Philippines	47.83	37.07	42.24	29
29	Indonesia	45.70	39.09	42.19	27
30	United Republic Of Tanzania	43.90	40.38	41.93	28
31	India	37.85	42.88	40.12	30
32	Egypt	32.76	46.84	39.55	32
33	Bangladesh	33.73	45.04	39.13	33
34	Namibia	51.56	26.76	38.90	31
35	Zambia	41.66	34.44	37.77	35
36	Mali	36.45	37.21	36.53	40
37	Kazakhstan	44.16	29.45	36.50	34
38	Benin	32.94	37.87	35.08	41
39	Venezuela (Bolivarian Republic Of)	41.12	28.39	34.42	37
40	Jordan	46.36	23.02	34.36	38
41	Senegal	37.08	28.65	32.50	39
42	Nepal	35.33	24.47	29.48	44
43	Mozambique	38.30	18.75	28.09	42
44	Cameroon	31.10	21.79	25.97	43
45	Zimbabwe	33.48	19.12	25.83	45
46	Burkina Faso	29.74	14.99	21.82	46
47	Malawi	24.77	16.50	20.06	47
48	Ethiopia	31.07	0.00	14.88	48
49	Sierra Leone	17.06	11.69	13.70	49
50	Haiti	14.88	13.22	13.36	50
51	Yemen	0.00	1.81	0.00	51

2 THE AFFORDABILITY DRIVERS INDEX (ADI)

2.1 LATIN AMERICAN NATIONS TOP THE INDEX

Latin American countries once again dominate the ADI rankings, with six nations of the region represented in the top 10. For most countries in the ADI top 10, changes in rankings were the result of gradual changes in the underlying indicators that make up the index. In some cases, these changes were more pronounced and were the result of improvements in the infrastructure sub-index scores. This was the case in **Malaysia**, which saw significant increases in fixed broadband speeds and international bandwidth per user, in **Peru**, where international bandwidth per user almost doubled, and in **Mexico**, which saw fixed broadband speeds increase significantly.

Colombia and **Costa Rica** again top the rankings, with scores that reflect improved infrastructure and access indicators. Both countries have approached the development and implementation of new ICT policy in a comprehensive manner, and affordability in both countries has improved – the price of a 500MB plan in **Colombia** fell to just over 3% of GNI per capita and to just 1% of GNI per capita in Costa Rica. Both have made improving access to the Internet a national priority and have partnered with the private sector to build out and share infrastructure, and to ensure a healthy, sustainable market. Each country faces the same overarching challenges to connectivity found in much of the world, including poverty and large rural populations, and have maintained a clear focus on enabling connectivity for these marginalised groups with digital skills and ICT training programmes and investment in locally created content.

Colombia

Much of **Colombia's** success so far has been driven by government leadership in implementing effective policies and building partnerships within the ICT sector. Colombia's 53% Internet penetration rate is among the highest of all countries covered in this report. This can be explained in part by the government's multi-pronged strategy to improve affordability and access in the country. This strategy was outlined in the first phase of the *"*Plan Vive Digital*"* which was launched in 2010 and was described in our 2014-15 Affordability Report.

Some of the factors behind the success of the first phase of the plan include:

- Improving use of broadband through increased certification and training in digital literacy, support for teleworking, and improved e-government services;
- Better incentives for broadband adoption at all levels (such as eliminating customs tariffs and VAT on the purchase of PCs, subsidies for computers, and special subsidised tariffs for Internet access in low-income households);
- Promoting the development of the ICT sector through special loans to study ICT-related fields, a network of public labs for content creation, an enterprise network (apprenticeship programme for the marketing and development of applications), and alliances with regional governments to develop the local IT industry;
- Regulatory steps such as the promotion of infrastructure sharing, development of clearer rules for mobile virtual network operators (MVNOs), efforts to address market dominance, and elimination of "permanence" clauses (where customers were required to have a certain number of months on their contracts).

In 2014, the Colombian government launched the second phase of their broadband plan – *"*Plan Vive Digital II*."* Two of the main goals of the new plan include: (1) making Colombia a global leader in the development of ICT applications for reducing poverty; and (2) making the government the *"most efficient and transparent in the world"* with regard to the use of ICTs. The plan's explicit focus on improving the lives of the poor is a model of how ICT policies can be targeted for the benefit of specific groups in the population.

Costa Rica

As with Colombia, much of **Costa Rica's** success has been driven by government leadership. In Costa Rica, this high-level political will stems from a legal commitment to ICTs as a tool for fighting poverty, advancing human rights and promoting democratic

2 THE AFFORDABILITY DRIVERS INDEX (ADI)

participation. Costa Rica boasts one of the highest mobile broadband subscription penetration rates (44%) of all countries in this report, and also has one of the most affordable entry-level broadband plans (500MB), priced at just over 1% of GNI per capita. Approximately 50% of the country is online.

The work of the National Telecommunications Fund (FONATEL) has also been crucial to closing the country's digital divide. FONATEL efforts have focussed specifically on: (1) connecting communities (e.g., through schools and community centres); (2) connecting households (including those of seniors, women entrepreneurs, the disabled, etc.); (3) connecting public sector organisations; and (4) establishing local WiFi networks.

The new Telecommunications Development Plan (Plan Nacional de Desarrollo de las Telecomunicaciones), developed through wide consultation, aims to increase Internet use to the average found within OECD countries, and to improve broadband speeds for at least 80% of the population to the median rate found in OECD countries.

2.2 THE FOOT OF THE TABLE

The bottom of this year's ADI looks much the same as the bottom of our 2014-15 index. While many of the 10 lowest ranking countries did better across several indicators, they did not improve enough to boost their overall ranking relative to other countries.

For the most part, these countries made most progress on the access sub-index. In **Nepal**, for example, the Internet penetration rate increased by two percentage points and the penetration of mobile broadband connections increased by approximately five percentage points (just below the index-wide average increase of 6.7 percentage points).

For countries such as **Ethiopia** and **Burkina Faso**, modest improvements in the access sub-index were undermined by declines or no changes in infrastructure sub-index-related indicators (e.g., international bandwidth and fixed broadband speeds). This lack of progress stems in part from the fact that much needed policy and regulatory reforms needed in both countries are yet to occur.

2.3 MOVING UP THE RANKINGS: MYANMAR, MEXICO & MOROCCO

Myanmar achieved the largest jump in its ADI ranking, moving up nine places to 27th position. This move came as a result of the successful opening of the previously state-owned telecoms market to new operators (2013), and the recent introduction of broadband services (2014). *(See box on Myanmar below for a more detailed discussion about recent changes there.)* We expect **Myanmar** to continue to improve on the ADI as rapid changes in adoption and use are reflected in future analysis.

Morocco and **Mexico** both entered the top 10 this year, each rising five spots in this year's ADI rankings. Mexico started to see the fruits of changes to its ICT sector policies and practices, many of which are line with best practices outlined by A4AI. Following the passage of a new telecommunications law in 2014, **Mexico** introduced service- and technology-neutral licensing, increased public consultation in the rulemaking process, and is planning to launch an open-access 700MHz network in 2018.

Morocco's rise in the rankings was largely due to improved infrastructure and to the results of reforms that began two decades ago. These early institutional reforms included the creation of the regulator, Agence National de Réglementation des Télécommunication (ANRT), and a plan for the liberalisation of the sector. This led to the eventual privatisation of Maroc Telecom (the government-owned incumbent), the early launch of 3G services, and the market entry of two new operators (INWI and Medtel). These developments occurred well ahead of other countries in the Middle East and North Africa (MENA) region.

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In fact, **Morocco** has one of the more advanced and effective telecoms regulatory systems in the MENA region. The country has implemented a reasonably transparent licensing regime that allows for additional licensing options, thereby increasing competition at different levels of service. In 2012, the government launched a ten-year National Broadband Plan with the goal of ensuring access to fixed or mobile broadband for the entire population by 2022. The broadband plan also includes specific guidance on the allocation of spectrum for both licensed and unlicensed wireless broadband services. A year after launching the new broadband plan, the ANRT established a new national frequency plan, which addresses migration and allocation of spectrum for new broadband uses. In 2015, the ANRT issued calls for new 4G licenses, utilising available spectrum. By the end of 2015, approximately 19% of the population were mobile broadband subscribers.

While mobile remains the dominant form of broadband access, in 2015 the ANRT decided to incentivise competition in fixed broadband. Currently, the fixed broadband market in Morocco is primarily controlled by one company, Maroc Telecom; the ANRT's new decision will allow other service providers to provide fixed broadband services directly to customers, using the incumbent's infrastructure.

MYANMAR: RAPID CHANGES IN AN EMERGING MARKET

Much has been made of the tremendous changes in the Myanmar telecommunications sector since the passage of the 2013 Telecommunications Law, which moved the country from a state-owned monopoly to a competitive market. Related reforms include the upcoming establishment of an independent regulator and the development of clear, transparent rules for the newly liberalised sector, based on international best practice.

In 2014, two new, private sector mobile operators (Telenor and Ooredoo) entered the market. There have since been significant decreases in the price of broadband services, with the price of a SIM card dropping from approximately US$150 in 2013 to just US$1.50 in 2015.

The tender process undertaken by the government to select the new two mobile operators was regarded as transparent and an example of international best practice. The government secured commitments from both new operators to invest heavily in the development of the country's telecoms infrastructure. Ooredoo, for example, pledged to invest US$15 billion during its 15-year license period. amd Telenor has outlined plans to invest over US$1 billion in its first year of operation alone. The state-owned, incumbent service provider Myanma Posts and Telecommunications (MPT) has also entered into a partnership with the Japanese joint venture KDDI-Sumitomo to improve its infrastructure and operations and expand service.

The Telecommunications Law allows independent companies to develop towers and fibre infrastructure, so that the burden of infrastructure development no longer sits with mobile operators and government alone. Tower sharing has increased and costs have gone down.

Myanmar's late entry into the ICT sector enabled it to benefit from lessons learned in other countries. Telecom companies leapt over older, outdated technologies, choosing to use and invest in 3G technology from the start, while the government has adopted progressive policies such as a unified licensing framework and promotion of infrastructure sharing by operators.

This has all led to a highly competitive and vibrant market. The telecom sector has become an attractive foreign investment destination, second only to the energy sector. Myanmar is witnessing an unprecedented uptick in broadband subscribers, spurred in part by the availability of more affordable smartphones. At the end of 2013, the total number of number of mobile broadband connections was 1.7 million; by the end of 2015, this number had grown more than 800% to 15.6 million.

Despite this dramatic progress, the number now connected represent only 18% of the population. Much more remains to be done. Priorities should include: a major roll-out of infrastructure over the next few years; addressing the limited reach of the electricity grid; improving the monitoring of compliance with licenses; increasing infrastructure sharing; and improving the country's human and institutional capacity to meet these challenges. The A4AI-Myanmar Multi-Stakeholder Coalition is working to inform the government's new Telecommunications Master Plan and to maintain the momentum seen over the past few years so that affordability can improve and access can expand.

[8] A4AI (2015), Case Study: Delivering Affordable Internet in Myanmar. http://a4ai.org/wp-content/uploads/2015/03/Myanmar-Case-Study.pdf
[9] A4AI (2015), Case Study: Delivering Affordable Internet in Myanmar. http://a4ai.org/wp-content/uploads/2015/03/Myanmar-Case-Study.pdf
[10] GSMA Intelligence database (2015)
[11] GSMA Intelligence database (2015)

2 THE AFFORDABILITY DRIVERS INDEX (ADI)

2.4 AFFORDABILITY IN THE WORLD'S LEAST DEVELOPED COUNTRIES

The overall ADI rankings presented above group all 51 countries together regardless of their diverse economic contexts. This year, given the SDGs explicit focus on the world's least developed countries, we've chosen to take a closer look at just this cluster of countries.[13]

Table 2: Highest ADI scores among Least Developed Countries (LDCs)

Country	Access Sub-Index Score	Infrastructure Sub-Index Score	ADI Composite Score	2015 ADI Rank
Rwanda	54.42	51.90	53.13	11
Uganda	56.53	42.44	49.40	16
Gambia	49.12	42.81	45.82	20
Myanmar	31.88	53.67	42.57	27
Tanzania	43.90	40.38	41.93	30

Rwanda is the highest ranked LDC in this year's ADI. Its success is due, in part, to the ambitious policies the country is pursuing. The SMART Rwanda Master Plan 2015-2020, builds on the previous National Information and Communication Infrastructure (NICI) plans, and puts ICTs – especially broadband – at the heart of the national socio-economic development agenda. The plan highlights public-private partnerships as a vehicle for achieving these goals, and lays out proposals for improved programme implementation and monitoring and evaluation.

Recent market developments in Rwanda look promising. In November 2014, Olleh Rwanda Networks (a joint venture between the government and Korea Telecom Corporation) launched an open access 4G LTE network; using this network, Airtel Rwanda was able to start offering 4G LTE services to customers that same month.

Rwanda is catalysing ICT efforts further afield, at subregional and regional levels. The government is leading and hosting the secretariat of the Smart Africa Alliance – an initiative to promote ICT as a driver for socio-economic growth across the continent. Rwanda is also a co-leader of the Northern Corridor Integration Projects ICT cluster, which brings together the governments of Rwanda, Uganda, Kenya, and South Sudan to collaborate in the development of the region.

For most other LDCs, several problems remain. Apart from Myanmar (see box above for more details on Myanmar), which has seen rapid changes in the sector as a result of policy reforms over the last two years, the gains made by LDCs were comparatively minor, resulting in in little or no movement up the index. Some reasons for this limited movement include existing legislation that is often not in line with international best practice, and limited or absent regulatory reform. While several LDCs have addressed long-standing issues around limited international bandwidth and have attracted greater investments in infrastructure, they are delaying critical reforms that can lead to lower industry costs and ultimately lower prices.

[13] The UN periodically reviews which countries can be classified as a LDC based on several socio-economic factors. There are currently 48 such countries, 18 of which are included in the ADI (based on the availability of data).
[14] GSMA (2015), "The Mobile Economy 2015." http://www.gsmamobileeconomy.com/GSMA_Global_Mobile_Economy_Report_2015.pdf
[15] GSMA (2015), "The Mobile Economy 2015." http://www.gsmamobileeconomy.com/GSMA_Global_Mobile_Economy_Report_2015.pdf
[16] GSMA Intelligence database (2015)
[17] GSMA (2015), "The Mobile Economy 2015." http://www.gsmamobileeconomy.com/GSMA_Global_Mobile_Economy_Report_2015.pdf
[18] Under this scenario the smartphone would add US$4/month to the overall user's cost.
[19] TechCentral (13 February 2014), "MTN's R499 Steppa smartphone reviewed". http://www.techcentral.co.za/mtn-steppa-review/46410/
[20] Overcart (20 March 2015), "Firefox phones are a disaster in India". http://www.overcart.com/blog/firefox-phones-are-a-disaster-in-india/
[21] Armstrong, Anne, Joseph H. Mueller and Timothy D. Syrett (2014), The Smartphone Royalty Stack: Surveying Royalty Demands for the Components Within Modern Smartphones. https://www.wilmerhale.com/uploadedFiles/Shared_Content/Editorial/Publications/Documents/The-Smartphone-Royalty-Stack-Armstrong-Mueller-Syrett.pdf

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WORKING TO REDUCE DEVICE COSTS

While our discussion thus far has centred around the cost of broadband data plans, there are other major expenses associated with accessing the Internet, including the cost to purchase and maintain an Internet-enabled device, and the cost of electricity needed to charge these devices.

Mobile phones represent the cheapest Internet-enabled device available on the market and, as a result, most people in developing countries will have their first broadband experience on a smartphone, and will use a mobile phone as their primary device for accessing the Internet. The GSMA estimates that by 2020, 63% of connections globally will be through a smartphone.

However, the relatively high cost of smartphones continues to prevent many people from getting online. Though our ADI analysis does not directly examine device costs, reducing the cost of mobile devices will be a critical aspect of expanding access and enabling billions of low-income users to afford both a device and a broadband data package.

The cost of smartphones in developing countries has fallen over recent years – since 2008, prices have dropped by 30% in Asia, 25% in Latin America and the Caribbean, and 20% in Africa. Nevertheless, the cost of an average smartphone still remains out of reach for many. The GSMA recommends that devices be priced between US$25-50 in order for the majority of people in developing countries to consider them affordable, yet smartphones on average cost over two times that recommended *"sweet spot"*. [16] Most smartphones still sell for US$100 or more in developing countries [17] – equivalent to approximately 9% of annual income (or about an entire month's income) for a person living in poverty (i.e., on under $3.10/day).

Even where individuals might be able to afford a smartphone, they might not be able to afford the additional costs associated with a data plan (as evidenced by at least one mobile phone group in Africa). When we add the price of a hypothetical low-cost US$48 smartphone to the price of a 500MB broadband plan, we find that the total population in almost all countries that can actually afford both a broadband plan and a low-cost smartphone drops by 20% (when compared with the percentage that can afford the broadband plan alone). [18] For some countries, such as India and Pakistan, affordability drops as much as 60% when device costs are included.

In recent years, a number of device manufacturers (e.g., Mozilla, Google/Android One, Gionee, Huawei, ZTE) have released low-cost smartphones in developing countries, including some that cost as little as US$25. Operators in low-income markets have also taken steps to make smartphones more affordable (e.g., MTN in South Africa). [19] However, many of these efforts have had less success than expected [20]. For some would-be consumers, the price of these *"low-cost"* options remain out of reach; for others, the *"low-cost"* smartphones available on the market lack the functionality and quality necessary to convince users to purchase the device.

Private sector efforts to bring desirable low-cost smartphones to market should be applauded, despite the mixed results. It is clear, however, that more can be done, especially with respect to the costs associated with accumulated patent royalties. Royalty stacking – where a company must pay multiple royalties because its device, or components within its device, might infringe on an existing patent – is a significant challenge in the smartphone industry. Recent analysis suggests that patent royalties contribute as much as US$124 to the total cost of a US$400 smartphone – a number that appears all the more disproportionate when one considers that the physical components of such a phone generally cost between US$120-$150. This highlights a clear opportunity to make smartphones more affordable. Indeed, royalty stacking in the smartphone industry undermines the competition, investment, innovation, and reduction in cost required to make devices affordable for the majority of people [21].

Governments also have a role to play. A large portion of the total cost of a smartphone results from import and sales taxes levied on the devices. Governments in some countries – most notably in Africa, where device costs have fallen least since 2008 – have recognised that reducing such taxes can lead to higher future tax revenues by boosting economic growth. Earlier this year, the government of Côte d'Ivoire, for example, took the bold decision to reduce taxation on smartphones from 26% to 6.6%. It is imperative that other governments take such steps and play their role in the proliferation of affordable smartphones.

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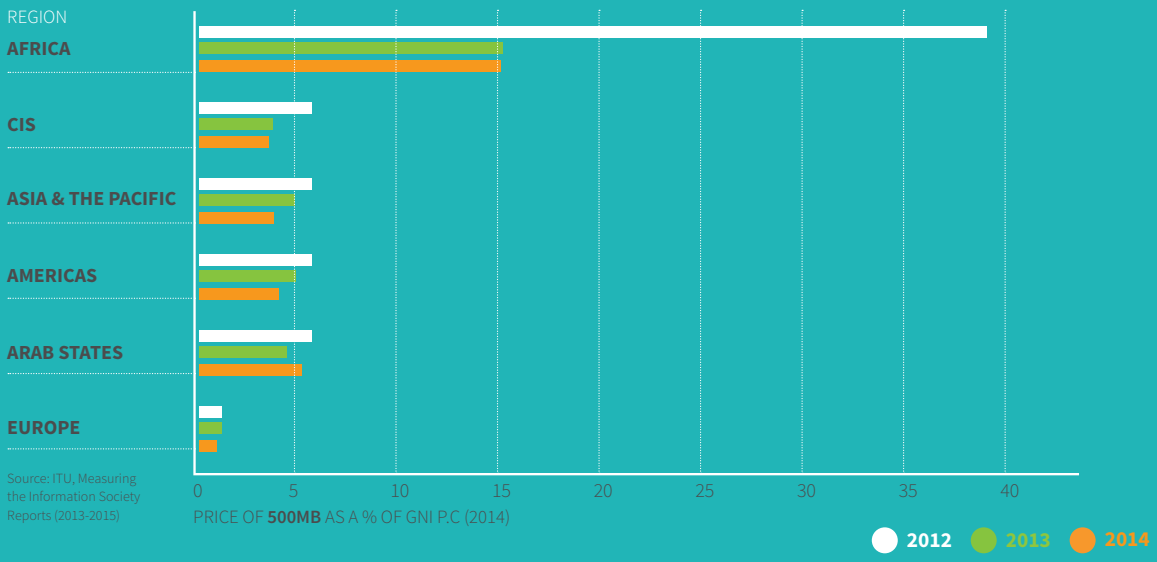
2.5 THE LONG ROAD TO IMPROVED BROADBAND AFFORDABILITY

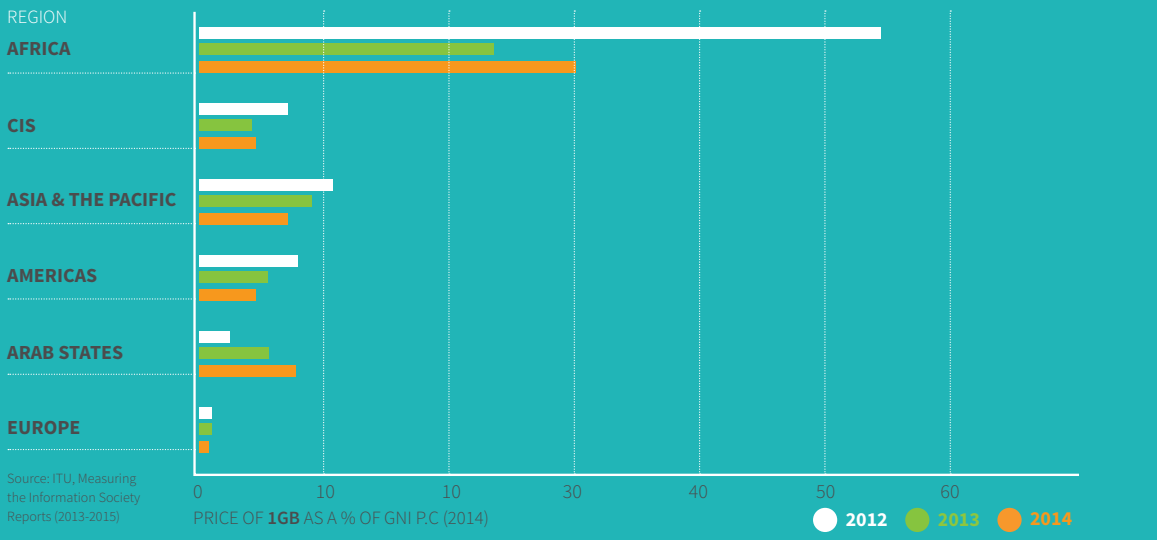
Despite some progress made over the past year, there remains significant room for improvement across all of the countries of the ADI. This is even true for those countries that moved the most up the index, including Myanmar, Morocco, and Mexico. Where affordability of mobile broadband (as measured by price as a percentage of GNI per capita) has improved, it has done so only marginally; in some regions, mobile broadband has become less affordable, particularly for a 1GB plan.[22]

Figure 3: Average price of a 500MB (prepaid, mobile) broadband plan as a % of GNI per capita, by region



Source: ITU, Measuring the Information Society Reports (2013-2015)

Figure 4: Average price of a 1GB (postpaid, computer-based) broadband plan as a % of GNI per capita, by region



Source: ITU, Measuring the Information Society Reports (2013-2015)

[22] Note that little or no improvement in affordability between 2013 and 2014 can be explained in part by declines in average GNI per capita across almost all regions (except Europe and the CIS). However, average prices (in PPP) also increased in this period, most notably for the 1GB plan in Africa and the Arab States.

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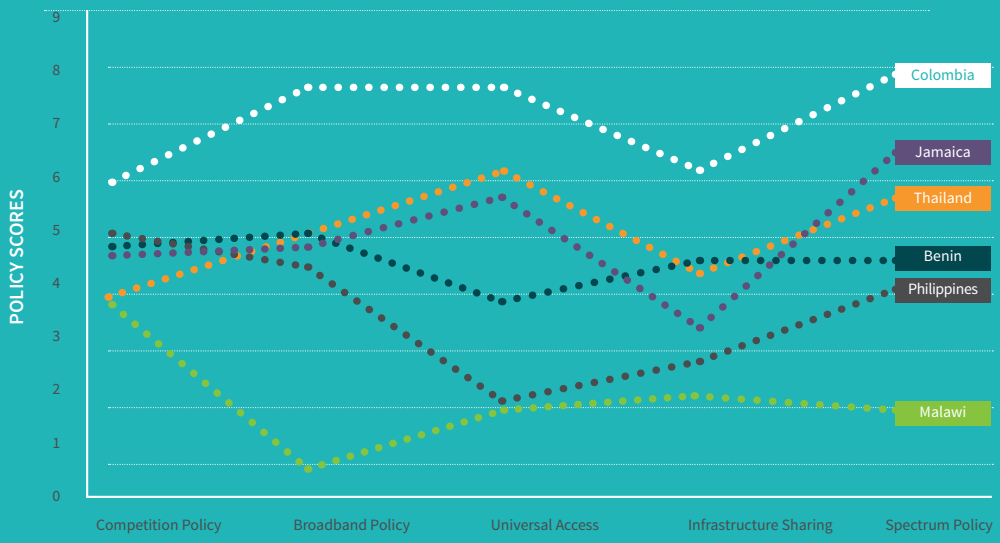
2.6 INCREASING AFFORDABILITY BY DEVELOPING POLICIES IN LINE WITH BEST PRACTICES

Figure 5: Average Clustered Policy Scores for Select Countries (2014)



[22] These surveys were completed for the 2014-15 Affordability Report.

The ADI assesses the progress that countries are making in implementing policies informed by a set of policy and regulatory best practices. In constructing the index, these policy variables are grouped into five clusters based on thematic similarities:

1. **Policy and regulation for competition**
2. **National broadband planning**
3. **Universal access**
4. **Infrastructure sharing**
5. **Spectrum policy**

While the ADI provides an indication of the overall progress a country is making in promoting affordability, it can also be useful to look in more detail at which policy clusters countries are doing well in, and those clusters that require more work. Figure 5 illustrates the scores for select countries based on a series of surveys completed by policy experts in 2014. Policies were scored on a scale from 0 to 10, where 10 indicated that the policy was in line with international best practice and was being implemented on a wide scale.

The above graph highlights the various policy areas where countries are doing relatively well, as well as those that require more attention. Colombia, for example, scored close to an eight for policies that support spectrum allocation, universal access, and broadband adoption – well above the average score (of 4.6) for all countries in the ADI. Nevertheless, Colombia still has much work to do to improve ts policies around infrastructure sharing and competition, where it only scored around a six.

In other countries, the gaps between the policy clusters are much larger. Jamaica, for example, rates above average on spectrum and universal access policies, but needs to improve policy around infrastructure sharing. For countries at the lower end of the ADI rankings, the scores for each cluster are lower across the board. Though Malawi is rated just below the average for spectrum allocation policy, it urgently needs to improve its national broadband planning.

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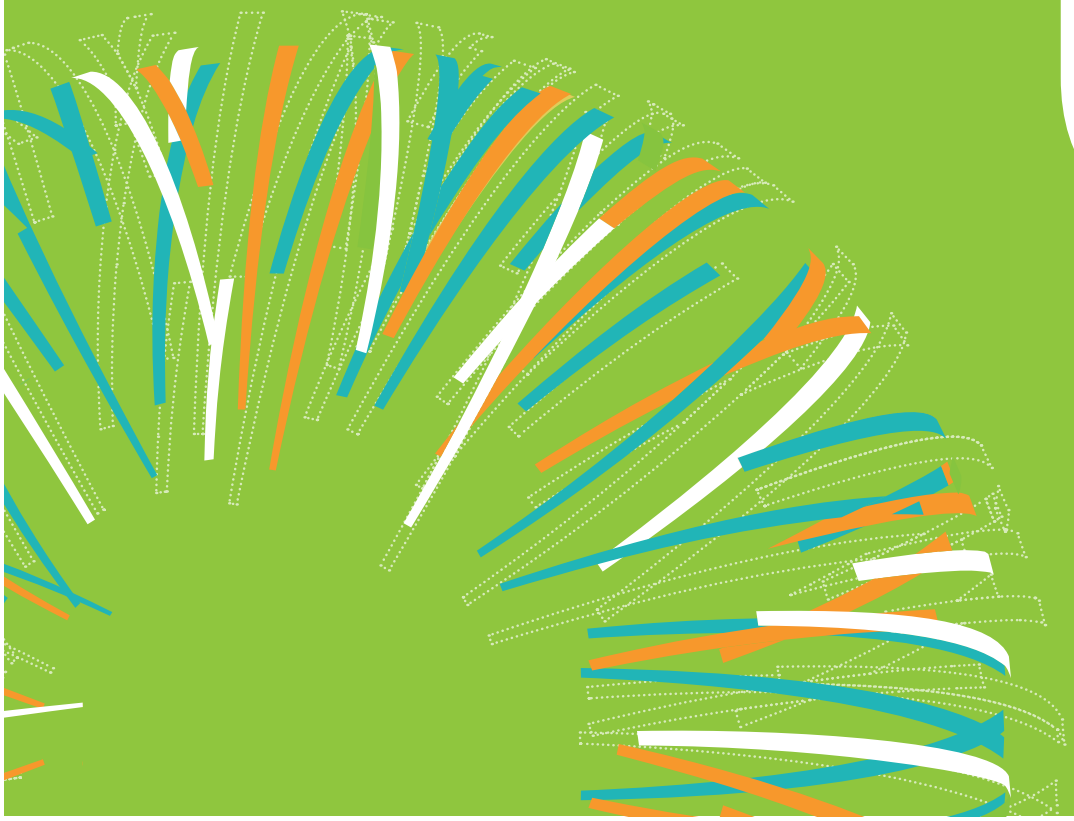
2.7 COMPREHENSIVE APPROACH TO POLICYMAKING

Our assessment shows that no one policy domain had a greater influence than others on price, as a proportion of GNI per capita. This suggests that reforms and/or investments in just one domain are not enough to effect long-lasting change. Countries must develop policies and investments that will work together to build an affordable Internet environment. Focusing on supply while ignoring demand, for instance, is a recipe for failure. Although resource constraints typically mean not all policies can be implemented at once, policies should be developed with the end goal in mind, and should keep an awareness of the big picture and how all the pieces fit together.

3

POVERTY, INCOME INEQUALITY & THE CASE OF MISTAKEN AFFORDABILITY



3 POVERTY, INCOME INEQUALITY & THE CASE OF MISTAKEN AFFORDABILITY

In 2011, the UN Broadband Commission established a target for for broadband affordability: entry-level broadband (defined as 500MB of mobile data) priced at 5% or less of average national income (as measured by GNI per capita). By early 2015, according to the ITU, 111 countries – including all of the world's developed countries and 60% of developing countries – had achieved this target. Our own analysis points to progress made over the past year. Our 2014-15 Affordability Report found that 23 out of 51 countries were able to meet the UN's 5% price target; this year, 25 countries have met this target, as shown in the table below. Of the 26 that have yet to meet the target, 16 are LDCs.

Table 3: Highest ADI scores among Least Developed Countries (LDCs)

Country	Mobile-broadband, prepaid handset-based (500 MB) as % of GNI per capita	Market penetration, unique subscribers (Mobile broadband)
Kazakhstan	0.57	15.49%
Turkey	0.95	28.04%
Malaysia	0.99	30.82%
Costa Rica	1.03	39.08%
Brazil	1.13	35.47%
Indonesia	1.13	13.82%
Pakistan	1.31	3.25%
Thailand	1.38	38.67%
Mauritius	1.43	25.24%
South Africa	1.48	32.52%
Tunisia	1.68	18.41%
Peru	2.02	17.81%
Jordan	2.05	30.04%
Philippines	2.47	19.76%
India	2.48	5.13%
Venezuela	2.61	23.39%
Namibia	2.62	17.98%
Egypt	2.7	15.39%
Mexico	2.72	18.74%
Colombia	3.24	10.84%
Bangladesh	3.49	3.13%
Jamaica	3.63	23.78%
Ecuador	4.43	9.72%
Ghana	4.48	13.07%
Morocco	4.73	14.10%
Botswana	5.17	19.20%
Nigeria	5.4	10.45%
Kenya	5.89	9.08%
Mozambique	6.28	7.04%
Dominican Republic	6.46	15.30%
Vietnam	7.31	16.36%
Nepal	7.45	4.47%
Gambia	10.07	10.90%
Tanzania	10.54	11.54%
Senegal	11.57	8.86%
Zambia	11.89	7.19%
Yemen	12.19	3.38%
Benin	12.3	2.43%
Rwanda	14.02	9.42%
Uganda	15.4	3.71%
Ethiopia	16.92	7.12%
Mali	17.04	7.42%
Burkina Faso	24.3	0.89%
Malawi	24.4	2.08%
Sierra Leone	24.74	6.62%
Zimbabwe	27.93	12.80%
Haiti	32.8	6.57%
Ethiopia	31.07	0.00
Sierra Leone	17.06	11.69
Haiti	14.88	13.22
Yemen	0.00	1.81

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However, while the past year has seen a decrease in broadband prices as a percentage of average income, these reduced prices have not translated into rapidly increasing rates of connectivity. On average, in 15 of the 25 countries that have met the 5% target, only one in five people (or fewer) are mobile broadband subscribers. A closer look at the levels of poverty and in-country income inequality helps to explain the reasons for slow connectivity growth, despite falling prices.

3.1 THE EFFECT OF POVERTY

Across the 51 countries covered in our report, there are 1.9 billion people living in absolute poverty (i.e., under the World Bank's new poverty measurement of US$3.10/day); 835 million of these live in extreme poverty (i.e., under US$1.90/day). For these people, the price of a basic broadband connection represents a much higher proportion of income than for those earning the national average income.

Table 4: Countries where broadband is most affordable for those living in poverty

Country	Price of 500MB plan as a % of average income for those living on less than $3.10/day (US$94/month)	Poverty headcount ratio at $3.10 a day (2011 PPP)	Price of 500MB plan as a % of average income for those living on less than $1.90/day (US$58/month)	Poverty headcount ratio at $1.90 (2011 PPP)
Pakistan	5.5	44.97	8.9	8.3
Mozambique	6.6	87.54	10.7	68.7
Bangladesh	8.8	77.61	14.3	43.7
Indonesia	9.7	41.67	15.7	15.9
Kazakhstan	11.7	0.26	19.0	0.04
India	12.0	58.01	19.5	21.3
Costa Rica	12.8	3.95	20.7	1.7
Kenya	13.4		21.8	
Tunisia	14.1	8.4	22.9	2.0
Turkey	15.2	3.1	24.7	0.3
Brazil	15.4	9.06	24.9	4.9
Gambia, The	16.2		26.2	
Nepal	16.2	48.38	26.2	15.0
Thailand	16.2	1.23	26.3	0.1
Philippines	16.4	37.61	26.6	13.1

Sources: ITU 2015, World Bank – Povcalnet 2015

Despite falling prices, not one of the 51 countries included in our analysis has met the 5% affordability target for those living in poverty. This is not an issue affecting small numbers of people — in the LDCs, over two-thirds of the population[12] may be living beneath the international poverty line. Though the countries at the top of the table above have comparatively low broadband prices for those living in poverty, high levels of poverty persist and, as a result, mobile broadband subscription rates remain low (e.g., Pakistan and Bangladesh both around 3%, Mozambique at 7%). This suggests that even with low prices, significant populations in these countries will require alternative means, including public access options, to get online.

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BUILDING BUSINESS SOLUTIONS FOR LOW-INCOME, RURAL CUSTOMERS IN BENIN

Developing sustainable business solutions to provide affordable Internet access for low-income customers can be a challenge, particularly in countries like Benin where 75% of the population lives in poverty (i.e., on less than $3.10/day). High infrastructure costs, for example, pose a significant barrier to the provision of mobile coverage in rural areas, and can reduce the possibility of much financial return on investment. To tackle this problem, MTN Benin and Ericsson have partnered on a five-year agreement to provide mobile access to rural, and often impoverished, communities in northern and central Benin, where coverage currently doesn't exist.

The project, which launched in October 2015, has contributed to expanding connectivity by deploying both solar-powered base stations and satellite for backhaul connectivity. This implies lower supply-side costs, and a potentially sustainable business model that can bring the benefits of connectivity to those who need it most. As a result, customers in these areas have recently started using MTN Benin's mobile money services.

3.2 THE DISTORTING EFFECT OF INCOME INEQUALITY

It's not just the poorest of the poor who struggle with the cost to connect. Wide differences in earnings within individual countries also can mask the true affordability picture. The UN measures affordability by comparing broadband costs to an estimate of the average income in country (i.e., GNI per capita). Although simple and useful, this affordability yardstick smooths out the sharp income inequalities that exist on the ground in many of the countries covered in this report. To understand the true affordability picture we need to analyse broadband prices as a percentage of the income of the rich, the middle class, and the poor.

So, how affordable is Internet access when we take in-country income inequality into account? To get a clearer picture of affordability across a country's full population, we analysed how expensive a 500MB package is for different income groups in each country (divided into quintiles, or segments of 20%). In most countries surveyed, even a basic monthly data allowance is not affordable to vast swathes of the population – one in five people are unable to afford such a basic connection in countries like Brazil and India; this rate spikes as high as four in five people in nations like Botswana and the Dominican Republic. We found that the 20% of the population with the lowest average income could only afford a basic data package in nine of the 36 countries (for which income distribution data was available).

[24] In Mozambique, 88% of the population lives on less than $3.10 a day; Bangladesh has 78% in poverty; Gambia has 68%. (World Bank (2015). Poverty & Equity Data. http://povertydata.worldbank.org/poverty/home/)
[25] World Bank (2015). Poverty & Equity Data. http://povertydata.worldbank.org/poverty/home/

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Table 5: Countries where a 500MB plan is affordable for the bottom 20% of income earners

Countries where 500MB plan is affordable for bottom 20%	Mobile-broadband, price of prepaid handset-based (500 MB) as % of average income of bottom 20%, 2014	Mobile-broadband, price of prepaid hand-set-based (500 MB) as % of national average income (GNI per capita), 2014
Costa Rica	4.85	1.03
Indonesia	2.81	1.13
Jordan	4.33	2.05
Kazakhstan	1.23	0.57
Malaysia	3.84	0.99
Mauritius	3.24	1.43
Pakistan	2.53	1.31
Thailand	3.46	1.38
Turkey	3.95	0.95

In the other 27 countries, a basic broadband plan is not affordable for at least one quintile of the population. Of particular note are the nine countries – Brazil, India, Peru, Philippines, Mexico, South Africa, Colombia, Ecuador and Namibia – where a 500MB plan is ostensibly affordable using national average income (i.e., those countries that have met or surpassed the 5% target), but where the price exceeds the 5% target for some portion of the population. This finding points to the need for a lower target that takes in-country income inequalities into consideration.

While using incomes by quintile rather than the national average provides a more accurate picture of affordability, this data is not regularly updated or available for many countries. As a result, the national average income (i.e., GNI per capita) continues, for now, to be the best measure of progress. What then would be a better target for price as a proportion of GNI per capita – one which would make access affordable for all?

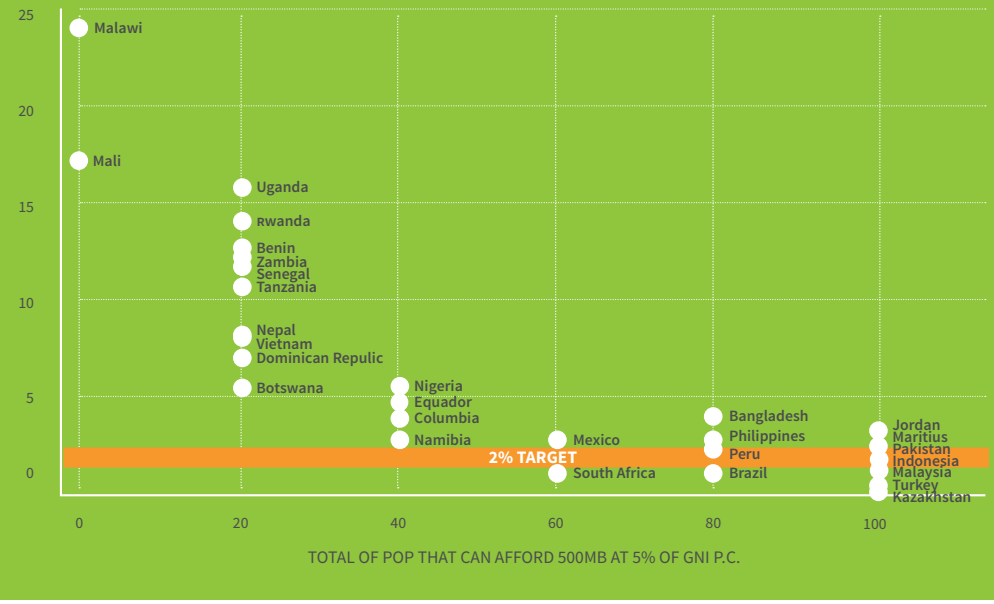
In countries where a 500MB plan is affordable for all income quintiles, price as a percentage of GNI per capita is less than 2% (Jordan is 2.05%). This is reflected in Figure 6, where these same countries are found below the red line marking prices at 2% or less of average income.

[26] For more detail, see Annex 1.

In other words, when the price at the national level is lower (e.g., 2% of GNI per capita), that price also becomes much more affordable when we consider average incomes for each quintile within the population.

As long we keep using price as a percentage of GNI per capita to assess affordability, we need a lower target to overcome the effects of income inequality and achieve wider affordability. This new target should reflect our finding that entry-level broadband becomes affordable across all five income segments when priced at 2% or less of average monthly income. Accordingly, we propose that the ITU and its member states agree to adopt and work toward a new and ambitious target of broadband priced at or below 2% of GNI per capita.

Figure 6: Comparison of price as a % of GNI per capita for a 500MB plan and the % of population that can afford that plan (2014)



3 POVERTY, INCOME INEQUALITY & THE CASE OF MISTAKEN AFFORDABILITY

3.3 HUNGRY FOR DATA

While affordability is currently measured against the cost of a 500MB data plan, the reality is that users are hungry for more data and meaningful use of the Web requires it. With a data allowance of 500MB a month, you could only watch two minutes of high-quality video – not enough to enable regular use of health, education and other valuable online tools and information sources. Video and picture-rich content consume large amounts of data and yet, it is exactly these resources that are likely to be most valuable for the poor, marginalised, and often illiterate populations that are currently offline. A larger data allowance is needed for users to realise the development benefits of the Internet. Doubling the current 500MB yardstick to 1GB would be a good start.

MOBILE DATA SERVICES DESIGNED TO ADDRESS THE NEEDS OF LOW-INCOME GROUPS

Over the last few years, a number of initiatives designed to increase access, particularly among the poor and other under-represented populations, have sprouted. These initiatives typically centre around data service plans that offer content-specific, zero-rated data (i.e., data offered to users at no cost, but which can only be used to access specific sites or applications). To supporters, these zero-rated and similar services offer the promise of access – even if limited (in time or content) – to those who might not otherwise have a chance to come online. To critics, this sort of behavior offers users such limited Internet access that it threatens to create a two-tiered Internet – one for the rich, and one for the poor. Other models, which offer *"free"* data in exchange for completing certain tasks (e.g., watching an advertisement, completing a survey) are also emerging.

Despite the growing profile and debate around zero-rated and other mobile data services, there is a dearth of empirical evidence on the effectiveness of such services, making it difficult to develop informed recommendations on their use. A4AI recently started a research project to uncover the facts around the availability, use, and impact of these data service models in developing countries. Using empirical research, we will determine how service-specific, zero-rated, and other new data service models impact Internet affordability and usage in developing countries and in so doing, will inform policymakers on how best to address such services as part of their overall strategies to improve Internet access.

The project draws on user surveys and interviews with industry and government stakeholders, and will look at service use and impacts across eight developing countries (Colombia, Peru, Ghana, Nigeria, Kenya, India, Bangladesh, and the Philippines). The first research brief examines the types of mobile data services that are actually being offered in these countries; further research briefs will be published on an ongoing basis, as new data is collected and analysed.

[27] ITU (2015), "Measuring the Information Society 2015". http://www.itu.int/en/ITU-D/Statistics/Pages/publications/mis2015.aspx

3 POVERTY, INCOME INEQUALITY & THE CASE OF MISTAKEN AFFORDABILITY

3.4 THE LONG ROAD TO UNIVERSAL ACCESS IN THE WORLD'S LEAST DEVELOPED COUNTRIES

While the price of an entry-level broadband plan has trended down across the globe, the average cost in developing countries is still squarely above the 5% target, coming in at an average of 6.5% of GNI per capita [29]. The situation is even more dire in the majority of the world's 48 Least Developed Countries (LDCs), where approximately half the population lives in extreme poverty [30].

Though broadband prices are falling faster in LDCs than across developing countries as a whole, [31] the cost of a basic broadband plan – equivalent, on average, to 15.2% of GNI per capita [32] – remains either unaffordable across all segments of LDC populations, or affordable only for the top 20% of income earners (Bangladesh is the exception, see Table 6). Across all LDCs in our study, approximately 340 million people – or 69% of the population – cannot afford a 500MB mobile broadband plan.

To achieve universal access across the LDCs by 2020 will require radical change, fast. The ITU estimates that at current rates, only 16% of people in LDCs will be online by 2020. Our own analysis shows that, at current rates, LDCs on average won't achieve universal access (i.e., at least 90% Internet penetration) until 2042 (33). How can we accelerate progress to consolidate 27 years worth of growth into just five years?

Table 6: Prices, affordability and growth trends in the LDCs (2014)

LDC	Estimated percent of population (based on number of income quintiles) that can afford a 500MB mobile broadband plan	Estimated population (based on number of income quintiles) than cannot afford a 500MB mobile broadband plan	Mobile-broadband, prepaid handset-based (500 MB) as % of national average income (GNI per capita)	Estimated number of years to reach 90% Internet penetration rate based on trends over last 15 years
Bangladesh	80	31,815,503	3.49	25
Rwanda	20	9,073,235	14.02	27
Tanzania	20	41,458,097	10.54	30
Zambia	20	12,577,074	11.89	18
Benin	20	8,478,786	12.3	35
Senegal	20	11,738,046	11.57	25
Nepal	20	22,539,779	7.45	15
Uganda	0	37,782,971	15.4	18
Mali	0	17,086,022	17.04	28
Burkina Faso	0	17,589,198	24.3	22
Malawi	0	16,695,253	24.4	30
Ethiopia	0	96,958,732	16.92	35
Sierra Leone	0	6,315,627		40
Haiti	0	10,572,029	32.8	30
	TOTAL	340,680,351		

Sources: ITU 2015, World Bank – Povcalnet 2015

[28] ITU (2015) "Measuring the Information Society 2015". http://www.itu.int/en/ITU-D/Statistics/Pages/publications/mis2015.aspx
[29] UNCTAD (2015) "Least Developed Countries Report 2015." http://unctad.org/en/pages/PublicationWebflyer.aspx?publicationid=1393
[30] ITU (2015) "Measuring the Information Society 2015". http://www.itu.int/en/ITU-D/Statistics/Pages/publications/mis2015.aspx
[31] ITU (2015) "Measuring the Information Society." http://www.itu.int/en/ITU-D/Statistics/Pages/publications/mis2015.aspx
[32] Source data from the ITU World Telecommunications/ICT Indicators Database (2015)
[33] Source data from the ITU World Telecommunications/ICT Indicators Database (2015)

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3.5 OVERCOMING THE CHALLENGES OF POVERTY & INCOME INEQUALITY

As this analysis shows, we have a long way to go to make basic Internet access truly affordable for all.

Whereas 25 of 51 countries had met the 5% affordability target for those earning the average national income, just nine of these countries meet the affordability target for the bottom 20% of its population. Not a single country studied can claim to meet it for those living in poverty.

Though prices continue to move lower and countries continue to achieve the UN 5% affordability target, the reality is that income inequalities belie the true nature of affordability on the ground. If broadband prices remain out of reach for large segments of the population in developing and emerging countries, so too will universal access remain an unachievable goal. So long as rampant poverty and inequality exist, a target that defines affordable Internet at 5% of average national income will keep billions locked out of the information economy.

Though reducing inequality in its broadest sense requires efforts beyond the scope of the Alliance, we can work with governments and stakeholders around the world to develop policies and initiatives that will enable us to overcome the access challenges posed by inequality.

We think that there are three key steps countries should be taking:

First, set a more ambitious affordability target. A top-line target is in many ways a necessary evil – a single number that all stakeholders can get behind. However, our analysis has shown that the current target of entry-level broadband priced at 5% or less of GNI is woefully inadequate. In the countries studied, only once prices drop to 2% of GNI per capita or below does basic broadband become truly affordable for all income groups, including the bottom 20%. As noted earlier, 500MB of data does not allow for meaningful use of the Internet; it is time to bring the standard by which we measure our progress on *"affordability"* more in line with the reality of modern data usage. We therefore propose a new definition of *"affordable Internet"*: A 1GB mobile, prepaid broadband plan priced at 2% or less of average monthly income. This ***"1 for 2"*** target should be adopted as the new threshold for affordability.

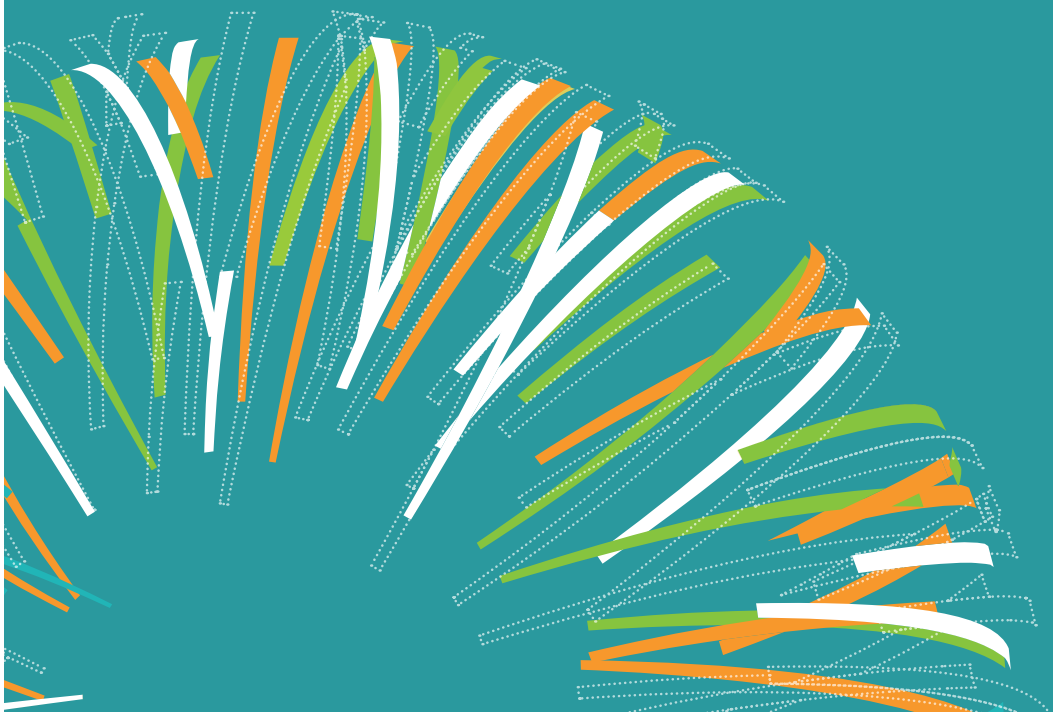
Second, get more granular on measuring affordability and uptake across different population groups. Universal access requires targeted strategies. Measuring how these strategies are working requires segmented analysis. Given the challenges of data collection and resource constraints in LDCs, this is a medium-term goal for governments to aim for, and for donors to support.

Third, commit to public access programmes to reach those that the market never will. Even at a level of 2% of GNI per capita, Internet access will remain out of reach for the poorest of the poor. Far flung rural areas may never prove profitable for operators to serve. Strategies such as public access programmes and mandatory service provision as a license condition should be included in national policies. Better use can be made of Universal Service and Access Funds (USAFs) – often maligned, but often effective – to achieve these goals.

These recommendations, and others, are considered in more detail in Section 5.

4

GENDER INEQUALITY: EXACERBATING AFFORDABILITY CHALLENGES



4 GENDER INEQUALITY: EXACERBATING AFFORDABILITY CHALLENGES

As the 2014-15 Affordability Report found, women are among those hardest hit by the high cost to connect. A number of factors play into this reality, including cultural barriers to access (e.g., *"a woman shouldn't be online"*) and many of the same economic challenges discussed above (in Section III). As stark as the affordability picture appears for those living in poverty and at the bottom of the income pyramid, it is that much more dire for women in these income groups who, on average, earn 30-50% less than their male counterparts. This gender wage gap diminishes the ability of women – and female-headed households in particular – to afford Internet access.

The need for gender-specific thinking in development is explicitly recognised in the SDGs. In addition to calling for affordable, universal access to the Internet (target 9c), the new set of SDGs also propose, via target 5b, to *"enhance the use of enabling technology, in particular information and communications technology, to promote the empowerment of women."* Although these two targets are found under different overarching goals, they are inextricably linked – universal access cannot be achieved without concrete efforts to bring women online, just as full gender equality cannot be achieved without enabling women's access to an affordable, open, and safe Internet.

So what is the state of play for women and the Web, and what actions can be taken to enable more women to come online?

4.1 WOMEN AND AFFORDABLE ACCESS TO THE INTERNET: THE CURRENT PICTURE

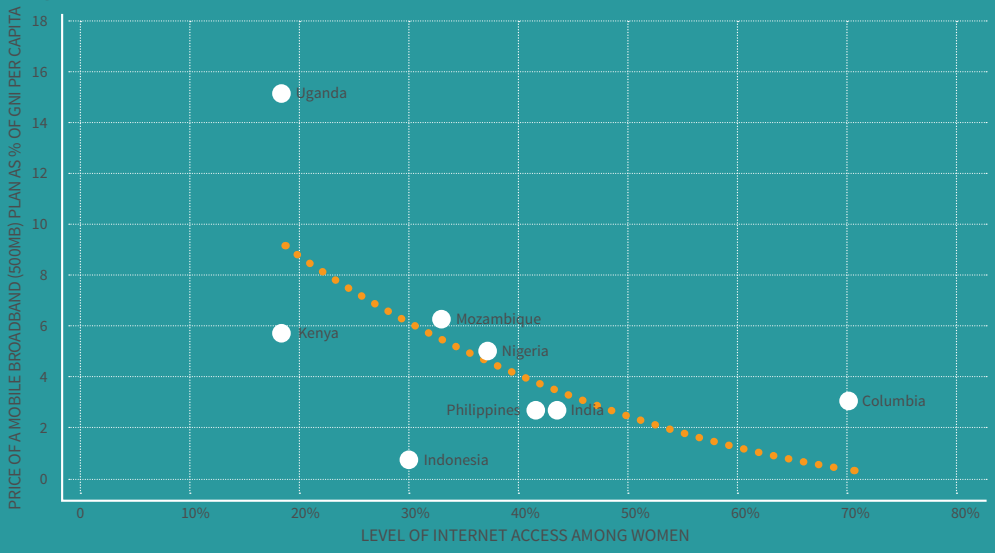
> *I really want to learn how to use the Internet, but [mobile data] is still expensive, and there's no free Wi-Fi access in my area – I would have to travel to a shopping mall to get Wi-Fi."*
>
> Female shop-owner in Jakarta
> Focus group discussion by ICT Watch, Women's Rights Online country partner

Recent research by the Web Foundation shows that poor women in urban areas in ten developing countries are 50% less likely to be connected to the Internet than men in the same age group, with similar levels of education and household income. Two major barriers to women's online access – as found by the Web Foundation research and earlier research by the GSMA – include both a lack of know-how or technical literacy, as well as the high cost to connect. Those countries that have the highest Internet costs (as a proportion of average income) not only have the lowest numbers of women online, but also the largest gender gaps in Internet use (see Figure 7) (35). Using recent sex-disaggregated income data from ten countries in Latin America and the Caribbean, we found that the relative cost to connect is higher for female-headed households – perhaps not surprising given the gender wage gap found throughout the globe. The high cost to connect particularly affects single-parent, female-headed households, which comprise up to 25% of all households in those countries.

4 GENDER INEQUALITY: EXACERBATING AFFORDABILITY CHALLENGES

4.1 THE CURRENT PICTURE CONTINUED

Figure 7: How mobile broadband prices affect women's Internet access



Source: Women's Rights Online Report (2015)

As a result of these barriers to connectivity, the GSMA estimates that 1.7 billion women in low- and middle-income countries do not own mobile phones. The same study finds that women on average are 14% less likely than men to own a mobile phone – a fact that translates into a gender gap in mobile phone ownership of 200 million. Working to close this gap will be an important element in working to close the overall gender digital divide.

THE MOBILE PHONE GENDER GAP IN MYANMAR[36]

By March 2015, just over a year after liberalising their ICT sector, 40% of Myanmar's population between the ages of 15-65 owned a mobile phone. Yet, women were 29% less likely to own a mobile phone than men. To understand the reasons for this gender gap in mobile phone ownership, GSMA and LIRNEasia conducted a qualitative study among 91 men and women in Yangon, Myanmar's largest city, and Pantanaw, a small town in the southwestern part of the country.

The research showed that women in Myanmar play a prominent role in the management of household finances — even if they do not earn anything themselves — and are frequently involved in the financial decision to purchase a mobile phone for the family. Yet women's access to this family mobile phone is often limited because the phone tends to travel outside the home, with the person who is deemed to need it the most. Since activities outside the home are more often undertaken by men, this mobile access and usage gender gap is exacerbated. As such, getting a second mobile phone into the household (which has a higher likelihood of staying inside the household) seems key to increasing women's access and usage.

The top two reasons among women for not owning a mobile phone (lack of affordability or need) are connected. *"Not needing"* a mobile is relative to the cost-benefit trade-off of purchasing an additional phone for the household. Many women without a mobile phone said that they don't *"need"* one because they do not leave the house for work or studies. Though many would like to have their own mobile, they felt that even if they did buy one, the top-ups would be unaffordable because they are either not earning an income, or are earning a lot less than the male household members. The clear preference for particular high-end brands of smartphones was also a factor, since many women were willing to delay the purchase until they could afford a particular brand.

In addition, many women do not see spending on mobiles as a priority compared to other more pressing needs of the household, partly as a result of having limited experience with mobile phones. Even among women who already use or own a mobile, many did not possess the skills or knowledge to expand their current use to potentially valuable data services and usually relied on others (primarily men) for instruction.

In Myanmar, closing the mobile gender gap and realising the associated social and commercial benefits will require stakeholders to focus on the two main barriers: 1) improving affordability and 2) increasing technical literacy.

This case study was prepared by Ayesha Zainudeen and Helani Galpaya of LIRNEasia, based on findings from a GSMA Connected Women-LIRNEasia study on Mobile phones, internet, and gender in Myanmar.

[35] Web Foundation (2015), Women's Rights Online. http://webfoundation.org/about/research/womens-rights-online-2015/

[36] This case study was prepared by Ayesha Zainudeen and Helani Galpaya of LIRNEasia, based on findings from a GSMA Connected Women-LIRNEasia study on Mobile phones, internet, and gender in Myanmar.

4 GENDER INEQUALITY: EXACERBATING AFFORDABILITY CHALLENGES

4.2 USING SMART POLICY TO CLOSE THE GENDER DIGITAL DIVIDE AND ACHIEVE UNIVERSAL, AFFORDABLE ACCESS

The benefits of connecting women are significant – the GSMA estimates that *"achieving parity in ownership and use between men and women in low- and middle-income countries could bring socio-economic benefits, such as the availability of new education and employment opportunities, to an additional 200 million women….[and] unlock an estimated US $170 billion market opportunity for the mobile industry by 2020."*

Similarly, the potential for the Internet to support women's empowerment is enormous: it can link women with economic opportunities, expand social capital and support networks, and amplify women's voices on civic issues. But gender equality and female empowerment through ICTs, as proposed in SDG target 5b, will not become a reality until ICTs become more affordable and readily accessible to women. What can we do to achieve this?

Increase collection & improve availability of gender-based indicators

Poor understanding of the reasons for the gender gap in Internet access, adoption, and appropriation result in large part from limited data on the topic. Few governments consider gender-based indicators when developing surveys or data collection tools and, as a result, few collect gender-disaggregated data on ICT use. This translates to few countries considering gender when drafting policy; as the Web Foundation's 2014 Web Index showed, few countries have concrete, measureable policy targets for gender equity in their national ICT policies and broadband plans. As a UN expert task force on measuring ICT recently concluded, *"When ICT data excludes data on women specifically, women become ignored in data and in policy."*

Policy solutions to overcome the gender ICT gap and enable wider broadband access must be rooted in country-specific knowledge and experience, and must take into account the social and economic realities of the country – including how gender inequalities determine women's participation and engagement with technology. We know that the dimensions and determinants of women's digital exclusion vary widely by country, but without data that looks specifically at how women access and interact with ICTs, the development of strong, effective policy – and the ability to measure progress toward policy goals – will remain a challenge.

The Partnership on Measuring ICT for Development has developed and shared guidance for improving these data collection efforts and ensuring that the data collected can be compared and analysed internationally. All countries must commit to collecting sex-disaggregated data and most importantly, to integrating a gender perspective in all measuring efforts by introducing gender indicators in their surveys and data collection activities.

In addition to national efforts to improve data collection and measurement, it is also important that research institutions and those involved in gender and ICT research efforts collaborate and coordinate efforts, so that new research efforts avoid duplication and complement existing and ongoing research efforts. New, gender-centred research will enable us to develop a better understanding of women's Internet access and use, and to create the policy needed to address barriers to access faced by women.

4 GENDER INEQUALITY: EXACERBATING AFFORDABILITY CHALLENGES

Develop & implement gender-responsive national broadband plans & policies

Despite efforts over the last decade (e.g., an early ITU initiative to develop a gender and telecommunications policy curriculum and train policymakers and regulators on the importance of gender analysis; research and policy advocacy work done by UN agencies and global NGOs working on issues around gender in ICT), very little progress has been made to integrate gender equality targets at the ICT sector policy level. More recently, the Broadband Commission Working Group on Gender was successful in adding a new gender target – gender equality in broadband access by 2020 – to its advocacy efforts; however, this effort has had limited practical support and, therefore, limited impact.

This trend is apparent also on a national level. Very few countries currently take a gender-focused approach to their policy development – only 10 out of 109 countries covered in the 2013 Broadband Commission Working Group on Gender Report have policies that include references to gender. Only seven of a small sample of 17 developing countries analysed in further detail for our own affordability research have broadband plans in place, and only two (Nigeria and Colombia) have plans that include specific targets for ICT gender equity, with budget allocated to achieve these targets.

Without a specific focus on gender equality goals, policies and national plans will continue to fail 50% of their population. Given the significant gaps in addressing gender equality goals through policy and plans across most countries, we recommend that all policymakers consider the elements listed below as they develop or update their broadband plans and/or national ICT policies.

Designing policies with women in mind: Making policies & plans more gender-responsive.

- Ensure that all analysis conducted for the purposes of developing policies and plans integrate gender and gender considerations, from network deployment analysis to universal access strategies and priorities. [37]
- Involve gender advocates and experts in the policy and planning process from the start to ensure women-centric policy development.
- Establish time-bound targets to achieve gender equality in access across all areas of policies and plans, from skills building to adoption and use.
- Consider allocating a percentage of the resources available to support women-centred activities, including resources to promote and support women ICT entrepreneurs, digital literacy training for women and girls, and targeted public access and other projects to support access and use for women and girls.
- Ensure that all skill building and training programmes are developed considering the needs of women and girls across all educational levels. These programmes should: consider what themes would be most relevant to participants; offer training opportunities for all levels, from basic skills to more advanced coding and design; consider the location of programmes and the gender of trainers.
- Establish quotas to ensure the equal participation of women and other marginalised groups in all programmes supported by national policies and plans, especially rural and poor populations.

Support education & skill-building programmes with a focus on women & girls

Research has shown the importance of a comprehensive broadband strategy – and one that considers both the supply of and demand for broadband services – for increasing universal access to and use of affordable Internet. Yet, if these supply and demand strategies continue to ignore the unique barriers faced by women and girls, they will never achieve goals of universal affordable access. To achieve equal and universal access, it is critical that both national broadband plans and broader national and international ICT policies contain gender-specific, time-bound targets, and consider best practices to overcome the economic and socio-cultural barriers that women face in getting online. Without such deliberate intervention, grounded in a careful understanding of the economic, social, and cultural realities of women's ICT access and use, policies run the risk of further entrenching the gender digital divide and reproducing offline gender inequalities online.

4 GENDER INEQUALITY: EXACERBATING AFFORDABILITY CHALLENGES

ENABLING INTERNET ACCESS & MEANINGFUL USE FOR NIGERIA'S WOMEN

Nigeria's National Broadband Plan (2013-2018) envisions a highly connected society and views access to broadband as a key factor in facilitating socio-economic development for the country and its people. It commits the government to intensifying efforts for improving digital literacy and inclusion by using existing national assets for community access, and to advocate and demonstrate the benefits of broadband within the government and among the population. Furthermore, the plan aspires to close the gender gap in ICT by committing to *"monitor specifically the number of women without access to the Internet; provide incentives for private educational centres and civil society organisations to train more women in the use of the Internet, and have dedicated centres at local government headquarters to serve as safe technology access centres for women. Courses on safe use of the Internet for girls will also be delivered using ICT."*

Girls and women in Nigeria are 40% less likely to have access to the Internet than men, and support from the government and private sector is critical in closing this gap. The Growing Girls and Women in Nigeria (G-WIN) programme, initiated through the Ministry of Communications and Technology, supports projects seeking to bridge the gender gap in digital access and empowerment, such as:

- Smart Woman Nigeria is an online network of women in Nigeria who receive important information about topics like health, education, and agriculture via their mobile phones. This initiative has enabled rural and less privileged women to access information to help them meet their socioeconomic needs (e.g., information about health, education, agriculture, etc.).
- Digital Girls ICT focuses on developing ICT interest and skills among secondary school girls through their participation in digital clubs that include exposure to cutting-edge training in ICT skills. Though women represent more than 50% of Nigeria's population, they occupy fewer than 20% of ICT jobs in the country. Digital Girls Clubs encourage young girls to embrace ICT in order to bridge the existing digital divide between men and women.
- FMCT/Huawei 1000 Girls leverages a private-public partnership with an ICT company to train 1,000 girls in practical ICT skills and knowledge to increase employability.

Access to education, and skill building and training opportunities, is key to support women's effective participation in a digital society, and must be considered and integrated as part of a comprehensive strategy. Several initiatives have been launched to support technical skills development for women and girls, including Take Back the Tech (led by the Association for Progressive Communications), trainings for women by World Pulse, and several programmes led by Ghana KACE. Recent efforts by the African Technology Foundation (see box below) serve as a good example of the kind of activities and opportunities that policies should support and integrate into larger-scale educational efforts.

TECHNOLOGY BOOTCAMP EMPOWERS YOUNG TANZANIAN WOMEN[38]

To address the gender digital divide and ensure that women are provided an opportunity to develop as successful entrepreneurs, the African Technology Foundation recently conducted the first in a series of technology bootcamps for women at the University of Dar Es Salaam, Tanzania. Implemented in partnership with the College of Information and Communication Technologies (CoICT) at the University of Dar Es Salaam, Buni Divas, and HelptoHelp, the bootcamp was designed to achieve the following:

- Give female students studying at higher education institutes in Tanzania computer skills trainings and an introduction to online learning tools to meet the needs of universities as well as future employers.
- Train young Tanzanian women to become Technology Ambassadors, who can teach basic computer skills to fellow students, as well as in their home and business communities, with a focus on expanding into rural communities.
- Encourage employers in Tanzania to increase their hiring quota for skilled women, and to design roles based on realistic workplace challenges.

Bootcamp participants were trained and then tested on their basic computing skills. They were introduced to various elements of basic computing, including word processing, presentation technologies, coding, and software development, and a number of women were invited to develop and present their ideas for potential new business start-ups.

[38] Prepared with inputs from the African Technology Foundation.

5

POLICY RECOMMENDATIONS

5 POLICY RECOMMENDATIONS

The results from this year's Affordability Drivers Index point to areas in which countries have made gains to lower broadband costs; more importantly, they also highlight areas for improvement. These improvements are imperative to achieve the global goal of universal access, and stated goals by many governments to improve broadband affordability and access. Yet, to realise these goals, countries must overcome barriers posed by income and gender inequalities. Below, we review our key recommendations for tackling these challenges and enabling equal, affordable access for all.

5.1 REDEFINE "AFFORDABILITY" WITH INCOME AND GENDER INEQUALITIES IN MIND

A major challenge to achieving affordable, universal access is that the current definition of affordability does not allow us an accurate picture of the true cost of access across the globe. In 2011, the UN Broadband Commission put forward what is now the de facto definition of "affordable Internet": the price of an entry-level broadband plan should be less than 5% of monthly average national income (i.e., GNI per capita). Different components of this definition are worth revisiting.

a. Redefine "entry-level" broadband as a 1GB data plan

First, it is time to reconsider what is meant by an "entry-level" broadband plan. As we discussed previously, a 500MB mobile broadband plan for use over the course of a month – equivalent to about 16MB of data per day – is limiting. As the data requirements of applications continually increase, so too does the need for larger data packages. The content most useful to those currently offline, many of whom are illiterate or lack formal education, is often the content that requires the most data to access (e.g., audio/visual content, interactive health and education apps, etc.). To benefit from and use the Internet in a meaningful way, it is much more realistic to assess affordability based on the price of a 1GB mobile broadband prepaid plan. While this remains a bare minimum, it provides a more relevant starting point.

b. Set a more ambitious cost target

It is also important to reconsider the 5% affordability threshold. Our analysis has revealed that at this level, broadband prices in many countries appear to be affordable, when, in fact, they are too expensive for a significant portion of the population. In many of the countries that have achieved the 5% target, entry-level broadband (500MB) is still too expensive for at least the bottom 20% of income earners in the country and often remains out of reach for all those except the top group of income earners.

Using national average income as a measurement of affordability is imprecise and disguises the challenges caused by high levels of income inequality. Despite this, using GNI per capita – data that is readily available – as a measurement tool for affordability will remain our best option for assessing progress, so long as more granular data (e.g., data aggregated by income quintiles) remains hard to come by. To stand a chance at achieving the universal, affordable access called for in SDG 9c, we must account for and overcome the barriers posed by poverty and income and gender inequality. To do this, we must lower the threshold for what we consider "affordable" Internet.

c. Adopt and work toward a new "1 for 2" target

We propose defining affordability as an entry-levelbroadband plan (i.e., 1GB plan) priced at 2% or less of GNI per capita. If growth continues at current rates, the digital divide will continue to widen and achieving universal access by 2020 will be impossible. In fact, LDCs are on track to achieve universal access (defined as 90% Internet penetration) only in 2042. Redefining "affordable Internet" as 1GB of data priced at 2% or less of GNI per capita will move the target to a level where women, the poor, and other marginalised populations might be able to afford to access the Internet and join the digital revolution. International organisations, including the UN Broadband Commission and the ITU, as well as national governments around the world must adopt and start working toward this new, more ambitious target now.

5 POLICY RECOMMENDATIONS

5.2 REDUCE THE COST OF DEVICES

The additional cost of a smartphone – even a low-cost smartphone – conspires to keep many others offline. When the price of such a device is added to the price of a basic broadband plan, the number of people across income quintiles that can afford access is dramatically reduced. Enabling more people to afford broadband will require bringing down the cost of smartphones and other ICT devices.

In order to bring more affordable smartphones to the market, different stakeholders have important roles to play. Handset manufacturers must continue to manufacture low-cost smartphones; some have taken important steps in this regard (e.g., Google's Android One programme, Huawei low-cost products), but much more needs to be done to develop a wider range of phones within the range of prices the GSMA estimates to be affordable in developing countries (i.e., US$25-50). Previous failed forays into the market have underscored the importance of these phones having a functionality and design comparable to higher-end phones, so that consumers are inclined to purchase them. Manufacturers and mobile phone operators should also consider business models that would enable them to partner to offer lower-priced smartphones to consumers.

The private sector, government, and academia should also examine the challenges posed by and effects of royalty stacking in the smartphone industry. Observers suggest that up to 31% of the cost of a US$400 smartphone can be attributed to patent royalties. Indeed, in some cases, the cost associated with patent royalties [39] for a smartphone represent more than the cost of the phone's physical components. This matter requires closer examination, especially because royalty payments act as a disincentive for potential new market entrants to invest, innovate, and compete in the smartphone industry – all prerequisites for affordable desirable smartphones.

Governments can also help drive down device costs by reducing import taxes on handsets and related items like SIM cards. The A4AI-Mozambique Coalition argued, in a study done on the existing ICT taxation regime in Mozambique, that reducing custom duties on handsets (as well as other devices and equipment) could increase GDP by approximately US$443 million over four years. This economic growth would result from the expected increased uptake in mobile phone and ICT use. Such actions are urgent in countries with high taxes levied on ICT imports and services, like in St. Lucia, where import duties and other taxes add up to a whopping 55% , and in the Dominican Republic where handsets taxes represent 48% of the total cost of devices. It is important that governments work to identify and implement a balanced taxation regime for ICTs, and handsets in particular – one that does not emphasise short-term revenues at the expense of medium- to long-term economic impacts.

5.3 PRIORITISE PUBLIC ACCESS FACILITIES

Even when device costs are reduced and data becomes more affordable, lack of income will remain a steep barrier to access for some marginalised groups. Public access initiatives are often critical to bringing connectivity to these groups, yet they are frequently neglected or excluded from policy in developing countries trying to achieve universal broadband. To achieve the SDG target of universal access, governments will have to invest much more in providing widespread low-cost or free public access facilities, designed particularly to reach women, rural dwellers, and those living in poverty.

Public access facilities – including telecentres, community centres, post offices, libraries, and public WiFi networks – provide the public with affordable or free access to computers, tablets, and other communication devices with an Internet connection. These facilities may also serve as anchor points for community WiFi systems and networks that can also reach those people with their own mobile and computing devices. Recent experiences with public WiFi networks in in Sri Lanka and in the city of Tshwane, South Africa illustrate how governments are sponsoring public access and providing a free data allowance to citizens. Brazil, Colombia, Mozambique, Sri Lanka, Philippines and India all offer examples of successful public access initiatives that have not only expanded access, but have also provided the opportunities for skills training needed for local communities to benefit from this access.

[39] A4AI calculations based on Armstrong, Anne, Joseph H. Mueller and Timothy D. Syrett (2014), The Smartphone Royalty Stack: Surveying Royalty Demands for the Components Within Modern Smartphones. https://www.wilmerhale.com/uploadedFiles/Shared_Content/Editorial/Publications/Documents/The-Smartphone-Royalty-Stack-Armstrong-Mueller-Syrett.pdf

5 POLICY RECOMMENDATIONS

5.3 PRIORITISE PUBLIC ACCESS FACILITIES CONTINUED

Public access facilities offer broadband-enabled services, but they also double up as entities that provide educational opportunities, digital literacy training and, in many cases, skill development and distance learning opportunities. A multi-year study in several low- and medium-income countries found that most users (62%) first used the Internet at a public access venue. The study also found that public libraries are particularly important for providing affordable access to underserved groups. However, public libraries and other public access facilities often remain underfunded or overlooked as a mechanism for providing affordable access.

DIGITAL INCLUSION INITIATIVES

A number of governments have made commitments to address digital inclusion, especially in rural areas. Examples include:

- The NBTC of Thailand allocated US$550 million from the country's Universal Service and Access Fund (USAF) to extend connectivity to 70,000 villages and connect 2,300 community-based ICT centres to broadband services.
- Fiji's telecentre model promotes Internet use in schools – both for students, during school hours, and for local communities after school hours.
- Free broadband access in all public libraries of Western Cape, South Africa has allowed students and community members who would not otherwise be connected to access the Internet.
- In 2015, the Philippines committed resources to establish free nationwide WiFi in sites like schools, hospitals, airports and public parks by 2016.
- In Mozambique, Community Multimedia Centres support digital inclusion by providing free and low-cost access and digital training programmes for communities.

One of the main challenges surrounding public access initiatives is an insufficient understanding of the strategies needed to create and sustain public access centres. Some potential areas for focus by policymakers include strengthening national and local knowledge on how to create sustainable public access venues, offering locally relevant content and services such as e-government services, providing continuous and relevant training for staff and users at these venues, and ensuring that public access venues have appropriate low-cost broadband connectivity options. The role of telecentres will continue to evolve as technology changes, but ensuring inclusive growth will continue to require government-led efforts to ensure the availability of digital tools for marginalised citizens [41].

One key option to address sustainability concerns is to strengthen the use of Universal Service and Access Funds (USAFs) to support the expansion and successful implementation of public access facilities. As we've noted in previous research, USAFs can direct funding to where it will be most effective in closing digital gaps and enhancing demand, which in turn will accelerate *"the virtuous cycle of broadband ecosystem expansion"* [42]. As important collective investment mechanisms, USAFs are well positioned to invest in and support public access facilities to become the low-cost or free access option for the unconnected, and the effective use of such funds can support these efforts.

5.4 DEVELOP GENDER-RESPONSIVE NATIONAL BROADBAND PLANS

Gender inequality represents one of the most critical challenges of our time. The gender gap in ICT access (as evidenced by the Web Foundation's Women's Rights Online report) is one such inequality, and addressing it will be crucial for achieving both SDG 9c (universal and affordable access) and SDG 5b (using ICTs to empower women). We cannot achieve universal access without bringing women (half the world's population) online; likewise, women's empowerment through ICTs will not happen without enabling women affordable access to the Internet. Ensuring that ICTs can support women's empowerment while overcoming the gender gap in ICT access and use are goals that must be explicitly addressed by governments everywhere. Although both gender issues and ICTs impact all aspects of modern life, they rarely intersect at the policy level. As noted previously, there are very few national broadband plans that address gender issues. At the same time, there are

[41] Francisco Proenza (2015), Public Access ICTs Across Cultures. https://mitpress.mit.edu/public-access-ICT

[42] A4AI (2015), Universal Access and Service Funds in the Broadband Era: The Collective Investment Imperative. http://a4ai.org/wp-content/uploads/2015/06/A4AI-USAF_06.2015_FINAL.pdf

5 POLICY RECOMMENDATIONS

5.4 DEVELOP GENDER-RESPONSIVE NATIONAL BROADBAND PLANS CONTINUED

very few national gender policies that discuss ICT access and use.

In the 2014-15 Affordability Report, we showed that effective broadband strategies (i.e., *"strategies that consider both the supply of and demand for broadband services, and that reflect a partnership-based approach to decision-making and implementation"*) were associated with lower broadband prices. Making such strategies more gender-responsive has the potential to improve affordability and access to broadband among women; this, in turn, can help reduce the gender gap. A gender-responsive broadband plan will consider existing gaps between men and women in terms of affordability and access, and will propose interventions with the potential to lead to equal outcomes for men and women.

There are a few nascent examples of countries working to make their national broadband plans more gender responsive. A4AI national coalitions are supporting efforts in the Dominican Republic – which is working to include gender concerns and targets in the country's Digital Agenda (see box above) – and Mozambique, which is working with the support of Cetic.br – the UNESCO Regional Centre for Studies on the Development of the Information Society – to collect more gender data by including new gender-based indicators and gender-specific questions in the country's new household ICT survey. In order to develop a more general set of recommendations for other countries, we draw on these experiences and previous work in this area to put forward a checklist of issues that national broadband plans and sector policies should incorporate when looking to close the gender digital divide. Implementing these plans can also help countries achieve international and national targets to reduce the gender access gap and empower women.

CREATING A GENDER-RESPONSIVE DIGITAL AGENDA IN THE DOMINICAN REPUBLIC

The Dominican Republic recently revived efforts to develop a national Digital Agenda, and has committed to developing the agenda with input from a series of public consultations. The A4AI-Dominican Republic Coalition spearheaded efforts to ensure that this Digital Agenda would be gender-responsive, taking into consideration the unique needs of, and barriers faced by women in the digital space. While the initial draft of the Digital Agenda acknowledged the Gender Equality Plan for the Information Society (PIOM-SI) (developed by the Research Center for Feminine Action (CIPAF) in collaboration with Dominican gender advocates), it did not integrate its recommendations across the policy's action areas.

In September 2015, over 90 stakeholders from various government agencies of the Dominican Republic, the private sector, and civil society gathered in Santo Domingo for a workshop on how best to integrate gender across all five pillars of the proposed Digital Agenda – (1) infrastructure and access, (2) capacity development, (3) productive development and innovation, (4) e-government and digital services, and (5) enabling environment. These ideas were then shared during a public consultation. The workshop and consultation – a collaboration between the National Commission on for Information Society and Knowledge (CNSIC), CIPAF, Indotel, the Ministry of Women's Affairs (Mesa de Género y Tecnologías) and A4AI – revealed enormous public support for an increased focus on gender equality in the policy. It also recommended a potential sixth pillar on gender and digital inclusion, with cross-cutting considerations for gender and socio-economic equality in the Information Society. Participants recommended that the new policy focus specifically on:

- Digital services designed for the information needs of women and girls;
- Infrastructure and access strategies that consider the barriers to access faced by poor women, especially in rural or remote areas;
- Capacity building and educational opportunities for women and girls across all sectors, from agriculture to the military; and
- Building support for women technologists.

The inputs and suggestions are currently being integrated into the working draft of the Digital Agenda, which should be submitted for approval by mid-2016. It is expected that the new Digital Agenda will reflect the vision and aspiration of all Dominicans, including women and girls.

5 POLICY RECOMMENDATIONS

5.4 DEVELOP GENDER-RESPONSIVE NATIONAL BROADBAND PLANS CONTINUED

Table 8: Developing gender-responsive ICT policy and broadband plans

Overall	National level objectives for gender equity targets across key areas of the broadband ecosystem
Investment in the Sector (by private sector, public sector, and public-private partnerships)	Investment incentives (e.g., tax reductions, universal access contribution "credits") to reduce overall costs, especially in rural and remote areas, where a significant percentage of the poor are women and girls that can benefit the most from affordable services, including through public access facilities.
	Licensing obligations for coverage in rural, peri-urban and un-served areas with a focus on serving women and the poor (e.g., outside major transport corridors).
	Policy incentives (e.g., tax reductions, universal service funding) for shared investments and operations for the provision of public access facilities to serve women and low-income populations.
	Policy guidance to increase collaboration among all public utility providers (e.g., telecom, transport, energy) and increase access to all services to the poor.
	Promote and incentivise investments in women-centric technology solutions that provide affordable quality broadband access and applications.
	Public and/or public-private partnerships investments focused on filling the gender access gap across market segments.
Availability (Supply)	Availability of women-and girl-focused services. If these do not exist, are there provisions to support the development of services and targeted offers to meet women's needs?
	Availability of public access services (e.g., community WiFi) supporting and providing low-cost or free access to meet the needs of women and rural populations.
	Are networks and services available in areas where women work, farm, or conduct their business?
Relevance (Demand)	Is there content available that is relevant to women and girls? If not, are there provisions to support the development of women-centred content and supporting applications?
	Is the policy addressing digital skills and digital literacy programmes to support the participation of women and girls in the ICT sector as users, producers, and creators?
Affordability	Are entry-level broadband prices affordable to all women in the country (considering income and gender inequality)? If not, are plans and policies in place to ensure low-cost or free public access to those population groups, both in urban and rural areas?
	Do affordable data packages provide sufficient data for the information and digital needs of women and girls? If not, are there policies in place to encourage innovative data plans to support access by low income populations?
Measuring progress	Data collected to measure progress towards all gender targets.
	Data collected to measure the contribution and impact of all the above type of policies and measures.
	Improve collection of sex-disaggregated ICT data and gender indicators.
	Implement guidelines for the collection of gender and ICT indicators in the sector (starting with guidelines developed by the ITU and defining country-specific indicators).

5 POLICY RECOMMENDATIONS

5.5 INTEGRATED APPROACH TO POLICIES FOR AFFORDABLE BROADBAND INTERNET

Our analysis of countries' performance on the Affordability Drivers Index, particularly in terms of policy scores, found that no particular set of policies (e.g., policies around competition, infrastructure sharing, universal access, spectrum policies, etc.) were more likely than another to lead to lower broadband prices. Policies across all these areas are important in lowering industry costs and broadband prices. This points to our final recommendation – to address many of the challenges discussed above, governments and their partners in the private sector and civil society need to employ a comprehensive approach to creating affordable broadband Internet.

Our 2014-15 Affordability Report offered a roadmap towards improved affordability using a similar multi-pronged approach that promotes competition, open access and infrastructure sharing, access to spectrum, and universal access. We would add that it is also important to ensure that these policies are connected to related policies dealing with specific challenges such as gender inequality, income inequality, or poverty.

This is even more relevant in light of the role broadband Internet plays in helping to achieve many of the proposed SDGs. A comprehensive approach can extend beyond specific sectoral objectives and can be part of a country's broader development agenda. The 2016 World Development Report notes that for countries to fully realise ICT-supported development goals they must also invest in relevant and complementary non-ICT initiatives, including policies around skills development (e.g., education and training), accountability (e.g., good governance), and competition (e.g., anti-trust laws). Of course, all of this will require investment. Donor agencies and governments must support this by stepping up investment in broadband infrastructure and low-cost connectivity models, as well as in digital skills, local content development, and public access initiatives. A comprehensive approach to broadband policy will incorporate the assumptions and goals of a range of other policies and ideally will be part of a multi-sectoral debate on achieving more affordable broadband.

ANNEXES

ACKNOWLEDGEMENTS

Research and analysis for the 2015-16 Affordability Report was led by Dhanaraj Thakur. The report was written by Dhanaraj Thakur, Sonia Jorge and Lauran Potter, with contributions from Kojo Boakye, Onica Makwakwa, Ingrid Brudvig, and Shaddy Shadrach. Dillon Mann and Anne Jellema provided valuable advice and editorial support.

The Affordability Drivers Index research was carried out by Hania Farhan and Siaka Lougue (African Institute of Mathematical Sciences). A wide range of experts were involved in validating and reviewing the primary research conducted last year, and others helped to develop various case studies and best practice examples highlighted throughout the report; we thank them for their contribution.

The A4AI Affordability Working Group – composed of member representatives from the Association for Progressive Communications, Cisco, DIRSI, Ericsson, Facebook, Google, LIRNEasia, the Internet Society, Microsoft, Nokia, Omidyar Network, Research ICT Africa, USAID, World Pulse, and the Web Foundation – provided valuable inputs and advice on earlier drafts, although any errors in this draft remain ours alone.

Finally, we are grateful for the support of A4AI's global sponsors – Google and USAID – and that of the Alliance's entire membership.

ANNEX A: METHODOLOGY

The Affordability Drivers Index (ADI) is a composite measure that summarises in a single (average) number an assessment of the drivers of Internet affordability in various countries. Benefiting from the research framework established by the Web Index, the ADI covers 51 countries and focuses on two key aspects driving affordability: communications infrastructure and access.

Methodology

Two types of data are used in the construction of the Index: existing data from other data providers (*"secondary data"*), and new data gathered via a multi-country expert researcher survey *("primary data"*).

The survey consists of a set of questions – scored on a scale of 0 – 10 – on issues regarding policy, regulation, and various other aspects around broadband and affordable access to the Internet. The questions were specifically designed by the Alliance for Affordable Internet, the Web Foundation, and its advisers. These primary data, based on and aligned with the A4AI Best Practices, attempt to assess the extent to which countries have achieved a policy and regulatory environment that reflects the best practice outcomes. Survey questions were scored based on predetermined criteria by country experts. Three country experts were asked to provide evidence and justification that supports each score. The scores were checked and verified by a number of peer and regional reviewers.

The policy surveys were completed in 2014. We decided not to conduct a new set of surveys for 2015 on the assumption that policies and the regulatory environments of each country have not changed significantly, if at all, over the last year for most countries. To ensure that this was the case we asked several of the policy experts to review their survey responses for their assigned countries and compare those to the national policy and regulatory environments in 2015. In most cases, their responses were similar to those of 2014, although some noted that new laws or regulations are expected to be completed in 2015 which will take effect next year.

Data sources and data providers

We employed data from several large international databases to measure or proxy the dimensions under study. Before an indicator is included in the Index, it needs to fulfill five basic criteria:

1. Data providers have to be credible and reliable organisations, which are likely to continue to produce these data (i.e., it is not a one-off dataset publication).

ANNEX A: METHODOLOGY CONTINUED

2. Data releases should be regular, with new data released at least every three years.
3. There should be at least two data years for each indicator, so that a basic statistical inference could be made.
4. The latest data year should be no older than three years back from publication year.
5. The data source should cover at least two-thirds of the sample of countries, so that possible bias – introduced by having a large number of indicators from one source that systematically does not cover one-third or more of the countries – is reduced.

All the indicators included in the ADI are listed in Table 8 where they are grouped by sub-index and type (primary sources or secondary sources). There are two distinct types of indicators: primary and secondary. The primary indicators (codes A1-A13) are collected via the policy surveys described earlier. The secondary sources included data collected by the ITU, GSMA Intelligence, and the World Bank.

The indicators used in the ADI represent a comprehensive set of factors that influence broadband affordability. However, this is not a complete list as there may be other important factors which cannot be included because they do not meet the criteria above. In such cases, we conduct supplementary analyses to the index as we have done in this year's report by looking at income and gender equality.

Table 8: List of Indicators included in the Affordability Drivers Index

Type (Code)	Access Sub-index Indicators
Primary (A5)	Clear, time-bound targets in National Broadband Plan for reducing cost & increasing penetration
Primary (A12)	USFs used to subsidise access for underserved and underprivileged populations
Primary (A4)	ICT regulatory decisions informed by adequate evidence
Primary (A13)	Specific policies to promote free or low-cost access
Primary (A11)	To what extent have Universal Access/Service Funds (USF) prioritised infrastructure investments that will reduce costs and increase access for underserved communities and market segments?
Primary (A2)	To what extent does the gov't ICT regulator perform its functions according to published and transparent rules, with the ICT regulatory decisions influenced by public consultations?
Secondary (WI)	Market Concentration – Herfindahl Index (HHI)
Secondary (ITU_K)	Existence of National Broadband Plan
Secondary (ITU_B)	Fixed broadband subscribers (per 100 people)
Secondary (WI_B)	Unique mobile subscribers (per 100 people)
Secondary (WI_C)	Mobile broadband connections (% of all connections)
Secondary (WEF_B)	Internet access in schools
Secondary (ITU_EYE)	Cluster of ITU indicators (bundled)
Secondary (ITU_N)	Percentage of individuals using the Internet
Type (Code)	Infrastructure Sub-index Indicators
Primary (A1)	Flexible, technology & service neutral ICT licensing frameworks
Primary (A8)	Specific guidelines for public infrastructure funding & telecoms subsidies
Primary (A9)	Time bound gov't plan to make available broadband spectrum for high-speed data services
Primary (A10)	Transparent, competitive and fair process for increasing spectrum availability
Primary (A3)	To what extent does the regulator and/or the competition commission enforce the country's ICT licensing requirements and regulations?
Primary (A6)	National policies in place facilitating efficient access to public rights of way & tower zoning permissions
Primary (A7)	To what extent does the government facilitate resource sharing across telecommunications operators?
Secondary (ITU_G)	Percentage of population covered by mobile cellular network
Secondary (ITU_A)	International bandwidth per Internet user (bits/s)
Secondary (ITU_O)	Fixed broadband speed (Mbps)
Secondary (ITU_L)	Investment per telecom subscriber (average over 3 years)
Secondary (WB_A)	Secure Internet servers (per 1 million people)
Secondary (IEAA)	Electrification Rate
Secondary (PCH)	Existence of Internet Exchange Points (IXPs)

ANNEXES CONTINUED

Index Computation

There are several steps in the process of constructing a composite index. Some of those involve deciding which statistical method to use in the normalisation and aggregation processes. In arriving at that decision, we took into account several factors, including the purpose of the Index, the number of dimensions we were aggregating, and the ease of disseminating and communicating it in an understandable, replicable, and transparent way.

The following seven steps summarise the computation process of the Affordability Drivers Index:

1. Take the data for each indicator from the data source for the 88 countries covered by the Web Index for the 2007-2014 time period. Impute missing data for every secondary indicator for the sample of 88 countries over the period 2007-2014. Some indicators were not imputed, as it was not logical to do so. None of the primary data indicators were imputed. Hence, the 2015-16 Affordability Drivers Index is very different from the 2007-2014 Indexes that may be computed using secondary data only. Broadly, the imputation of missing data was done using two methods, in addition to extrapolation: country-mean substitution if the missing number is in the middle year (e.g., have data for 2009 and 2011, but not for 2010), or taking arithmetic average growth rates on a year-by-year basis. For the indicators that did not cover a particular country in any of the years, no imputation was done for that country/indicator.
2. Normalise the full (imputed) dataset using z-scores (z=(x-mean)/standard deviation), making sure that for all indicators, a high value is *"good"* and a low value is *"bad"*.
3. Where applicable, cluster some of the variables (as per the scheme in the tree diagram), taking the average of the clustered indicators post-normalisation. For the clustered indicators, this clustered value is the one to be used in the computation of the Index components.
4. Compute the two sub-index scores using arithmetic means, using the clustered values where relevant.
5. Compute the min-max values for each z-score value of the sub-indices, as this is what will be shown in the visualisation tool and other publications containing the sub-index values (generally, it is easier to understand a min-max number in the range of 0 – 100 rather than a standard deviation-based number). The formula for this is: [(x –min)/(max – min)]*100.
6. Compute overall composite scores by averaging the sub-Indexes (at z-score level).
7. Compute the min-max values (on a scale of 0-100) for each z-score value of the overall composite scores, as this is what will be shown in the visualisation tool and other publications *containing the composite scores.*

ANNEXES CONTINUED

Income Inequality & Affordability

In order to better understand how many persons in a given country can actually afford a mobile broadband package, we can use average incomes broken down by population segments, rather than a single national average. One approach is to rank everyone based on their estimated income and then group the entire population into five equal groups (or quintiles). Persons in the top quintile would earn the most on average, while those in the lowest quintile earn the least on average.

The World Bank's World Development Indicators Database provides the income shares of all quintiles for most of the countries covered in the Affordability Report. With this data we can estimate the average income for each quintile and use that instead of a single national average income (a similar approach based on income deciles was done in the ITU's Measuring the Information Society Report 2014 using older data).

From this analysis we can get an approximation of the total number of quintiles for which a 500MB package is affordable based on the threshold of price less than 5% of average monthly income. To do this we sum the number of quintiles (each 20% of the population) where prices (in PPP) are less than 5% of average monthly income (in PPP) for that quintile.

As an illustration, in Malaysia the price of a 500MB mobile broadband prepaid plan in 2014 was US$8.56 (or $17.61 PPP), which was only 0.99% of the national average monthly income – well below the UN 5% target. If we look at incomes by quintile, this price increases to 3.85% of the average monthly income of those in the bottom 20%, meaning that it's affordable for all five income groups.

We must point out that this analysis can only lead to approximations at best, as they are based on estimates of income shares, which are from 2013 to 2009. As our income and pricing data are from 2014 we make the assumption that income distributions have not improved significantly in the last one to five years.

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ANNEX B: AFFORDABILITY DRIVERS INDEX – EMERGING COUNTRIES

Table 9: Affordability Drivers Index - Emerging Countries

Rank	Country	Sub-index: Communication Infrastructure	Sub-index: Access and affordability	Affordability Drivers Index: Overall Composite Score
1	Colombia	60.85	69.45	65.32
2	Costa Rica	50	78.88	64.6
3	Malaysia	56.69	69.57	63.28
4	Turkey	58.6	65.85	62.35
5	Peru	61.48	61.93	61.82
6	Brazil	60.35	59.28	59.9
7	Mauritius	44.81	65.58	55.2
8	Mexico	51.05	56.68	53.85
9	Argentina*	49.58	57.16	53.35
10	Thailand	44.13	60.72	52.39
11	Jamaica	42.79	59.02	50.84
12	Ecuador	47.35	53.99	50.6
13	Dominican Rep.	41.63	53.07	47.23
14	Tunisia	47.11	46.8	46.83
15	South Africa	38.59	54.57	46.44
16	China	41.82	47.99	44.74
17	Botswana	40.54	48.82	44.51
18	Namibia	26.76	51.56	38.9
19	Kazakhstan	29.45	44.16	36.5
20	Venezuela (Bolivarian Republic Of)*	28.39	41.12	34.42
21	Jordan	23.02	46.36	34.36

* Note – The World Bank now (as of July 2015) classifies Argentina and Venezuela as high-income countries; they remain included in this table for comparison.

ANNEX C: AFFORDABILITY DRIVERS INDEX – DEVELOPING COUNTRIES

Table 10: Affordability Drivers Index - Developing Countries

Rank	Country	Sub-index: Communication Infrastructure	Sub-index: Access and affordability	Affordability Drivers Index: Overall Composite Score
1	Morocco	49.32	61.67	55.51
2	Rwanda	51.9	54.42	53.13
3	Nigeria	47.93	57.83	52.85
4	Uganda	42.44	56.53	49.4
5	Gambia	42.81	49.12	45.82
6	Kenya	39.27	52	45.48
7	Viet Nam	32.33	56.74	44.37
8	Pakistan	44.97	43.6	44.11
9	Ghana	38.92	47.15	42.84
10	Myanmar	53.67	31.88	42.57
11	Philippines	37.07	47.83	42.24
12	Indonesia	39.09	45.7	42.19
13	United Republic Of Tanzania	40.38	43.9	41.93
14	India	42.88	37.85	40.12
15	Egypt	46.84	32.76	39.55
16	Bangladesh	45.04	33.73	39.13
17	Zambia	34.44	41.66	37.77
18	Mali	37.21	36.45	36.53
19	Benin	37.87	32.94	35.08
20	Senegal	28.65	37.08	32.5
21	Nepal	24.47	35.33	29.48
22	Mozambique	18.75	38.3	28.09
23	Cameroon	21.79	31.1	25.97
24	Zimbabwe	19.12	33.48	25.83
25	Burkina Faso	14.99	29.74	21.82
26	Malawi	16.5	24.77	20.06
27	Ethiopia	0	31.07	14.88
28	Sierra Leone	11.69	17.06	13.7
29	Haiti	13.22	14.88	13.36
30	Yemen	1.81	0	0

ANNEXES CONTINUED

ANNEX D: ADI SCORE & BROADBAND PRICE COMPARISONS

Table 11: Comparison of ADI scores and price as a % of GNI per capita for mobile broadband

Country	Affordability Index	Mobile broadband (prepaid, handset based, 500 MB)	Mobile broadband (postpaid, computer based, 1GB)
Kazakhstan	36.5	0.57	0.57
Turkey	62.3	0.95	1
Malaysia	63.3	0.99	1.69
Costa Rica	64.6	1.03	1.61
Brazil	59.9	1.13	2.31
Indonesia	42.2	1.13	1.56
Pakistan	44.1	1.31	10.47
Thailand	52.4	1.38	2.49
Mauritius	55.2	1.43	0.82
South Africa	46.4	1.48	1.18
Tunisia	46.8	1.68	2.53
Peru	61.8	2.02	3.04
Jordan	34.4	2.05	3.42
Philippines	42.2	2.47	8.27
India	40.1	2.48	3.13
Venezuela, RB	34.4	2.61	3.7
Namibia	38.9	2.62	2.81
Egypt, Arab Rep.	39.6	2.7	1.55
Mexico	53.8	2.72	2.26
Colombia	65.3	3.24	2.21
Bangladesh	39.1	3.49	5.28
Jamaica	50.8	3.63	5.19
Ecuador	50.6	4.43	4.44
Ghana	42.8	4.48	4.48
Morocco	55.5	4.73	4.68
Botswana	44.5	5.17	11.57
Nigeria	52.8	5.4	9.46
Kenya	45.5	5.89	11.78
Mozambique	28.1	6.28	13.13
Dominican Republic	47.2	6.46	3.7
Vietnam	44.4	7.31	3.92
Nepal	29.5	7.45	13.05
Gambia, The	45.8	10.07	143.92
Tanzania	41.9	10.54	7.59
Senegal	32.5	11.57	–
Zambia	37.8	11.89	14.16
Yemen, Rep.	0.0	12.19	–
Benin	35.1	12.3	21.53
Rwanda	53.1	14.02	28.03
Uganda	49.4	15.4	28.88
Ethiopia	14.9	16.92	39.29
Mali	36.5	17.04	27.2
Burkina Faso	21.8	24.3	16.2
Malawi	20.1	24.4	41.88
Zimbabwe	25.8	27.93	62.85
Haiti	13.4	32.8	32.8
Argentina	53.3	–	–
Cameroon	26.0	–	11.3
China	44.7	–	1.49
Myanmar	42.6	–	–
Sierra Leone	13.7		41.23

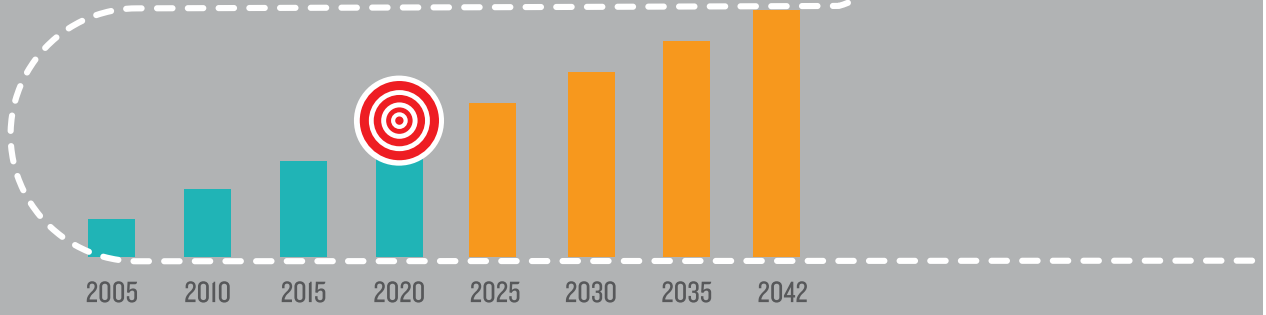
* Note – Where blank, data is not available.

INTERNET FOR ALL BY 2020?

IN SEPTEMBER 2015, WORLD LEADERS AGREED ON A NEW GLOBAL GOAL

AFFORDABLE, UNIVERSAL INTERNET ACCESS IN THE WORLD'S LEAST DEVELOPED COUNTRIES BY 2020

ON CURRENT TRENDS, THE WORLD WILL MISS THIS GOAL BY 22 YEARS



THE GLOBAL CONNECTIVITY SITUATION

4+BILLON PEOPLE OFFLINE

9 OUT OF 10 IN THE DEVELOPING WORLD

MOST OF THESE ARE WOMEN

INTERNET FOR ALL BY 2020?

THE HIGH COST TO CONNECT IS EXCLUDING BILLIONS FROM THE DIGITAL REVOLUTION

UN DEFINES "AFFORDABLE BROADBAND" AS 500MB OF MOBILE DATA PRICED AT 5% OR LESS OF AVERAGE MONTHLY INCOME.

WE MUST TAKE ACTION NOW

COMMIT TO A NEW 1 FOR 2 AFFORDABILITY TARGET – 1GB OF MOBILE DATA PRICED AT 2% OR LESS OF AVERAGE MONTHLY INCOME

WHY? When a basic broadband package – whether for 500MB or 1GB of data – is priced at this level, it becomes affordable for all levels of income earners.

PRIORITISE PUBLIC ACCESS

WHY? Free and subsidised community access enables connectivity for those that continue to be excluded by the market or are unable to afford the cost to connect.

DESIGN POLICIES WITH A GENDER FOCUS

WHY? Closing the gender digital gap is critical to global development and women's empowerment. This won't happen unless policies make a concerted effort to connect women.

AFFORDABILITY REPORT 2015/16

A4AI ALLIANCE FOR AFFORDABLE INTERNET

Alliance for Affordable Internet | 1110 Vermont Ave NW, Suite 500, Washington DC 20005, USA
www.a4ai.org | Twitter: @a4a_Internet

Global Report – October 2015

Women's Rights Online

Translating Access into Empowerment

WORLD WIDE WEB FOUNDATION

with support from:
Swedish International Development Cooperation Agency (Sida)
SWEDEN

1

EXECUTIVE SUMMARY

The newly adopted UN Sustainable Development Goals include an important pledge to harness information and communications technologies (ICTs) to advance women's empowerment, as well as a commitment to connect everyone in Least Developed Countries to the Internet by 2020. However, until now, estimates of the "digital divide" between women and men in use of the Internet and other ICTs have been sketchy.

This report explores the real extent of that divide in nine cities across nine developing countries, in order to gain a better understanding of the empowering potential of ICTs as a weapon against poverty and gender inequality, and the barriers that must be overcome to unlock it. Research was designed and carried out in close collaboration with leading national civil society organisations in the countries we studied.

The stereotype of poor people in the developing world uniformly "left behind" in the darkness of a life without Internet connectivity is as misleading as its opposite: the cliche in which almost everyone in Nairobi or Jakarta now wields a mobile phone that gushes forth market price data, health information and opportunities for civic engagement.

Instead, our research reveals a picture of extreme inequalities in digital empowerment – which seem to parallel wider societal disparities in information-seeking, voice and civic engagement. For example, Internet use among young, well-educated men and students in poor communities of the developing world rivals that of Americans, while Internet use among older, uneducated women is practically non-existent.

Our research reveals a picture of extreme inequalities in digital empowerment – which seem to parallel wider societal disparities.

Inequalities in access

Women are about 50% less likely to be connected than men in the same age group with similar levels of education and household income.

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Women are almost as likely as men to own a mobile phone of their own, but they are a third less likely than men of similar age, education level and economic status to use their phones to access the Internet.

The **most important socio-economic drivers of the gender gap in ICT access are education and age**. Controlling for income, women who have some secondary education or have completed secondary school are **six times** more likely to be online than women with primary school or less.

Cities with the highest gender gaps in education level such as Nairobi (Kenya), Kampala (Uganda), Maputo (Mozambique), and Jakarta (Indonesia) were also the ones where the highest gender gaps in Internet access were reported.

Conversely, **in the cities where women's educational attainment outstrips the men in our sample (New Delhi and Manila), the gender gap in Internet access has closed.**

Unconnected women cited lack of know-how and high costs as the major reasons that they are not using the Internet. In the countries in our study, a monthly prepaid data allocation of one GB (enough for just 13 minutes of Web use a day, excluding video) costs, on average, about 10% of average per capita income. That's 10 times more than what the same data costs the average OECD citizen, relative to income, and is double what people in developing countries spend on healthcare. In the countries with the highest Internet costs as a proportion of average income, our study found the lowest numbers of women online and the largest gender gaps in Internet use.

Inequalities in use

How people use the Internet, once they are connected, is also strongly influenced by offline inequalities. Most of the urban poor respondents in our study face comprehensive marginalisation in civic and economic life. Only a small minority proactively seek out information from any source on topics key to achieving their rights, and an even smaller percentage participate in political debate or community affairs. Most are in insecure, informal work or don't have any reliable income of their own. Being female deepens exclusion on every single one of these counts.

A few of these poor urban dwellers are starting to use the Internet to change their situation – to gain a voice, seek information, enhance their livelihoods, or expand their networks beyond existing social boundaries. Not only is this group small, it is also disproportionately male.

Women are half as likely as men to speak out online, and a third less likely to use the Internet to look for work (controlling for age and education).

The most important socio-economic drivers of the gender gap in ICT access are education and age.

However, there is potential for digital empowerment to spread much more widely and equitably:

- A high proportion of women and men surveyed recognise and value the Internet as a space for commenting on important issues, and say that the Internet has made it safer for women to express their views – even though they may not yet be using it for this purpose themselves.
- Large majorities of urban poor Internet users do already exploit digital platforms as a vehicle for reinforcing the social ties on which their survival often depends, suggesting that the Internet's power to enhance social capital could be an effective route to digital empowerment.
- Education is a major enabler of digital empowerment among women, suggesting opportunities for greater investment in girls' education to work hand-in-hand with targeted ICT skills programmes in schools.
- Gender gaps in how men and women use the Internet are significant – but not as large as gender disparities in access to the Internet. In other words, once women do manage to get online, the gap narrows between female and male users in terms of digital empowerment. The policy challenge is to grow the minority of women using the Internet and expand their voice and choices into a majority – both through expanding women's access and in tackling barriers to women's empowerment.

Notably, women who are active in "offline" political and civic life are not only more likely to be connected in the first place, but are also three times more likely (controlling for education level, age and income) to use the Internet to express opinions on important or controversial issues than other women. We need to better understand this synergy between offline and online agency in order to learn how gender norms that silence women in both realms can be overcome.

Patriarchy online

Around three in 10 men agreed with sentiments that the Internet should be a male-controlled domain, but only two in 10 women agreed. Only a tiny fraction of women said they do not use the Internet because it is "not appropriate" for them or that they are not permitted to do so. Such attitudes were much more prevalent in some cities than others, however. For example, in New Delhi and Manila nearly two-thirds of men agreed

Around three in 10 men agreed with sentiments that the Internet should be a male-controlled domain.

with the statement that women should not be allowed to use the Internet in public places, and over half agreed that men have the responsibility to restrict what women look at online. Yet, these were the two cities with the highest levels of Internet use among women, suggesting that patriarchal beliefs don't necessarily stop women getting online. However, further research is needed to explore the extent to which they contribute to self-censorship in how, where and when women use the Internet.

Summary of key recommendations

We will not achieve the SDGs on universal Internet access and empowerment of women through ICTs unless technology policy is specifically designed to tackle and overcome the steep inequalities of gender, education and income outlined in this study.

Full details of each recommendation can be found at the end of the report, but the fundamentals include:

1. **Establish time-bound targets for equity in Internet access, use and skills, by gender and income level**. Our 2014 Web Index shows that many national ICT strategies or broadband plans include, at most, a rhetorical commitment to gender equity. A few have a patchwork of interesting but small-scale programmes and initiatives, but overarching targets linked to budget allocations are needed to ensure coherence, coordination and scale.

2. **Teach digital skills from primary school onwards**. Our findings point strongly to the overwhelming difference that education makes to women's use of technology, even when controlling for other factors such as income and age. By making sure that primary and secondary school curricula include ICT literacy basics, we can take advantage of near-100% primary enrolment rates to open up digital opportunities for everyone.

3. **Smash the affordability barrier**. Making broadband cheaper is not only the best way to get more people connected, but also a prerequisite to enable them to go online and explore longer and more often, so they can fully unlock digital opportunities. For example, women who are able to go online daily are nearly three times more likely than infrequent users to report that the Internet has helped them to increase their income.

4. **Practice woman-centred design**. The impact of online services could be dramatically increased by defining the end user as a woman and not just a generic "consumer". Experience shows that when women are not consulted, products and services are often destined to fail. When government agencies and donors invest in such services, the number one target for success should be uptake by low-income women.

5 **Make women's civic and political engagement an explicit goal**. The small minority of poor women who are already active in community or political life are not only much more likely to be online, but also far more likely to use technology in transformative ways. Policymakers should work with women's groups to find ways that technology can help women to enhance their offline participation, voice and power.

6 **Combat harassment of women online**. In 74% of countries included in the Web Index, law enforcement agencies and the courts are failing to take appropriate actions in situations where ICTs are used to commit acts of gender-based violence. Governments must take steps to enact adequate legislative measure to protect women and girls, and educate law enforcement, lawyers and judges on how to deal with ICT-mediated violence against women.

7 **It's not (just) the technology, stupid**. Neither communications ministries, which typically have lead responsibility for national ICT strategies, nor gender ministries, where these exist, can achieve the SDGs on Internet access and women's digital empowerment on their own. Additionally, our findings underline the lesson that empowering women does not happen in separate boxes labelled "offline" and "online", but requires progress across several fronts at once. Government agencies, civil society groups and private sector stakeholders will need to work together in all sectors to ensure that ICT initiatives are systematically integrated with wider efforts to expand women's choices and capabilities in the labour market, in the home, at school and in public life. Training policymakers across different sectors (such as health, education, small business, agriculture) to understand and harness the potential of ICTs to tackle poverty and gender inequality may be a good starting point.

2

INTRODUCTION: TECHNOLOGY, GENDER AND EMPOWERMENT

More and more women across the developing world are gaining access to the Internet and mobile phones, and there are high hopes that this could accelerate progress against gender inequality – progress that has otherwise been frustratingly slow. The newly adopted UN Sustainable Development Goals (SDGs) include an important pledge to harness information and communications technologies (ICTs) to advance women's empowerment, as well as a commitment to connect everyone in Least Developed Countries (LDCs) to the Internet by 2020.

A better evidence base for understanding how gender and poverty affect ICT use is badly needed to guide efforts to achieve the SDG targets. As a UN expert task force on measuring ICT recently concluded, "*when ICT data excludes data on women specifically, women become ignored in data and in policy*" (ITU 2014). While there is evidence that men are benefitting more than women from the digital revolution, the data is patchy. So, using household surveys and focus group discussions, we set out to dig deeper into the "digital divide", exploring the extent to which poor city-dwellers in 10 developing countries are leveraging digital opportunities, and the relative importance of gender, age, income and education in determining how people exploit ICTs.

> *"When ICT data excludes data on women specifically, women become ignored in data and in policy."*
>
> UN ICT expert task force

This global synthesis report covers nine of the 10 study countries (survey data from the 10th, Egypt, was received too late for inclusion). As Table 1 shows, all of these countries have high levels of gender discrimination, mainly ranking in the bottom third of countries included in UNDP's Gender Inequality Index.

We conducted our research in a range of slum areas and informal settlements in Nairobi, Kampala, Lagos, Yaounde, Maputo, Cairo[1], Bogota, New Delhi, Jakarta and Manila.[2]

We chose urban areas for our research for two reasons. First, high population densities in urban areas made it feasible to carry out

1 *Due to bureaucratic challenges that led to delays in survey implementation, data from our research in Cairo, Egypt was not available in time for inclusion in the global report. Please refer to the Egypt country report written by Tadwein Gender Research Centre for data and analysis.*

2 *Including capital cities or the main economic hub of each country.*

door-to-door interviews, rather than telephone or SMS surveys, leading to more reliable and representative data. Second, because women's choices and experiences around connectivity were a key research focus, we needed to select areas where the basic infrastructure (such as 3G signal coverage and public Internet access points) is available to allow people to connect. This excludes much of the countryside in many developing countries. However, we acknowledge the critical importance of carrying out similar research in rural areas in future.

Although incomes may be higher on average in cities than in rural areas, the poor urban dwellers we surveyed face extreme vulnerability and marginalisation in many dimensions of their lives. Many of them live in settlements that are illegal or afford no tenure security. This not only puts them at constant risk of eviction by developers or local authorities, but also, in some cases, makes them dependent on local "slumlords", who can extract extortionate sums for protection. Most slum neighbourhoods lack basic necessities like running water, sewage, electricity, and garbage removal. Many of the respondents in our New Delhi sample, for example, live in tent-like shelters (jhuggis) on the roadside; in Manila many people live under bridges, along train lines or on riverbanks. The areas where the poor can afford to live are also often subject to toxic pollution and natural disasters. For example, many of the communities we surveyed in Kampala, Manila and North Jakarta are on the frontline of climate-related flooding, while informal settlements in Bogota are built on hillsides that suffer constant mudslides.

Poor sanitation, limited access to affordable healthcare, and high levels of crime and violence against women affect physical and mental health. In the slums of Nairobi, Oxfam reports that people are almost twice as likely to be infected with HIV as their rural counterparts and child mortality rates are double those in rural areas, while a World Bank study found two-thirds of residents did not feel safe inside their settlements.

A constant hustle for casual, low-paid work – including hazardous occupations such as scavenging, begging and sex work – is the norm for most of our survey respondents.

In coastal slums of Jakarta, for example, a 2009 Reuters report found many people peeling shellfish for less than 12 cents a kilogram, while buying clean water was costing them as much as a dollar a day. Some poor women in Kampala scrape a living by hand-crushing rocks into gravel for pennies a bucket. Informal sector work tends to be irregular as well as poorly paid. Overall, across the nine countries covered by our report, only about half of the women surveyed (as against two-thirds of the men) were earning any income at the time of the survey.

Nevertheless, people living in urban slums are not a homogeneous group. Informal settlements attract a wide range of people. Some have been

"pushed" out of their home areas by one or many factors, such as violence or conflict (as in Colombia and Cameroon), the threat of forced early marriage (as in Kenya), or drought and landlessness (as in Uganda and India). But others have been "pulled" into cities by the prospect of making a better life, and they may possess significant resources such as education, savings and connections. Incomes also vary. For example, in Manila's informal settlements, according to a 2011 study based on official household survey data, about 50% of people live above the subsistence poverty line and can afford to spend $2-$4/day, while in 2014 the vast majority of Kampalans were classified by the government as "insecure non-poor". We segmented our survey data by education, work status and household wealth to get a more fine-grained picture of how these factors affect ICT access and use.

Premises, Aims and Methodology

Although it is important to establish systematic data on gender disparities in who is using ICTs, it is equally important to understand differences in how men and women are using ICTs. We set out to explore whether women and men are realising the same opportunities to enhance their political voice, economic chances and social capital through technology.

The many theories of women's empowerment converge in the idea that empowerment is the expansion of freedom of choice and action; it is, as Naila Kabeer puts it, the ability of people to make strategic life choices in a context where this ability was previously denied to them. Similarly, Amartya Sen defines development itself as "a process of expanding the real freedoms that people enjoy to lead the lives they have reason to value".

Empowerment is the expansion of freedom of choice and action.

Our research design was based on the framework developed by Anita Gurumurthy and Nandini Chami, drawing upon Kleine's Choice Framework to analyse how technology contributes to empowerment, understood as an expansion of choice. In their research on women, local governance and ICTs, Gurumurthy and Chami (2014) have noted that technology can increase the choices available to women in a number of interrelated ways:

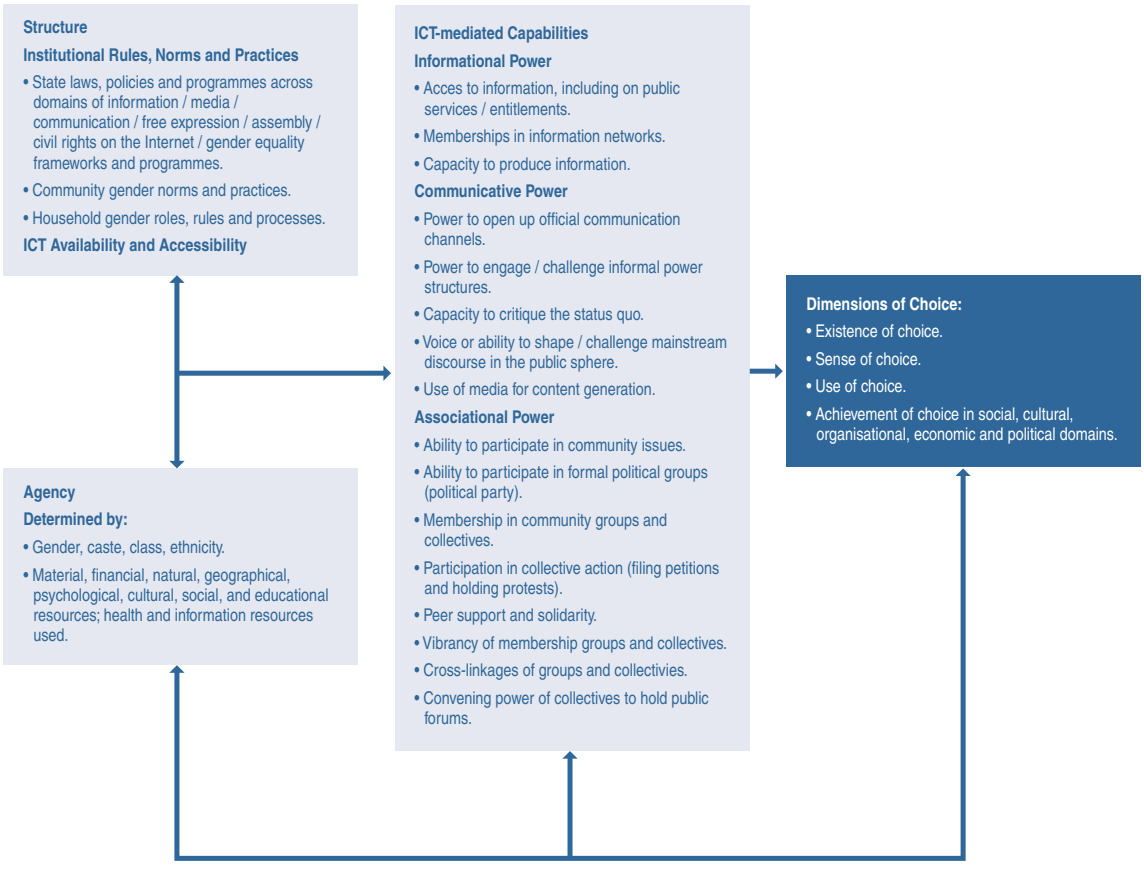
- It can increase **informational power** – for instance by allowing women greater access to relevant information and giving them capacity to produce their own information.
- It can boost **communicative power**, including giving women new communications channels, or allowing them to participate in existing communications channels on an equal footing to men.
- **Associational power** – gained through new linkages or greater ease of participation in existing structures – can also be enhanced.

We wanted to understand if, and how, women were harnessing this potential. We also set out to investigate the structural factors (such as costs, infrastructure, gender norms, and access to education) that affect women's ability to unlock these benefits.

Drawing on our findings, we have tried to identify concrete actions that governments and other actors can take to overcome the patterns of inequality in ICT use that we have uncovered, so that ICTs more effectively support women's capabilities and choice.[3]

Figure 1

Theoretical Framework developed by Gurumurthy and Chami, drawing on Kleine's (2008) Choice Framework and the Active Citizenship Framework of the Women-gov project (2014)



3 *Paper on the elements of the 'Equality of Autonomy' Framework forthcoming.*

3

THE GENDER GAP IN INTERNET ACCESS AND USE

3.1. Who is online?

Over four billion people (60% of the world's population) are still not connected to the Internet. Nine out of 10 of the unconnected are in the developing world.

This digital divide is sometimes symbolised by images that show Europe, North America and East Asia "lit up" with millions of Internet connections while Africa and South Asia languish in near-total darkness. On the other hand, some technology evangelists would have us believe that poverty and marginalisation in the developing world have been practically banished by the triumph of mobile phones.

However, our research shows that the digital divide is more complex than either narrative suggests. Far more men and women in poor urban communities are using the Internet[4] than national aggregate statistics would predict (see Table 1 below). For example, in slum areas of Maputo we found that more than six times as many people are online than the national average reported by the ITU; Internet use in poor neighbourhoods of Yaounde, Cameroon is more than triple that for the country as a whole; in Jakarta's informal settlements, levels of connectivity are almost double the national average.

This suggests the potential for technology to help slum-dwellers tackle their political exclusion and economic vulnerability may be even greater than previously thought. At the same time, it also points to the true scale of rural/urban disparities in Internet connectivity.

Even within urban areas, access is heavily skewed by gender, education, age and income. Rates of connectivity among the young men in our sample (ages 18-29) outstrip the national averages for some developed countries such as Italy and Portugal. Likewise, men with tertiary education in our sample are almost as likely to be online as the average American. However, among women with no formal education, only two in 100 are

4 *Taking note of other studies which show that people may not realise that using Facebook or other web-based platforms counts as "using the Internet", we designed our survey to specifically prompt for use of such platforms.*

Internet users. **Half as many women were online in the lowest income group as in the highest income group** in our sample.

Gender is a major factor in itself. Overall, 37% of women we surveyed are Internet users, against 59% of men. Controlling for the effects of education and household income, **women are about 50% less likely than men to use the Internet**.

The picture that emerges, in other words, is neither one of blanket digital exclusion nor one of inexorable digital progress – but one of extreme digital inequality. Those who are urban, male, young and well-educated are connecting at rates one would expect in much wealthier countries, while the poorest women with little schooling are largely shut out of the World Wide Web. In the next chapter, we unpack these disparities further.

Table 1

Country-specific overall Internet use and women's use in particular

	Urban Population (% of total) (World Bank)	Total % Internet users (WF)	Total % Male Internet Users (WF)	Total % Female Internet Users (WF)	Gender Gap in Internet Use (WF)*	% individuals using the Internet (ITU)[5]	UN HDI Gender Inequalit y Index rank) (2014)[6]
Yaounde Cameroon	43%	38%	45%	36%	-25%	11	130
Bogotá Colombia	76%	73%	76%	71%	-7%	52.57	92
New Delhi India	53%	46%	43%	47%	+9%	18	103
Jakarta Indonesia	16%	36%	50%	31%	-67%	17.14	115
Nairobi Kenya	47%	29%	57%	20%	-185%	43.40	--
Maputo Mozambique[7]	44%	40%	59%	33%	-79%	5.94	78
Lagos Nigeria	32%	44%	66%	36%	-83%	42.68	146
Manila Philippines	25%	45%	42%	46%	+9%	32.69	122
Kampala Uganda	32%	38%	61%	21%	-190%	17.71	115

* Gender Gap in Internet Use (WF): % Male Internet Users – % Female Internet Users / & Female Internet Users multiplied by 100 = % gap

5 *International Telecommunications Union (ITU) ICT Facts and Figures 2015 http://www.itu.int/en/ITU- D/Statistics/Pages/stat/default.aspx*

6 *UNDP's Gender Inequality Index (GII) captures the loss of human development achievement due to gender inequality using three dimensions: reproductive health, empowerment, and labour market participation.*

7 *Disparity between WRO data for total Internet users in Mozambique with ITU data on Internet penetration is likely due to the fact that 68% of Mozambique's population is rural. Our survey took place in Maputo which accounts for less than 6% of the total population of Mozambique.*

3.2. What determines who is online?

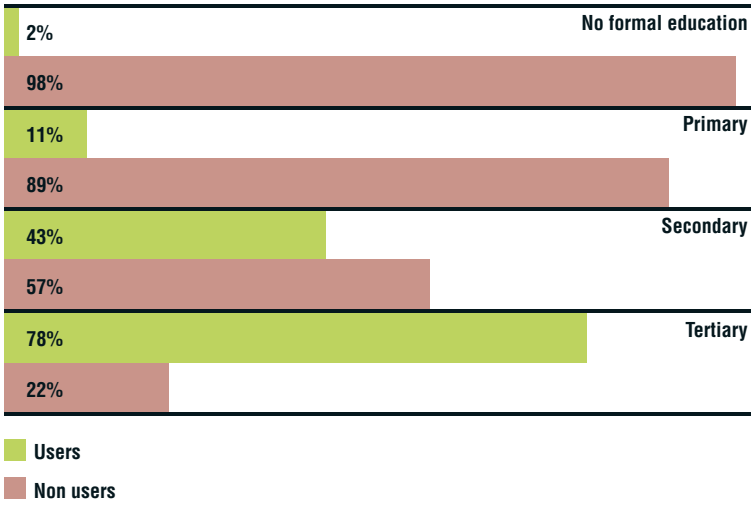
Education is the key

Education proves a very important determinant of Internet use among poor, urban women. Controlling for income, women who have some secondary education are six times more likely to be online than women who have primary education or no education.

Women who have some secondary education are six times more likely to be online than women who have primary education or no education.

Graph 1

Women's Internet use based on education level



Among women surveyed, a striking 92% of women who use the Internet have at least some secondary education. Only 2% of women with no formal education are online.

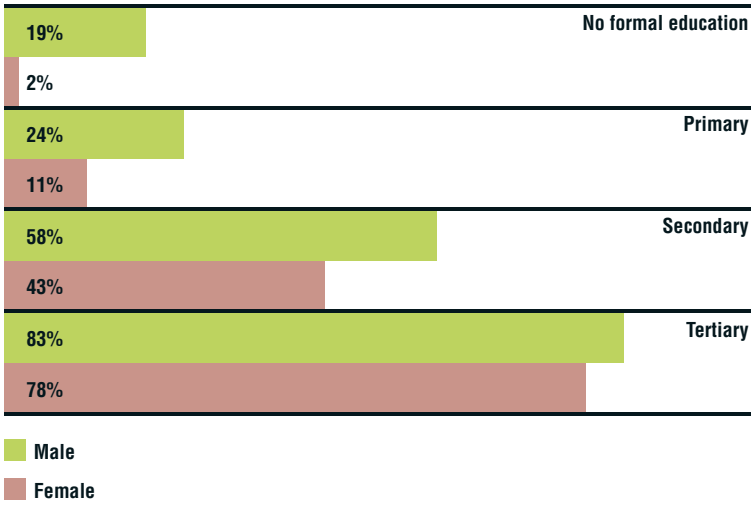
As education levels rise, the gender gap in connectivity diminishes.

Among those with tertiary education, only 6% fewer women than men are online. Among those with secondary education, the gender gap is 35%, but among those with primary education it skyrockets to 100%. Almost 10 times as many men as women are connected among those with no formal schooling.

Education is an important factor affecting men's Internet access too, but not quite so powerful a determinant as for women. Internet use among men without any formal education is 25% lower than among men who have been to primary school. Twice as many men with secondary education are online as men with primary education only.

Graph 2

Internet users by education level



Cities where our sample showed the highest gender gaps in education level, such as Nairobi, Kampala, Maputo, and Jakarta, were also the ones where the highest gender gaps in Internet access were reported.

Similarly, in the cities where a higher percentage of women than men sampled have at least a secondary education, which includes New Delhi and Manila, our data shows that the gender gap in Internet use has closed.

Higher levels of education are also correlated with more frequent Internet use. Seven in 10 connected women with tertiary education are online daily, versus only five in 10 with primary education. Frequency of use did not appear to be strongly influenced by gender or income level.

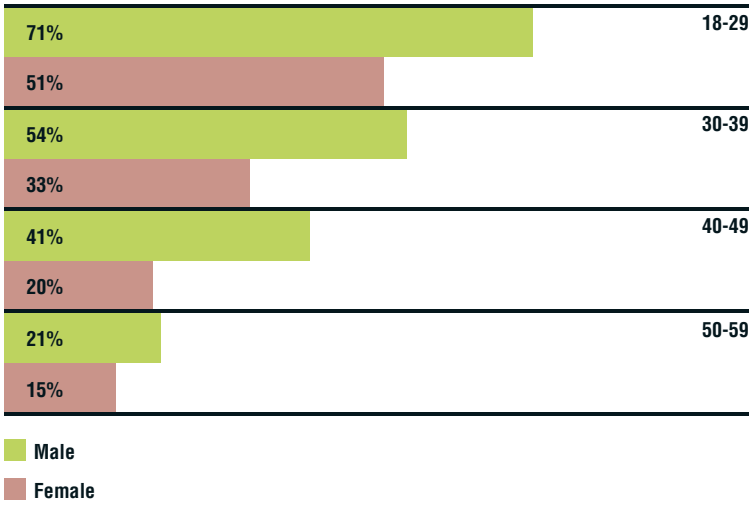
Age

Similarly, age matters – over 60% of poor, urban women and men between 18-29 years of age are online, compared to less than half of 30-39 year olds and only a quarter of over-40s.

But youth does not overcome all barriers to Internet use. While the Internet gender gap is somewhat smaller among the young, it is still sizeable. Among 18-29 year olds, there are still only seven women online for every 10 men (as compared to one woman to every two men online among 40-49 year olds). Education and income significantly constrain Internet adoption by young women, just as they do among older women.

Graph 3

Internet users based on age

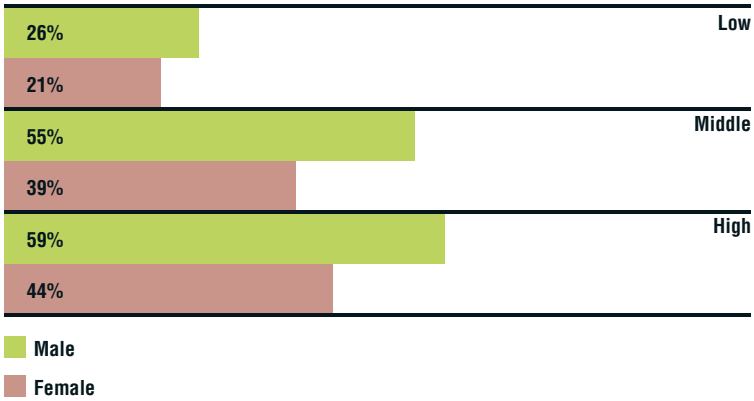


Income

We used country-specific indicators of household wealth (such as whether or not the household owns a car or motorbike and the type of roof on the dwelling) as a proxy for income levels, allowing us to stratify our sample into three groups, from most to least poor.[8] The poorer people are, the less likely they are to use the Internet. Only 21% of women in the lowest income group use the Internet, compared to 39% of women in the middle group and 44% of women in the highest. The gender gap in connectivity is smallest among the poorest, and highest at middle income levels. However, at every income level men are still more likely than women to be online.

Graph 4

% of Men and Women using the Internet based on household economic status



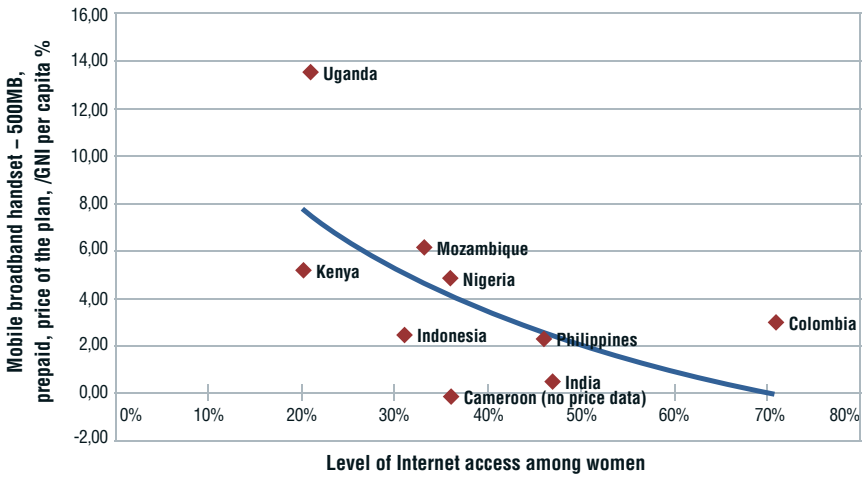
8 *We decided to use empirically observable wealth indicators as a way of mitigating the widely-known problems with self-reported income data in surveys like this. Please see Methodology Annex for details on the wealth index.*

Connectivity costs, as a proportion of average income, appear to significantly affect women's access. In the countries in our study, ITU data show that just one GB of prepaid mobile data (enough for just 13 minutes of Web use a day, excluding video) costs, on average, about 10% of average monthly per capita income. That's 10 times more than what the same data costs the average OECD citizen, relative to income, and is double what people in developing countries spend on healthcare.

The countries with the highest Internet costs (as a proportion of average per capita income) have the lowest numbers of women online and the largest gender gaps in Internet use.

Graph 5 [9]

Women's Internet access based on mobile broadband cost/GNI per capita %



Average income, calculated as Gross National Income (GNI) per capita, is a somewhat misleading guide to ICT affordability for the poor. Cost as a proportion of the income of the poorest 20% is a better benchmark, and measured against this benchmark, Internet access is still a luxury good for the poor in the countries we studied. Recent ITU analysis based on 2013 prices show that one GB of prepaid data would cost the poorest Filipinos 26% of their average monthly household income, 40% in Colombia, 48% in Uganda and 76% in Nigeria. And of course, these figures, being based on household income, do not account for the fact that women typically earn less and have less control over household resources than men. Preliminary analysis of our survey data on self-reported spending on Internet access confirms that in practice, the urban poor do sacrifice a significant proportion of their income to get online – ranging from around 8% of the consumption of the poorest two deciles in Jarkarta, to 34% in Kampala.

9 *The ITU does not collect mobile data costs for Cameroon.*

Civic engagement and political participation[10]

Statistical analysis revealed a strong relationship between Internet use and public-political participation. Women who engage in civic and political activity offline (such as attending community meetings, signing petitions, contacting public officials, or raising funds for a local school) are more likely to use the Internet, and use it more frequently, than others. Even controlling for education, income and age, women who participated in such activities just once in the previous six months were 1.5 times more likely to use the Internet, and those who participated more frequently were almost two times as likely to use the Internet.

Women who engage in civic and political activity offline are more likely to use the Internet, and use it more frequently.

It is difficult to say which way the causality runs without further research, but our interpretation is that women who are active in civic and political life are more likely to have the confidence to embrace the Internet, and/or to find it relevant. There may also be a feedback loop, whereby Internet use further boosts agency among those who are already engaged in civic life.

3.3. What barriers do women perceive?

We asked non-users to name the three most important factors that prevent them from getting online, and we also asked Internet users about the three biggest barriers that stop them using the Internet more often. The main barriers that women respondents reported were:

Know-How

"*I don't know how to use it*": "Not knowing how" to use the Internet was the barrier most widely cited by poor, urban women who don't use the Internet – a finding consistent with previous studies. It did not come through as an important concern for those already online, whether female or male.

Overall, women are 1.6 times more likely than men to report lack of skills as a barrier to Internet use. However, women's confidence in their digital abilities rises dramatically with increased education. Among those with little or no schooling, 40% of women and 33% of men say they "don't know how". This drops to 9% of men and 18% of women with secondary education, and only 3% of men and 5% of women with tertiary education. Household economic status was also a significant factor, but less influential than education. One in three women from the lowest income group noted lack of skills as a barrier, compared to one in four among other women.

Actual classroom training in digital skills is unlikely to explain the difference made by schooling, since practically no ICT training was on offer in schools at the time our respondents were enrolled. Rather, those

10 *Civic engagement and political participation was constructed as a composite measure which includes: attending a community meeting; signing a petition; contacting a local government official or office; calling a radio phone-in show or writing a letter to the newspaper; sharing views on an important or controversial issue through social media/Internet; organising activities or raising money for a school, place of worship, or community group; and participating in the meetings and activities of a political party or trade union.*

with more education may be more comfortable going online thanks to better literacy skills and greater fluency in English or other 'dominant' languages. As an Indonesian primary school graduate participating in one of our focus group discussions commented, "To learn about computer and Internet for me is very time consuming and it's hard to understand the language, because mostly it is in English".

Another powerful factor may be the general increases in confidence, status and sense of entitlement that education brings. Ethnographic research in Kisumu, Kenya, for example, suggests how strongly having a Facebook account is tied to social status and an image of modernity and sophistication (Wyche, Schoenebeck and Forte 2013). This relates to the point that "sense of choice" (refer to Figure 1) is key in explaining adoption or non-adoption of any new technology. The general belief that lack of formal schooling makes people ignorant or backward may lead less educated people to feel that the Internet is "not for them", a perception they express in terms of lack of skill or knowledge.

Age is also a strong factor affecting perceived skills: only 4% of men and 11% of women aged 18-29, across all education levels, reported that lack of know-how keeps them offline. This may point to a strong, self-reinforcing effect of informal peer interaction in overcoming skills gaps: since Internet use is much higher among the young, even those youths who are not yet connected themselves are very likely to become familiar with technology by interacting with friends, classmates and acquaintances.

Although women's self-reported digital competence rises strongly with education and with youth, they are still more likely to report a lack of know-how than men of similar age and/or similar educational attainment. This is an interesting puzzle demanding further research. It may simply mean that men are reluctant to admit to lacking ICT skills, or that women underestimate their ability because they are socialised to believe they are no good with technology – as has been shown by large-scale studies of young women's beliefs about their maths abilities. In addition, men, like young people, may have more informal opportunities for picking up digital skills. For instance, across our sample, they are more likely to be in waged employment and one might speculate that they are more likely to work in settings where the Internet is a routine tool for doing business. In some cities in our study, men are also much freer than women to move around and socialise in public places where others might be using technology, such as cafes, bars and marketplaces.

> *"To learn about computer and Internet for me is very time consuming and it's hard to understand the language because mostly it is in English."*
>
> Indonesian focus group participant

Cost

"I can't afford it", or "it is too expensive": Cost featured as the second most important concern for women who are not connected. Younger women aged 18-29, and women in the lowest income group, are most likely to say cost is a factor. A woman shop-owner in Jakarta commented, "I really want to learn how to use the Internet, but [mobile data] is still expensive, and there's no free Wi-Fi access in my area – I would have to travel to a shopping mall to get Wi-Fi."

> *"I really want to learn how to use the Internet, but [mobile data] is still expensive, and there's no free Wi-Fi access in my area – I would have to travel to a shopping mall to get Wi-Fi."*
>
> A woman shop owner in Jakarta

Interestingly, men were more likely than women to note expense as a major reason for not using the Internet, or not using it more than they currently do. Over a third (36%) of male users cited cost as a major barrier to more frequent use, while 28% of male non-users mentioned it.

Among the unconnected, this male:female disparity may simply reflect greater awareness of data costs among men. However, among Internet users, 76% of women reported that they personally pay for their Internet access (as compared to 85% of men), hence they would presumably be well aware of costs[11].

Time

Lack of time was the single most important barrier preventing women who are online from using the Internet more often. It was cited more often by women than men, and more often by the poorest women than by other income groups. This corresponds with findings that time poverty is a major dimension of urban women's experience of poverty, as summarised in this UN report:

> Poor housing conditions, distance from health services and schools, unsafe neighbourhoods (because of both environmental hazards and high rates of crime and violence), and limited access to water and sanitation put an additional burden on [women] who, within households, are responsible for childcare, food preparation, cleaning and washing. At the same time, however, income poverty also means that women ... need to engage in the cash economy, often in the lowest-paid formal- and informal-sector activities. As a result, women's days may involve as many as 17 hours working within and outside the home ... Time poverty and the related emotional stress is an important and specifically gendered element of multidimensional poverty (UNFPA 2012; see also OECD 2014).

Relevance

Survey options relating to the perceived relevance and usefulness of Internet content and services were the third most important barrier, both for women who are already connected and those who are not. Men were less likely to cite relevance as a concern than women.

11 *17% of women reported that their spouse or partner pays for their Internet access.*

For “time-poor” women engaged in the battle for urban survival described by UNFPA above, the decision to spend time online presents a real opportunity cost, and is therefore directly affected by the value people see in Internet services and applications. We could speculate that “I don’t have time to go online more often” may be another way of saying “The benefit I would get is not worth the time I would have to give up.” If this hypothesis was correct, then time and relevance combined would move into first place as the single biggest barrier to more intensive Internet use among connected women.

Infrastructure

Availability or quality of connection, and electricity to charge devices, were the fourth most important barrier for both women and men who are already online. However, as expected, the importance of infrastructure barriers varied by city, most likely reflecting city-by-city variations in areas such as 3G/4G coverage; spectrum availability; quality of service regulation; electricity supply; and/or availability of free public Wi-Fi schemes. The cities in our study where women were most likely to report infrastructure barriers were Maputo (16% of women), followed by New Delhi and Manila (7% of women in each case).

Infrastructure factors were not mentioned by significant numbers of non-users, suggesting that the obstacles posed by know-how, cost, time and relevance are perceived as so overwhelming that smaller details such as signal coverage or electricity supply might appear to be moot points.

Access to Internet-enabled devices

Lack of an Internet-enabled device and/or lack of access to a safe public access point were the fourth most important barrier for unconnected women and men alike. These issues were not reported as important by those who are already connected.

The mobile phone is by far the most common way for both women and men to get online, and about nine in 10 of those we surveyed did possess a phone of their own (with little difference between women and men).

The share of phone owners of both sexes who have smartphones is also quite high, at about 43% of women phone owners and 49% of men phone owners.[12] However, this varied widely by city, and in places where smartphone ownership was lowest among women, women’s Internet use was also lowest. In cities with the highest percentage of women online or where the gender gap has closed (Bogota, Manila and New Delhi), over half of women surveyed personally own smartphones. Kampala, Jakarta, and Nairobi, on the other hand, have both the lowest percentage of women online and also lower rates of female smartphone ownership than other countries in the study.

12 *Interviewers used picture cards to help respondents identify the type of phone they have. A smartphone is not a requirement for Internet use; most feature phones can use Internet-based services, and some platforms such as Facebook Zero have interfaces specifically designed for feature phones.*

Owning a smartphone or having access to safe, "respectable" public access facilities may be critical enablers for women in situations where their mobility is culturally constrained. In Kampala, for example, as one focus group discussion participant commented, it is perfectly acceptable for men to go to a restaurant to use Wi-Fi for any reason at all ("even surfing pornography"), but frowned on for women to do the same, even to send a document urgently requested at work. "Our society sees us as stay-at-home assets," she explained.

In addition to country differences in levels of device ownership, we also found gender and age differences in how people use their devices. The use of phones to access Internet-based services and content is relatively uncommon among both women and men, but women mobile phone owners are much more likely than men to limit their use to voice and SMS only. Young people aged 18-24 are over three times more likely than 55-60 year olds to access the Internet from their phones. Even among the young, however, only 55% of young men and 44% of young women who possess phones are using them for Internet-based applications and services.

Other factors

I am not allowed to use it, or the Internet is bad/inappropriate for me: The numbers of women and men who cited "appropriateness" or lack of permission as a major barrier were insignificant in all cities[13].

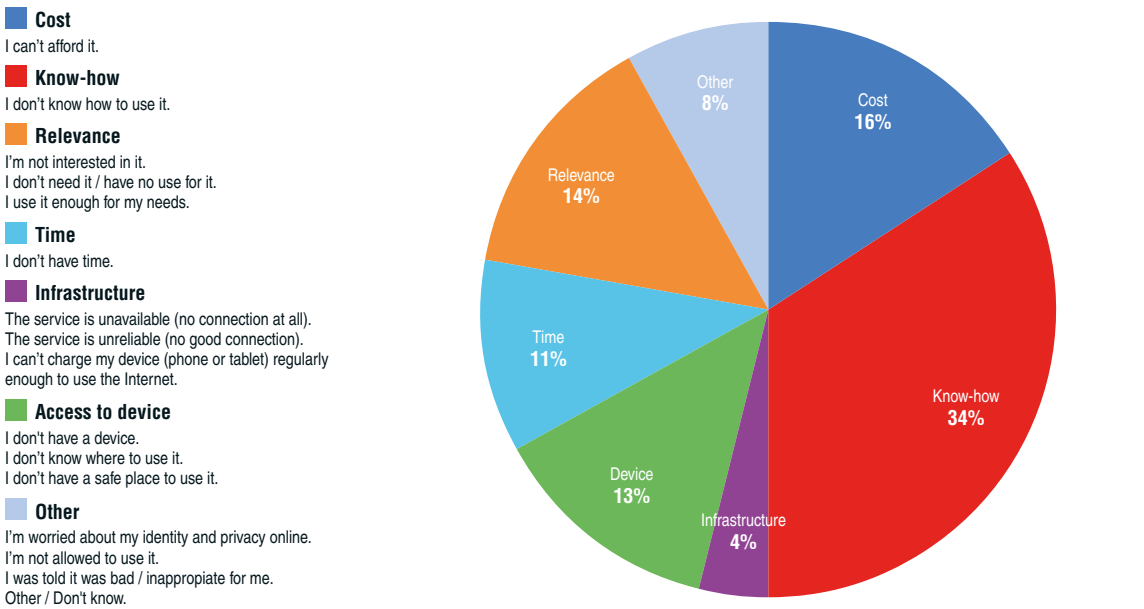
I'm worried about my privacy: Very few respondents of either sex in any city reported that concerns about privacy discourage them from using the Internet.

Owning a smartphone or having access to safe, "respectable" public access facilities may be critical enablers for women in situations where their mobility is culturally constrained.

It is perfectly acceptable for men to go to a restaurant to use Wi-Fi for any reason at all ("even surfing pornography"), but frowned on for women to do the same, even to send a document urgently requested at work.

Graph 6

Barriers to Internet use among female non users



13 *Our survey result is somewhat different from Dalberg's research for Intel, which found that one in five women in India and Egypt felt that the Internet is "not appropriate" for them.*

Graphs 7

Barriers to using the Internet more often (among female Internet users)

Cost
I can't afford it.

Know-how
I don't know how to use it.

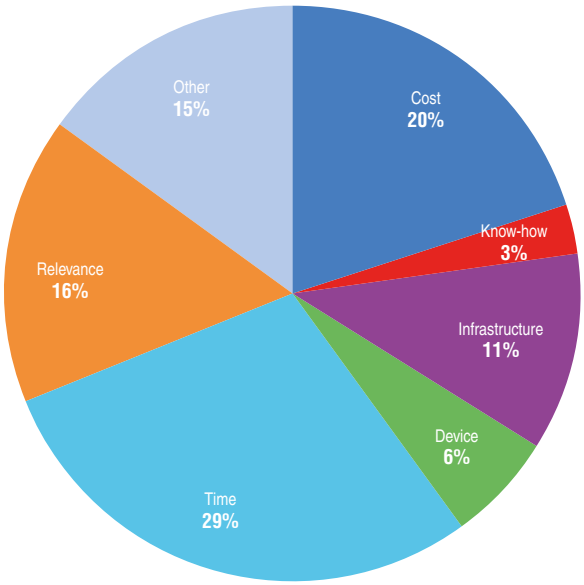
Relevance
I'm not interested in it.
I don't need it / have no use for it.
I use it enough for my needs.

Time
I don't have time.

Infrastructure
The service is unavailable (no connection at all).
The service is unreliable (no good connection).
I can't charge my device (phone or tablet) regularly enough to use the Internet.

Access to device
I don't have a device.
I don't know where to use it.
I don't have a safe place to use it.

Other
I'm worried about my identity and privacy online.
I'm not allowed to use it.
I was told it was bad / inappropiate for me.
Other / Don't know.



4

THE GENDER GAP IN DIGITAL EMPOWERMENT

The Web has the potential to nurture social, economic and political change, as exemplified by recent experiences from Brazil to North Africa to Hong Kong. Women can use it to amplify their political and creative voice, expand their associational life beyond the boundaries of the 'traditional' women's sphere, open up new opportunities to earn income or advance their education, and expand their aspirations and self-confidence (IT for Change). However, these advantages are neither immediate nor automatic. Here we examine how the Web – and especially social networking platforms, which are the entry point to the Web for almost all of those we surveyed – may be helping women expand their informational, communicative and associational capabilities and choices.

4.1. Social capital

Social ties are serious business in poor urban communities. As Woolcock (2005) notes:

> The urban poor … rely heavily on their friends and relatives to help them both 'get by' and 'get ahead.' Faced with institutions, policies, and services that are frequently hostile, inadequate, or indifferent to their concerns, the urban poor have little choice but to valiantly deploy a range of coping strategies, chief among them the use of their social networks, to provide everything from credit and physical security to information about housing and employment opportunities.

The norms and networks upholding these support mechanisms are often referred to as "social capital".

Sociologists distinguish between kinship and intracommunity ties (popularly referred to as "bonding" social capital); ties spanning spatial and demographic divides ("bridging" social capital); and ties spanning power differentials ("linking" social capital). While poor women may invest heavily in bonding social capital, their bridging and linking ties may be weak compared to men, especially more affluent men.

Reliance on social resources is a necessity, not a choice, for the poor, and can have negative consequences as well as benefits (Woolcock 2005):

> It is in and through people's immediate social networks that their identities, expectations, and self-worth are nurtured and sustained. These networks thus have a powerful influence on the type, range, and quality of information people receive and the options and opportunities to which they are exposed. … The often restricted but powerful networks … presiding over the lives of [the urban poor] may reinforce destructive behavior (Fernandez-Kelly 1995), perpetuate distrust, or limit their "capacity to aspire" (Appadurai 2004).

Almost all urban poor Internet users that we surveyed (97%) use social media, with eight in 10 using Facebook and just under half using WhatsApp.

Google+, YouTube and Twitter attract smaller audiences. Income level made little difference to social media use. Focus group discussions suggest that cost (the availability of "zero-rated" access from some mobile operators), local language content and user interfaces that work on more basic phones are key to the popularity of Facebook and Whatsapp.

However, the overwhelming importance to the poor of social uses of ICTs is another powerful factor in Facebook's popularity. Almost all Internet users, male and female, are exploiting social media platforms to sustain their existing social networks, a strategy that enhances "bonding" social capital (including through "real time updates", as women in Manila highlighted in our focus group discussions with them). Our findings are consistent with an IDRC study from East and Southern Africa, which suggests that such ties and reciprocities are greatly enhanced through ICTs.

About 49% of women social media users, compared to 59% of male social media users, report that they are also expanding their networks by making new friends and connections online – strategies that could help them to strengthen bridging and linking social capital.

Reinforcing and expanding social capital through ICTs has a direct economic benefit for the urban poor, for example by helping people to build social insurance networks. Ethnographic research in South Africa with migrants from across Africa shows that being connected helps facilitate new forms of bridging capital by creating the opportunity for migrants to explore new contacts through church and other religious networks (Hay 2014) and become part of home-village associations (Nyamnjoh 2014). Similarly, Cartier, Castells and Qui (2005) found that for rural-urban migrants in China, ICTs are critical tools for building and sustaining translocal networks, keeping migrants "connected with hometowns and family members as well as new friends and contacts, facilitating information flows about migratory experiences, job conditions, and business opportunities."

The ability to "bridge and link" through ICTs may be especially powerful for women, whose mobility (spatial, temporal and social) can be highly constrained by patriarchal norms and the constant threat of violence. In cities where violence against women is endemic, they may be "afraid to leave their homes except for essential visits for work and education" (UNFPA 2012). However, as Ling and Horst (2011) note, "Seen through the lens of power, the mobile phone changes the rules regarding who can interact with whom" (2011:370). Social media may extend this game-changing potential further – an area that merits further research.

Another area for further research is the extent to which social media help people escape the restrictive, conformist nature of the slum social networks described by Woolcock (2005). A major attraction of Facebook for the Kenyan Internet cafe customers studied by Wyche, Schoenebeck and Forte (2013) was the opportunity to connect with members of the diaspora and find new Facebook "friends" overseas – a classic example of "linking" social capital. Such connections were partly motivated by the pursuit of social status and the idea of possible economic gain, but also, and less instrumentally, by people's dreams and aspirations, which led them to want to cultivate a wider identity.

Unsurprisingly, a significant number (around 20%) of women and men say they use social media for entertainment or to pass time. Cultural knowledge, as Bourdieu points out, confers status and power. More research is needed to understand the extent to which the popular culture "repertoires" that the urban poor build online are helping them to expand their cultural capital and enhance their status – or simply to sustain their existing identity and relationships by keeping up with the celebrities, TV shows, music, and sports that are popular among those around them.

In our sample, students were the most proactive in using online platforms to expand social capital, with almost two-thirds seeking new connections through social media, regardless of gender. If the stereotype of students as experimenters and "strivers" holds true (something our surveys did not test), this might once again suggest that aspirations for a different life and exploration of possible alternative identities may be an important element of social media use among the urban poor.

A third area for research is the ways in which women grappling with the emotional and practical burdens of gender discrimination are to forge informal solidarity ties online with other women facing similar challenges – another form of "bridging". Evidence from the focus group discussions and Web Foundation partners suggests that the combination of anonymity and "instant community" that can be created online has been very powerful for women to face challenges such as the stigma surrounding abortion, or the intimidation and fear created by male harassment of women. In Egypt, HarassMap started life as a project to shed light on the problem of sexual harassment in public space using crowd-mapping

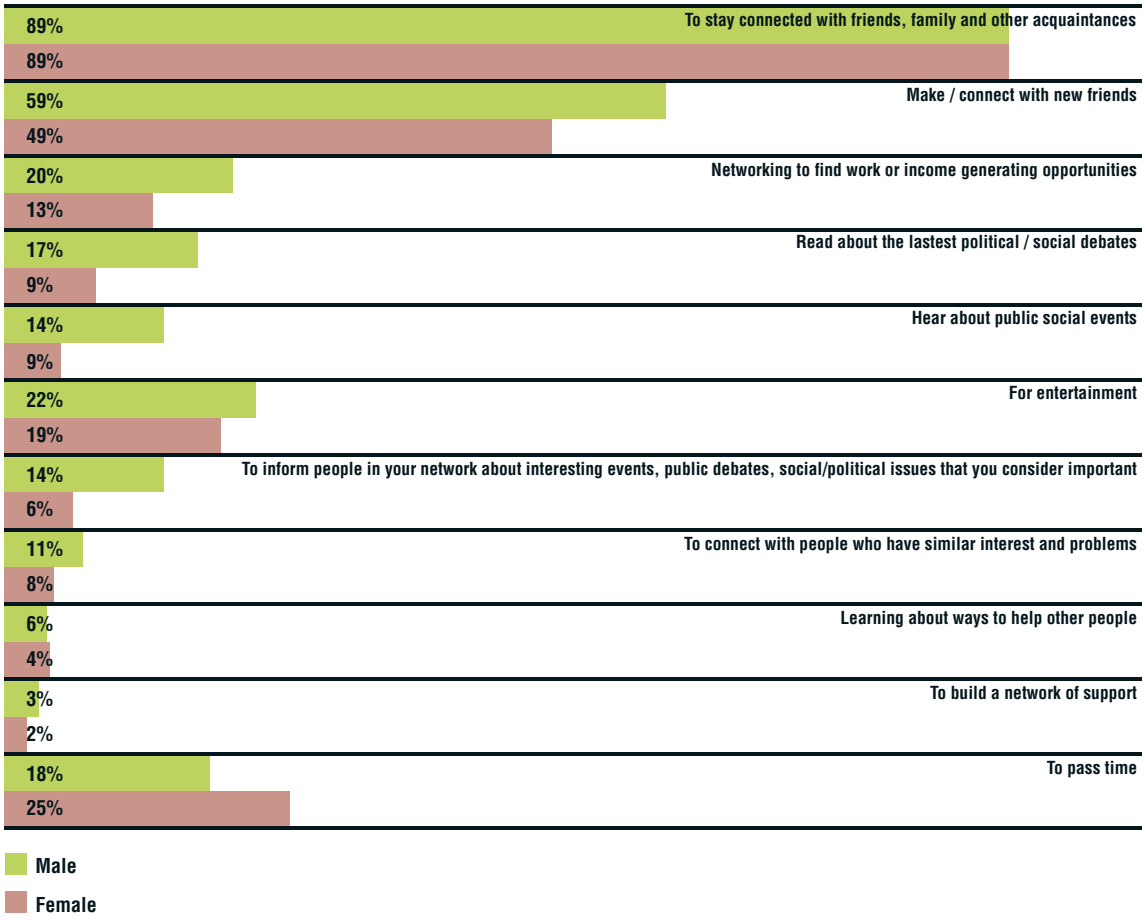
tools to report incidents of violence against women on the streets of Cairo and identify "hot spots". But women quickly started using it as a vehicle not only to report, but also to share anger and fear through longer narratives with details on how they felt, their personal opinions on patriarchal masculinity, or the lack of police and legal enforcements against sexual harassment. During the Egyptian revolution, HarassMap also evolved into a space for women who had been assaulted by the state to document their cases.

However, social media's power to quickly and easily forge new connections can also expose users – especially women – to new risks and vulnerabilities. In focus group discussions, young women in the Philippines described how competition to have the largest Facebook following led them to add complete strangers as friends. Only when they became more experienced users did they realise the risks to privacy and safety involved, and become more selective in their choices. Many young women who are active on social media face online misogyny and abuse, as described in section 5.1 below. Action to reduce these threats is needed if we want women to make full use of the "bridging" and "linking" power of social media.

Young women in the Philippines described how competition to have the largest Facebook following led them to add complete strangers as friends. Only when they became more experienced users did they realise the risks to privacy and safety involved.

Graph 8

Reasons for using social media (% of social media users)



4.2. Access to Information to Claim and Demand Rights

Does information online assist women to claim and demand their rights?

"TV and newspapers supply information but only give you what they want you to know. But if you want something personally, Google... Google tops it all." Male respondent, Nairobi.

Various dimensions of gender discrimination, some of them already outlined above (such as sociocultural constraints on mobility and network-building, educational inequalities and the disproportionate burden of unpaid care work) mean that women tend to have less access to knowledge than men and fewer institutional linkages, relying mainly on intimate networks for information. This ultimately deprives women of income and opportunities. In fact, a UNESCO report goes so far as to claim that after poverty and violence, the third major challenge facing women in developing countries is access to information (Primo 2003). To what extent are ICTs helping women to overcome this challenge?

After poverty and violence, the third major challenge facing women in developing countries is access to information.

Across the nine cities surveyed, only about 21% of female Internet users and 27% of male Internet users are seeking information online in important areas such as health, legal rights or public transport. Even the connected tend to rely on information passively "absorbed" from TV and radio, family and friends, or health and social workers, rather than proactively defining their own searches on the Web.

Only about 21% of female Internet users and 27% of male Internet users are seeking information online in important areas such as health, legal rights or public transport.

Table 2

Following links vs. seeking information

	Women Internet users using FB (%)	Men Internet users using FB (%)	Women FB users following link outside FB	Women Internet users seeking information online	Men FB users following link outside FB	Men Internet users seeking information online
Yaounde	**77%**	**81%**	**85%**	**20%**	**87%**	**22%**
Bogotá	**83%**	**89%**	**63%**	**29%**	**66%**	**33%**
New Delhi	**98%**	**96%**	**49%**	**17%**	**71%**	**28%**
Jakarta	**90%**	**94%**	**82%**	**26%**	**85%**	**28%**
Nairobi	**74%**	**88%**	**58%**	**25%**	**66%**	**41%**
Maputo	**78%**	**88%**	**77%**	**15%**	**75%**	**23%**
Lagos	**92%**	**95%**	**74%**	**21%**	**73%**	**23%**
Manila	**97%**	**95%**	**48%**	**18%**	**71%**	**28%**
Kampala	**91%**	**83%**	**48%**	**20%**	**61%**	**13%**
TOTAL	**87%**	**90%**	**65%**	**21%**	**73%**	**27%**

Health is the most popular topic for online information-seeking. Just over a third of women who use the Internet have gone online for advice about common illnesses like malaria or flu, while just under a quarter have searched for sexual and reproductive health information. One in five have gone online to find out about their legal rights on issues such as inheritance or divorce.

We investigated concerns that Facebook and other social networking platforms – the most popular Web service for most of the urban poor – may confine users to a "walled garden" that militates against active information-seeking and exploration. At least as proxied by the numbers of users who follow links to other Web pages outside of Facebook, this does not seem to be the case. A large majority of both male and female Facebook users (65% of women and 73% of men) reported clicking on links to take them outside of Facebook. The proportion of female Facebook users following links outside the platform was lowest in Manila, New Delhi and Kampala, but even in these cities it was just under 50%.

Age, education and income strongly influence information-seeking behaviour on the Internet:

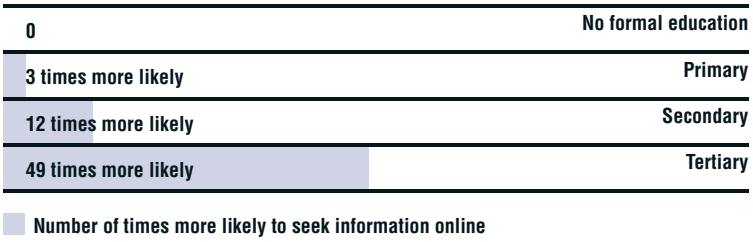
- Connected young people (age 18-24 years) are more likely than other age groups to use the Internet to find important information.
- Connected women with primary school education are 2.7 times more likely to seek information online than women with no formal education; connected women with secondary school education are 12 times more likely to do so; and connected women with tertiary education are 49 times more likely to do so than women with lower levels of schooling (see graph below).
- Respondents from higher income households were 1.3 times more likely to access information online than those from the poorest households.

When controlling for all these factors, we found that women are still 20% less likely than men to use the Internet to find information.

We found that women are still 20% less likely than men to use the Internet to find information.

Graph 9

When women's education levels increase, the probability of using the Internet to seek information increases



Civic and political engagement offline is the single most important determinant of online information-seeking.

Individuals who were politically active[14] just once in the six months preceding the survey were nearly twice as likely to look for information online than those who had not been politically active in the previous six months.

Women who were politically active more than once in the past six months were twice as likely as other women to cite at least one way in which the Internet is "very valuable" or "fairly valuable" to them.

The survey also revealed that in some countries, a large proportion of women have never sought information anywhere – especially with respect to sexual and reproductive health, and legal rights. For example, 64% of women surveyed in Bogota, 60% in Jakarta and 57% of women surveyed in Lagos have never sought out information from any source about their legal rights.

Our findings suggest that the "basket of basic services" approach – in which users receive free access to a handpicked selection of websites or apps giving information on key topics such as health – may not be as beneficial for development as hoped.

The strong relationship between offline political activity and online information seeking suggests that encouraging agency and voice through ICTs is more important than pushing "improving" content to the poor. Such an approach is likely to require that users can explore and define the Internet for themselves.

Table 3

Percentage of women who have never looked for information on sexual and reproductive health or legal rights

	"I have never looked for this information anywhere" sexual and reproductive health	"I have never looked for this information anywhere" legal rights
	% women surveyed	
Yaounde	12%	32%
Bogotá	39%	64%
New Delhi	16%	25%
Jakarta	21%	60%
Nairobi	9%	25%
Maputo	5%	37%
Lagos	38%	57%
Manila	16%	26%
Kampala	16%	39%
TOTAL	19%	41%

14 *Political activity offline was defined as: a) Attending a community meeting to discuss an important or controversial issue; b) Signing a petition about an important or controversial issue; c) Contacting a local government official or office; d) Calling a radio phone-in show; e) Writing a letter to the newspaper; f) Sharing views on an important or controversial issue through social media/Internet; g) Organising activities or raising money for a school, place of worship, or community group; h) Participating in the meetings and activities of a political party or trade union.*

4.3. Civic Engagement and Political Voice

Has the Internet increased women's voices in civic space?

The Internet, when used creatively, can help women, especially poor and marginalised women, gain a greater voice in public debate. Despite the cost of data and devices and the need for a certain level of digital know-how, it can still be easier and less intimidating to post a comment online than, say, to travel to a public meeting and gain the floor to speak, or seek an audience with a public official or get a letter published in a mainstream newspaper.

Generally speaking, both the women and men in our sample were strongly supportive of people's rights to speak their minds in public.

About nine in 10 people surveyed, irrespective of gender, believe that people should have the right to express controversial views freely without being harmed as a result.

Eight in 10 of male and female Internet users believe that people should have the right to debate any subject online without government interference. 70% of all men surveyed and 63% of women believe that the media should have the right to publish views and ideas without government interference. This remains the same for men who are Internet users, and increases slightly to 70% among women who use the Internet.

In contrast to a smaller study carried out for Intel, which found that "even women with Internet access were unaware of its potential utility beyond being a gateway to familiar sites such as Facebook and YouTube", a large majority (62%) of the women we surveyed report that they value the Internet as a space for commenting on important issues.

Almost half of women surveyed feel that the Internet has made it safer for women to express their views.

The more frequently a woman uses the Internet, the more likely she is to report this.

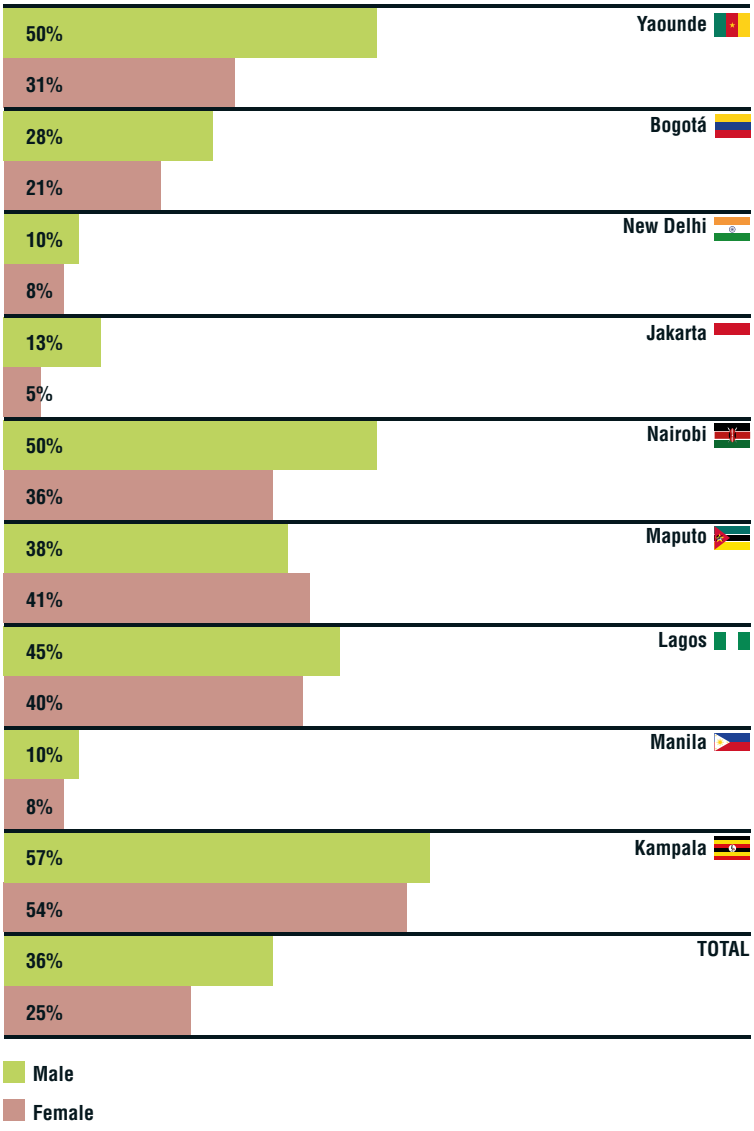
Yet, only 25% of female Internet users and 36% of male Internet users have used the Internet to share their views on controversial issues in the past six months. Among connected men and women alike, a significant majority of those who do participate in political life online have at least some secondary education and/or belong to the more affluent groups in our sample. Young people, 18-29 years, are also more likely to engage in these activities.

Overall, however, when controlling for education, work status, and household economic status, women are 52% less likely than men to express controversial views online.

This does vary widely by city, however. Interestingly, the African women (and men) in our sample are more vocal online than their Asian and Latin American counterparts.[15]

Graph 10

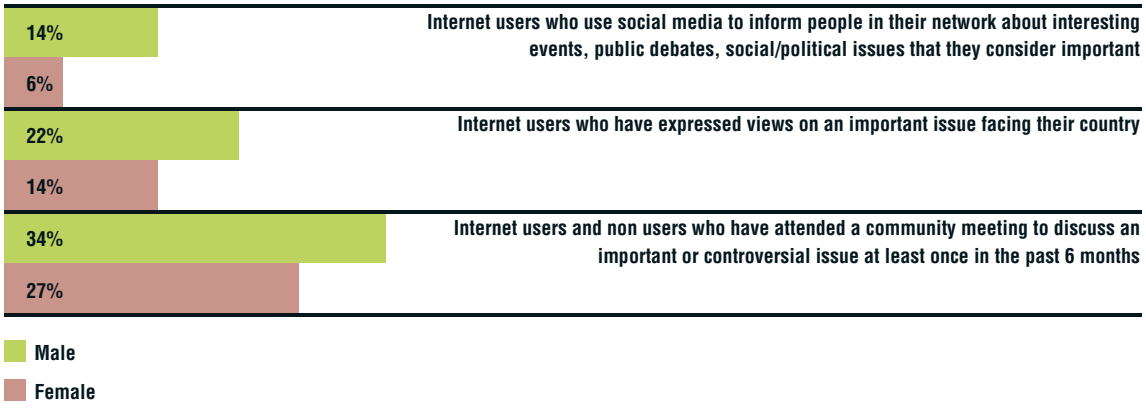
Percentage of Internet users who have shared their views on an important or controversial issue through social media/Internet more than once in last 6 months



15 *The extent to which governments encourage or restrict free expression online or offline appears to have little impact on poor people's use of the Internet to voice their views, as highlighted by the findings for India and the Philippines (both countries with a relatively strong tradition of free and open political debate).*

Graph 11

Internet use and political activity



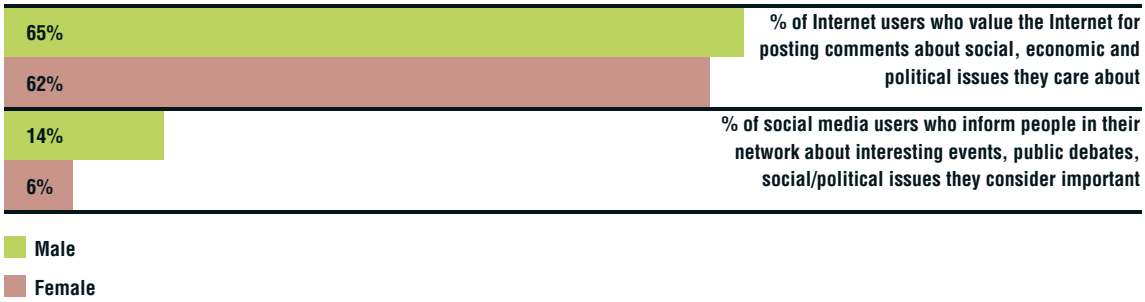
Similarly, only a small minority of Internet users say they use social media to keep up with current political debates (9% of women and 17% of men) or to inform people in their network about events and issues that they consider important (6% of women and 14% of men). Yaounde was the exception with 38% of men and 28% of women surveyed using social media to keep up with political debates (perhaps influenced by the fact that our fieldwork coincided with the Boko Haram incursions into Cameroon). A relatively high percentage of respondents in Kampala also use social media to stay politically informed compared to other cities, though with a large gender gap (30% of men and 15% of women). Use of social media to share information about events and issues one considers important was highest in Jakarta (23% of men and 16% of women) and Lagos (23% of men and 10% of women) – perhaps influenced by presidential elections in Nigeria around the time of the research.

Overall, our findings suggest that poor urban women understand and value the Internet's potential as a tool for having a say in public affairs – but do not appropriate it themselves. This is worrying because it means that if current patterns of technology use persist, the growth in Internet adoption won't do anything to challenge or change the subordination of poor women in civic and political life.

In this sense, the digital revolution could reinforce existing gender and class inequalities, social norms and gender roles.

Graph 12

Use of the Internet for sharing information about social, economic and political issues

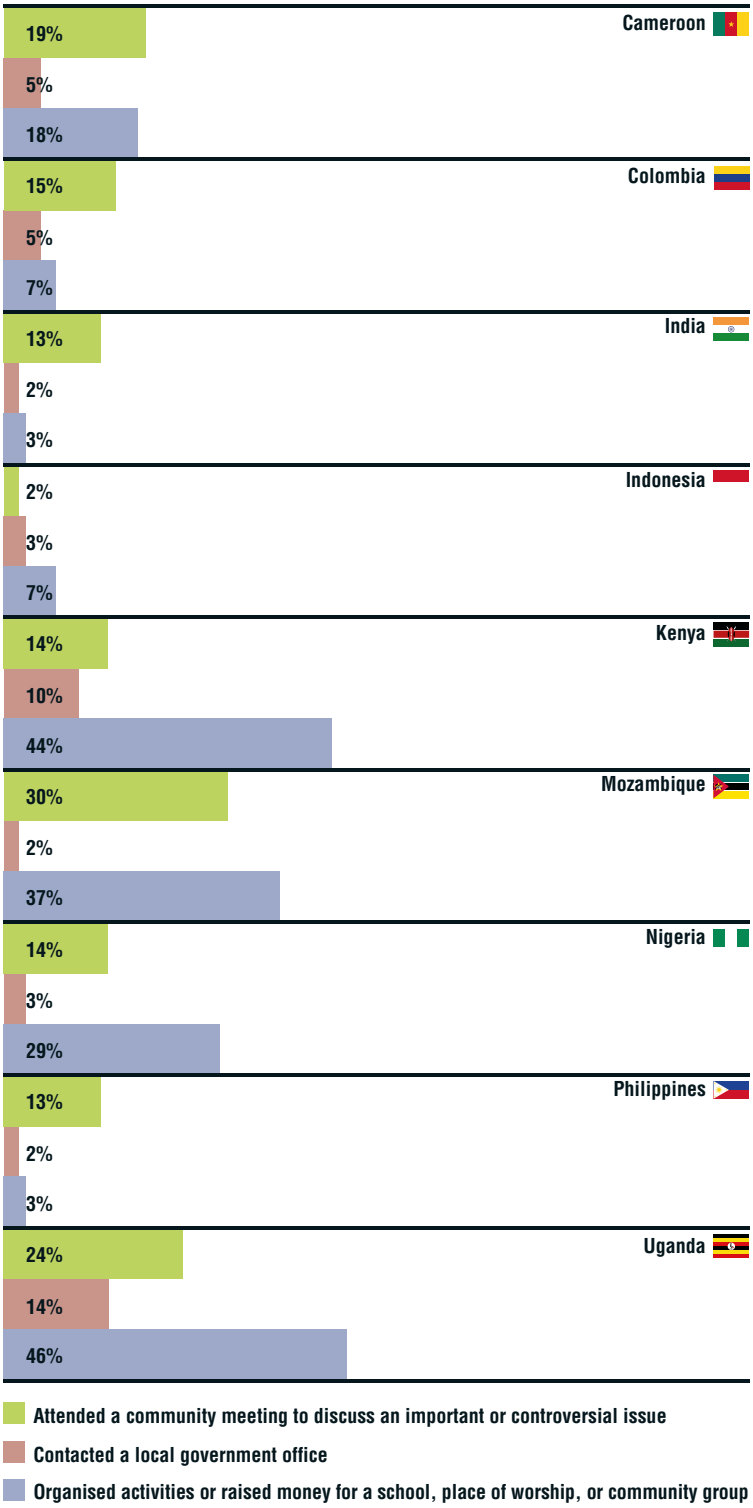


The very interesting exception to this trend is the minority of women who are active in political and civic life offline. Controlling for education, age and income, these women are three times more likely to use the Internet to express opinions on important or controversial issues than other women. This exception suggests that cultural norms and internalised stereotypes may pose very high barriers to women's political activity online. Women who have already overcome those barriers offline, by taking on active roles in community and political life, are much more likely to have the confidence to do so online.

Online engagement may also encourage and reinforce offline involvement. The founder of Digital Democracy says that in their work in developing countries they find "a strong correlation between Internet access and self-identification as activists… Internet access transforms civic engagement. It leads a population to be more connected, more hopeful" (Intel 2013).

Graph 13

Women's civic engagement and political participation offline



4.4. Economic Opportunity

Have technology and the Internet expanded economic opportunity for women?

Digital technologies can open up new opportunities for entrepreneurs, enhance access to financial services and credit, broaden job search prospects, or even create new forms of flexible, home-based work. A significant proportion of urban poor users, albeit more men than women, are exploiting the Internet to enhance their economic opportunities. About 34% of women Internet users have looked for a job online, compared with 39% of male Internet users. However, when controlling for the effects of age, education, employment status and income, women are 25% less likely to use the Internet for job-seeking than men. Qualitative research further supported this finding: for example, in Nairobi, famed for the entrepreneurial energies of its residents, fewer women than men said they were using the Internet to sell their products and services.

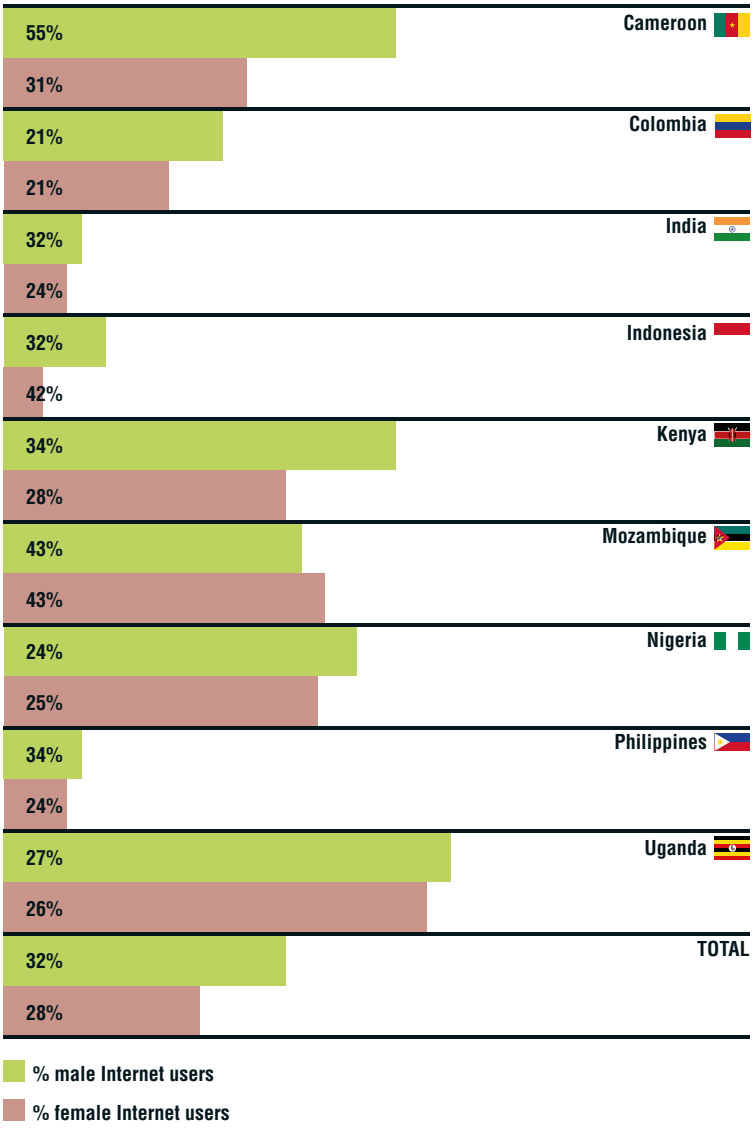
The gender gap in using the Web to look for jobs is largest in Maputo, New Delhi, Manila and Yaounde. These were also the cities with the smallest proportions of women in regular waged employment, suggesting that for women in the informal sector, traditional face-to-face relationships continue to be the most important way to find work. In Lagos, however, more women than men use the Internet to look for jobs.

Women and men aged 35 and above are less likely to use the Internet for job seeking than those who are in the age group of 18-24 years. Women with higher levels of education are twice as likely as others to use the Internet for job seeking.

The frequency of Internet use has a significant impact on whether women use the Internet to look for a job. Women who reported using the Internet daily and weekly were five times more likely to use the Internet for job-seeking than those who used it less often.

Graph 14

% of Internet users for whom the Internet has allowed them to increase their incomes "somewhat" or "a great deal"



About three in 10 female Internet users report that using the Internet has helped them to increase their income “a great deal” or “somewhat” – more or less the same proportion as among male Internet users. However, 19% fewer connected women than men say that the Internet has increased their incomes “a great deal”. Women who use the Internet daily are 2.7 times more likely to report that the Internet helped increase their income than those who use it only a few times a month.

5

CONSTRAINTS

Why are empowering uses of technology less prevalent than we hoped to find?

As we have seen, those who are well-educated, young and relatively more affluent are most likely to be using the Internet and using it in empowering ways. Overall, however, the number of men and women in urban poor communities who are using the Internet to exercise a political voice, pursue economic gain, or seek out information is very small – regardless of age, education level or income. Although more research is needed, our surveys and focus group discussions enabled initial exploration of the possible reasons that this might be so.

5.1. Online Harassment

Overall, reported experience of harassment and abuse was low. Only around 13% of women (and 18% of men) said they had experienced such incidents via phone call or text message, while 13% of women and 11% of men who use the Internet had suffered abuse via emails or social media posts.

Incidents of abuse via mobile phone and the Internet most often reported by women included offensive or threatening voice calls and SMS text messages or emails, and hateful, offensive, or insulting comments posted about them on the Internet[16]. Only a very small number of women across all cities surveyed reported cyber-stalking (e.g. use of social media to track movements and online activity), sexual coercion or luring (e.g. coerced into removing clothes, posing) or non-consensual distribution of photos/videos (e.g. posted by partner, ex-partner or anyone else without permission).

However, a survey methodology is not conducive to discussing intimate issues, and gender-based harassment tends to go under-reported worldwide. Hence our findings may well underestimate both the extent and the seriousness of the abuse women are experiencing.

16 *Questions on harassment (as all questions in the survey) were designed in close collaboration with Women's Right Onine country partners and are based on local knowledge of colloquial language and translation. The questions were field tested and refined during a pilot test of the questionnaire.*

It is striking that the two cities with the lowest rate of Internet access among women – Nairobi and Kampala – also reported extremely high rates of online harassment of women, suggesting that where such abuse is widespread, it may indeed be a factor severely inhibiting women's use of the Internet.

In both contexts, qualitative data indicates high prevalence of intimate partner abuse that extends to online spaces.

Additionally, instances of online abuse were much higher among the youngest women and men, aged 18-24 years old: over six in ten of connected women and men in this age group had experienced it, rising to nearly seven in ten of the young women who use the Internet daily. This is a matter of great concern since it is also among the youngest age group that we found greatest potential for women to leverage ICTs for empowerment.

Table 4

Number of respondents who have experienced online harassment

	Women and men who have experienced threats or direct personal bullying (including harassment or stalking) when using a **mobile phone** in the past two years		Women and men who have experienced threats or direct personal bullying (including harassment or stalking) on the Internet in the past two years	
	% Women Sample	% Men Sample	% Women Sample	% Men Sample
Yaounde	16%	11%	15%	12%
Bogotá	4%	4%	4%	2%
New Delhi	6%	6%	10%	10%
Jakarta	28%	19%	9%	3%
Nairobi	17%	60%	21%	19%
Maputo	12%	16%	17%	14%
Lagos	8%	23%	10%	17%
Manila	5%	5%	8%	8%
Kampala	21%	17%	45%	8%

Women's responses to online harassment

Women's main responses to digital harassment are to report the incident to friends and family, block or unfriend contacts on social networks or confront the perpetrator. Of those women who were harassed online or via mobile phone, one in four did nothing at all about it. The main reasons reported for inaction were: "it's not worth reporting", "it happens all the time" and "authorities don't care". In Kenya for instance, the legal framework safeguarding security online is generic in nature, and does not pay special attention to women and girls. In fact, it completely fails to mention online gender-based harassment. And in Uganda, law enforcement against cyber-crimes is weak (WOUGNET).

A participant in focus group discussions in Bogota explained:

> "I've submitted complaints to Facebook and Twitter, but the response has been non- existent. The authorities act very poorly. That is causing self-censorship… I've also changed my habits: I closed my Facebook account because I saw it was a more hostile environment. I control more than before what I say, where and with who I am. I feel more intimidated and more vulnerable [on social networks]."

I've submitted complaints to Facebook and Twitter, but the response has been non-existent. The authorities act very poorly. That is causing self-censorship.

Qualitative data from our focus group discussions shows that the police may also take away women's phones or dismiss their complaints.

5.2. Patriarchal attitudes to the Internet

We explored the extent to which patriarchal norms may be spilling over into the digital realm and if so, whether this is correlated with lower Internet use among women.

Our study showed that overall three in 10 men surveyed (but only two in 10 women) believe that:

Men have priority over women when it comes to accessing the Internet – this was a particular concern in New Delhi and the Manila, where 60% of men in each city agreed with this statement. In Kampala a third of women agreed with this.

Men have the responsibility to restrict what women access on the Internet – over half of men in New Delhi and Manila, and over a third of men in Yaounde and Jakarta and Kampala, agreed with this statement. Among women, Kampala again noted the highest number in agreement (26%).

Women should be restricted from using the Internet in public places on their own – In New Delhi 65% of men agreed with this statement, 63% of men in Manila and over a third of men in Yaounde, Jakarta, Lagos and Kampala.

Patriarchal attitudes are slightly less common among connected than unconnected men, with an average of 28% of male Internet users and only 17% of female Internet users agreeing with the above statements.

Men were most likely to express conservative attitudes about women's freedom to use the Internet in New Delhi and Manila – cities with the highest rates of Internet access among women – suggesting that such views are not a strong factor stopping women going online.

However, as focus groups conducted by Intel suggest, they may be a factor leading women to restrict what they do and say online, or how often they go online. Even in cities where patriarchal attitudes amongst men were less common, patriarchy as a form of social control may have debilitating effects at the micro-level (e.g. within the household) by placing women second in line to benefit from technology, if given the chance at all. Further research is needed to explore these hypotheses.

5.3. Offline marginalisation

As discussed above, our survey showed that a very small percentage of men in urban poor communities, and an even smaller percentage of women, are actively involved in civic or political life, or tend to seek out information (from any source) on critical topics.

This in turn reflects discrimination by gender and class, as well as lack of "bridging" and "linking" social capital, especially among women. As Oxfam observes of Nairobi's informal settlements, a weak social capital asset base (including "reduced connections with extended family members residing in the rural home, the limited presence of community based organisations or local non-governmental organisations..., lack of involvement in community activities, infrequent contact with village and community leaders, and limited access and sharing of information") limits slum-dwellers' voice and their ability to engage with both government and non-governmental organisations to access resources or assert their rights.

Consistent with the vast body of work on urban poverty, economic vulnerability was also high in our sample among women respondents – very few of whom had regular waged employment.

While employment status did not seem to have much impact on the level and quality of women's Internet use, offline civic and political engagement definitely did, and so did education, which is often associated with higher social status, an increased sense of self-efficacy and confidence and greater bargaining power in one's family and community. These factors strongly increased the likelihood that women would be connected and using the Internet to participate in public life, to enhance economic opportunities or to expand social capital through online strategies for "bridging" and "linking" beyond the existing limits of kin and community.

Our findings suggest that cultural norms of gender and class, which consign women and the poor to subordinate roles, may pose very high barriers to women's political activity online.

Women who have already overcome those barriers offline, by taking on active roles in community and political life, are much more likely to have the confidence to do so online. Offline agency and status is a powerful enabler of online empowerment (and possibly vice-versa). Conversely, real world and virtual experiences of exclusion and passivity may reinforce one another. More research is needed to better understand how these interdependencies work so that they can be harnessed for positive change.

6

CONCLUSION AND RECOMMENDATIONS: CLOSING THE GENDER GAP IN ICT POLICY

We will not achieve the SDGs on universal Internet access and empowerment of women through ICTs unless technology policy is specifically designed to tackle and overcome the steep inequalities of gender, education and income outlined in this study. Blanket initiatives to "connect everyone" will have less impact on the SDG targets than focused programmes to enable women and the poorest to get online, to overcome disparities in ICT skills and capabilities, and to design applications, services and content that are relevant to women's challenges and needs.

Blanket initiatives to "connect everyone" will have less impact on the SDG targets than focused programmes to enable women and the poorest to get online.

The truism that the World Wide Web is ultimately a social phenomenon is nowhere more true than among the urban poor. Our findings suggest that the primary value of the Internet to developing world urban dwellers, male and female alike, is, at present, social rather than informational, economic or political. The use of ICTs to reinforce and expand social ties is a two-edged sword. Social capital is critical to the coping strategies of the urban poor, and the Internet's potential to enable women to develop more "bridging" and "linking" relationships could make an especially important contribution to their empowerment. However, ideally the social uses of the Internet would serve as an entry point that also enables women to expand their informational, economic and political power, and that is not happening to nearly the extent needed.

The online realm presents women and girls with liberating opportunities to gain their own voice in civic and political life, increase their economic autonomy, and experience a sense of self- efficacy as well as solidarity. Many women we surveyed recognise and value these possibilities, but most are not yet appropriating them. To open the door to real digital empowerment, policymakers must tackle constraints such as the cripplingly high cost of access; the prevalence of harassment and abuse confronting young women in particular in their online lives; the extension of patriarchal norms in the digital arena; and the continuing silencing of women in public life.

The close relationship that we found between civic engagement and digital empowerment suggests that we need an integrated approach to advancing women's agency, autonomy and voice both online and offline.

Urban poor women are extremely marginalised when it comes to access to information, political voice, income-earning power and participation in civic life. Against this bleak backdrop, the small percentage of urban poor women who are using ICTs to seek out information, engage in public life, and enhance their economic opportunities is a seed of hope that must be nurtured.

Recommendations

We will not achieve the SDGs on universal Internet access and empowerment of women through ICTs unless technology policy is specifically designed to tackle and overcome the steep inequalities of gender, education and income outlined in this study.

While specific priorities will vary by country, **fundamentals include**:

1. Establish time-bound targets for equity in Internet access, use and skills, by gender and income level.

Our 2014 Web Index shows that many national ICT strategies or broadband plans include, at most, a rhetorical commitment to gender equity. A few have a patchwork of interesting but small-scale programmes and initiatives but lack overarching targets and a policy framework to ensure coherence, coordination and scale.

- Governments should give high priority to gender equity in ICT strategies and broadband plans, establishing concrete, measurable targets matched by adequate budget and political will.
- Government should also invest in the collection of timely data on gender indicators to measure progress.

2. Teach digital skills from primary school onwards.

Our findings point strongly to the overwhelming difference that education makes to women's use of technology, even when controlling for other factors such as income and age. Currently, this benefit only really kicks in for the small minority of poor women who make it to secondary school or beyond: 92% of the female Internet users in our sample had at least some secondary education. However, by making sure that primary and secondary school curricula include ICT literacy basics, we can take advantage of near 100% primary enrolment rates to open up digital opportunities for everyone.

- Governments should work with all stakeholders to design and roll out digital literacy curricula for all ages that are designed to boost the confidence and interest of girls, and focus on empowerment and rights, not just technical abilities.
- Digital literacy training programmes should also be made widely available to older age groups (for example, through jobs centres, libraries, workplaces and community organisations), but these should be designed as supplements to, not substitutes for, a solid base of classroom learning.
- Finding effective, interactive ways to teach digital literacy in resource-constrained settings is a particular priority.
- Governments should invest in the enablers needed to take education into the digital age, such as more and better ICT training and support for teachers; fast, free broadband for schools; and replacing expensive proprietary textbooks and learning materials with Open Educational Resources.

3. Smash the affordability barrier.

In the countries in our study, a monthly prepaid data allocation of one GB (enough for just 13 minutes of Web use a day, excluding video) costs nearly 10% of average income. That's 10 times more than what the same data costs the average OECD citizen, relative to income, and is double what people in developing countries spend on healthcare. Making broadband cheaper is not only the best way to get more people connected, but also a prerequisite to enable them to go online and explore longer and more often, so they can fully unlock digital opportunities. For example, women who are able to go online daily are nearly three times more likely than infrequent users to report that the Internet has helped them to increase their income. Priorities, as outlined by the Alliance for Affordable Internet, include:

- Increasing competition and transparency in every layer of the connectivity market.
- Making better use of Universal Access and Service Funds to subsidise broadband connectivity in underserved areas, with concrete targets for reducing the gender gap in access and adoption – including, for example, through community access options targeting women and girls.
- Promoting flexible use of low-value spectrum bands for free or very low-cost connectivity (e.g. community Wi-Fi).
- Removing luxury taxes on ICT devices.

4. Practice woman-centred design.

Many poor women cite lack of relevant content or lack of time as a reason for not making more extensive use of the Internet. Only a minority, for example, feel the Internet is helping them enhance their livelihoods. Services like mobile money, e-government, agricultural market information, mobile learning and health are critical to make the Internet more useful to and more widely used by women. The impact of online services could be dramatically increased by defining the end user as a woman and not just a generic "consumer". Experience shows that when women are not consulted, products and services are often destined to fail. When government agencies and donors invest in such services, the number one target for success should be uptake by low-income women. This means:

- Prioritising investment in digitising the information and services that low- income women will find most valuable.
- Designing multi-channel content and services, incorporating the platforms, and languages, that women use most.
- Involving women directly in design and planning, and making sure that a proportion of Universal Service and Access Funds and other public funding for technology development (such as subsidies or incentives for tech entrepreneurs) is specifically set aside for projects led or managed by women.

5. Make women's civic and political engagement an explicit goal.

Women who are already active in community or political life are not only much more likely to be online, but also far more likely to use technology in transformative ways. Policymakers should work with women's groups to find ways that technology can help women to enhance their offline participation, voice and power. Examples might include:

- Identifying grassroots women leaders and activists to receive training and support in the use of ICTs for social change and entrepreneurship, and/or to become trainers themselves.
- Supporting women-led movements and organisations (these might include faith- based organisations, market women's associations, etc.) to make greater use of ICTs in their work.
- Designing comprehensive programmes that use both online and offline tools to increase gender equality by focusing on women's civic and political engagement.

6. Combat harassment of women online.

In 74% of countries included in the Web Index, law enforcement agencies and the courts are failing to take appropriate actions in situations where ICTs are used to commit acts of gender-based violence. The very high level of mobile phone and Internet-based harassment facing young women in most cities in our study is not stopping them going online, but it may inhibit how they use ICTs, and discourage them from expressing creativity, expanding their social capital or seeking political voice online. Steps critical to change this include:

- Governments must enact adequate legislative measures to protect the right to safety and bodily integrity of women and girls.These measures can be extended to ICT-mediated abuse without unnecessary intrusion on free speech and expression.
- Governments must ensure that police, lawyers and judges are trained to understand and deal with ICT-based harassment against women, and can make effective use of the legal instruments that exist.
- All stakeholders involved in digital literacy programmes in and beyond schools must ensure both boys and girls receive training in appropriate online behaviour, protecting privacy and safety and dealing with ICT-based abuse.
- Online service providers must make it easier for women to report abuse (including in local languages) and ensure they respond to such reports quickly and effectively, as highlighted in recent APC research.

7. It's not (just) the technology, stupid.

Neither communications ministries, which typically have lead responsibility for national ICT strategies, nor gender ministries, where these exist, can achieve the SDGs on Internet access and women's digital empowerment on their own. They are usually under-resourced and cannot marshall either the budgets or the political clout of their colleagues in larger departments. Additionally, our findings underline the lesson that empowering women does not happen in separate boxes labelled "offline" and "online", but requires progress across several fronts at once. Government agencies, civil society groups and private sector stakeholders will need to work together in all sectors to ensure that ICT initiatives are systematically integrated with wider efforts to expand women's choices and capabilities in the labor market, in the home, at school and in public life. Training policymakers across different sectors (such as health, education, small business, agriculture) to understand and harness the potential of ICTs to tackle poverty and gender inequality may be a good starting point.

For example:

- ICTs can enhance poor women's livelihoods, but women also need equal access to decent work, productive resources, childcare and financial services and credit.
- Social media can help women gain a bigger voice, but this needs to be accompanied by other measures to increase women's participation and representation in decision-making processes at all levels.
- The Internet can support women in making informed choices about their bodies and health, but without adequate access to safe, legal and affordable sexual and reproductive health services and action against practices such as early marriage, these choices cannot be implemented.

ANNEX

- Links to the methodology, survey questions, and data tables/sampling plan are available on our website

LIST OF TABLES AND GRAPHS

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Acknowledgements

We are extremely grateful to the Swedish Development Cooperation Agency (Sida) for support to carry out this research.

This report was written by Anne Jellema and Ingrid Brudvig. The research was directed by Dr Hania Farhan and statistical analysis was led by Dr Siaka Lougue with support from Bado Aristide. Web Foundation team members including Dillon Mann, Kristen Robinson, Sonia Jorge, Dhanaraj Thakur, and Lauran Potter made valuable contributions.

Special thanks to the project advisory team including Anita Gurumurthy and Nandini Chami from IT for Change, for substantive input into the research design, conceptual framework, review and analysis of the findings and input into report. Special thanks also to Carly Nyst for advising on country policy analysis.

Data collection was carried out by Ipsos MORI led by Daniel Cameron, Sidra Butt-Mughal, Jennifer Keyes and Ipsos country offices. It was a great pleasure to work closely with leading civil society organisations to carry out this research. We extend great thanks to: Amalia Toledo from Fundación Karisma; Dorothy Okello, Irene Murungi, Sarah Atim, Moses Owiny from Women of Uganda Network (WOUGNET); Racheal Nakitare and Mary Masinde from the International Association of Women in Radio and Television (IAWRT); Temitope Ogundipe from Paradigm Initiative Nigeria; Dr Alsácia Atanásio, Sergio Cossa, Antonio Niquisse, Nilza Josefa, Sheila Sitoe, Nelson Timana Venancio Massingue from the Science Innovation Information and Communication Technology Research Institute (SIITRI); Excel Asama and team at I-Vission International; Julie Owono from Internet Sans Frontieres; Amel Fahmy and Enas Hamdy from Tadwein Gender Research Centre; Lisa Garcia and Christina Lopez from Foundation for Media Alternatives; Anita Gurumurthy and Nandini Chami from IT for Change; Widuri from ICT Watch Indonesia.

Thank you to the following individuals who contributed their expertise: Claire Sibthorpe, Shireen Santosham from GSMA Connected Women; Alison Gillwald, Mariama Deen-Swarray, Chenai Chair from Research ICT Africa; Maggie Mapondera from Just Associates; Jennifer Radloff and Emilar Vushe Gandhi from the Association for Progressive Communications; Jennifer Breslin from UN Women.

Translation of the executive summary was provided through Global Voices Translation Services. Please find the translated versions on our website.

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Established by the inventor of the Web, Sir Tim Berners-Lee, the World Wide Web Foundation seeks to establish the open Web as a global public good and a basic right, creating a world where everyone, everywhere can use the Web to communicate, collaborate and innovate freely. The World Wide Web Foundation operates at the confluence of technology and human rights, targeting three key areas: Access, Voice and Participation.

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