

# AFFORDABILITY REPORT 2020



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Any errors remain the authors' alone.

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# WELCOME LETTER FROM THE EXECUTIVE DIRECTOR

An orange speech bubble containing the text "Hi".

Welcome to the 2020 edition of the Affordability Report! This report series, now in its seventh year, studies the internet affordability barrier and how to overcome it. It brings together years of analysis based on systems thinking about the cost that people pay for internet access and how to bring that price down over time. This has meant that our Affordability Report policy recommendations focus on the policy and regulatory environment, because of their capacity to affect market dynamics, stakeholder relationships, and infrastructure availability.

Given the Covid-19 pandemic, which has exposed the shocking inequalities in internet access and affordability across the globe, the need to bridge the global digital divide has never been more important.

This year, we focus on policy in the long term: national broadband plans. These plans, while not yet made explicit in the Alliance's [good policy and regulatory practices](#), have the capacity to affect nearly all of the policies and practices mentioned. As this report details, they can be deeply influential in driving progress towards greater affordability, while failures in effective planning can stall the best of intentions.

We have assembled a wide array of evidence and research, including an update to the Affordability Drivers Index, that reflects the state of broadband right up to the pandemic's start. This year's report is informed by expert policy surveys conducted in 72 countries, almost all low- or middle-income, across the regions of Africa, Asia, and Latin America and the Caribbean. In addition, this report features stakeholder interviews and case studies from across the globe to document the impact of national broadband plans and their potential going forward.

A4AI's experience working with our national

multi-stakeholder coalitions across regions has demonstrated one of the key findings in this report, in particular, that open consultations are critical to develop national visions of broadband development in the sector.

These consultations ensure that diverse voices — including women, girls, rural populations, poor and marginalized groups — inform inclusive visions of digital development across all countries.

We hope that lessons from the experiences shared in the report can influence and guide policymakers, funders, private sector, and civil society in their quest to design human-centered national broadband plans and strategies — supported by the belief that these plans are indeed for the public interest and have the capacity to improve peoples' lives.

We invite you to partner with A4AI on this ever more important journey towards affordable and meaningful access for everyone. Become a member of our global coalition to contribute to our collective effort towards digital equality.

**Sonia Jorge**

Executive Director

Alliance for Affordable Internet

# EXECUTIVE SUMMARY

The Covid-19 pandemic has laid bare the scale and consequences of the digital divide and underlined the urgent need to find solutions to digital inequality.

Governments are being forced to reassess priorities and step up with innovative solutions to address a range of challenges across health, employment, education, and economic resiliency. As the internet and digital technology will play an increasingly important role in our world, governments must develop policies to deliver affordable and meaningful connectivity to all.

The 2020 Affordability Report looks at the state of policy progress to bring down the cost of internet access and points to the importance of effective national broadband plans (NBPs) in providing the conditions for internet prices to decline.



“ It [the internet] is my life. I feel connected to my environment, informed by it and I also impact on it. It is our number one source of information... it’s the internet that has made me the person I am today. ”

**Tina Appiah,**  
**Director of Ghana Code Club**

## Progress on policy and falling prices

Data on policy and prices is trending in the right direction. In the past five years, mobile broadband has become more affordable, and Affordability Drivers Index (ADI) scores have risen in most countries across all three regions we study — Africa, Latin America and Caribbean, and the Asia-Pacific region — signalling improvement in broadband policies. Low income countries showed strong signs of improvement with 11.3% increases in overall ADI scores.



**Broadband policies continue to improve.** The average ADI score across the countries we study has risen by 13.6 points, from 42 to 55.6 since 2014, with improvements most notable in low-income countries.



**Africa sees the biggest policy advances.** While Africa remains the region with the lowest average ADI score, this year it saw the fastest improvement (6.7% since 2019), with countries improving planning, better spectrum management and supporting programmes to narrow the digital gender gap.



**Mobile broadband prices have fallen consistently** among countries within the Affordability Drivers Index, with the average cost of 1GB data declining by more than half since 2015, from 7.0% to 3.1% of average monthly income.

While declining prices can be explained in part by general improvements in technology and other efficiencies, strong government policy is key to reducing costs and making sure that internet access is affordable to all. Furthermore, national differences persist and pose serious challenges to universal access.



**Asia-Pacific is the regional leader for broadband strategy.** At a regional level Asia-Pacific countries have the highest average ADI policy scores for broadband strategy and public access. And consumers pay the lowest prices, at less than 1.5% of the average monthly income for 1GB of mobile broadband.



**Rwanda**, which has effective national broadband planning, has seen 1GB data fall to less than a fifth of its 2015 price, from 20.2% to 3.39% of average monthly income, and made faster progress than its East African neighbours which have less robust broadband planning.



Three countries topping this year's Index – **Malaysia, Colombia, and Costa Rica** – all stand out with the highest three scores for national broadband planning. All three meet the UN Broadband Commission's '1 for 2' affordability threshold — 1GB data for no more than 2% of average monthly income.

## The challenge of getting to universal internet access

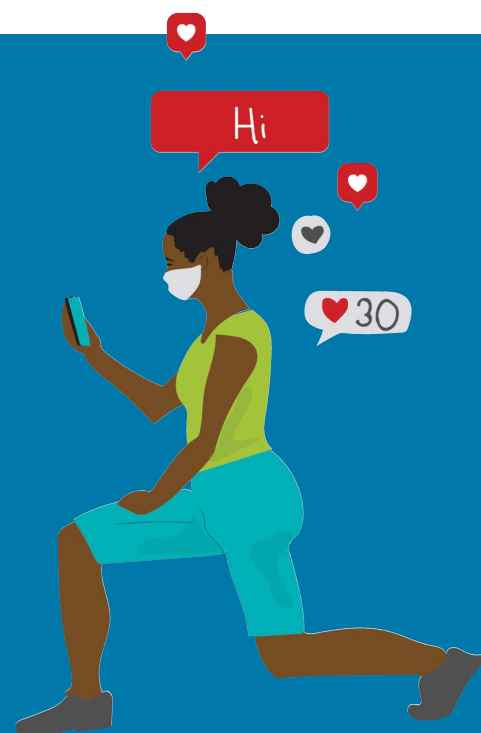
While the overall trend is encouraging, progress on reducing prices remains too slow, particularly as Covid-19 has shown beyond doubt that internet access is not a luxury but a lifeline.

**Over a billion people live in the 57 countries in our survey that are yet to meet the UN Broadband Commission's '1 for 2' affordability threshold.** 1GB is the minimum that allows someone to use the internet effectively; yet, the high cost to connect means billions of people are missing out on even this basic allowance. Almost half of the world's population remains with no internet access, and many others lack the meaningful connectivity that would allow them to engage in activities like online learning, remote working, and telehealth services.

Governments must act to bring down the cost of access. This will take significant investment: A4AI analysis has found that **US\$428 billion additional funding is needed** over the next 10 years to connect everyone to quality broadband by 2030. But to be successful, this funding needs to be paired with effective policy, strong planning and effective implementation, which includes urgent investments in the digital skills, content and enabling policy frameworks that are critical to support access to meaningful connectivity. Governments need robust national broadband plans to achieve this.

“ If you look at the need to increase productivity, improve educational outcomes, create jobs, and drive the economy, access to technology is critical to that, and access to technology in the world today is broadband. You need that connection to be able to access whatever resources or information or to communicate or transact to have better economic outcomes, no matter what kind of industry you're in. The reality is, if we are gonna have better economic out-comes or better livelihoods for our people, then making broadband available to them is critical, regardless of what part of a country they live in. ”

**Funke Opeke,**  
**Chief Executive Officer of MainOne Cable Company**



## Why national broadband plans?

National broadband plans are a necessity to bring down prices and ensure inclusive growth. With clear targets, they provide an agreed roadmap for all stakeholders and create accountability for continued progress.

The ADI assesses whether countries have a national broadband plan and evaluates how well that plan sets clear and time-bound targets relating to internet affordability.



Most countries (90% of those studied) have some kind of NBP; however, the quality of these plans vary widely.



Only two-thirds of the plans studied were drafted in open consultation. When they were, these plans were more likely to have targets and correlate with higher scores on the ADI and for overall broadband strategy.



52 countries (80% of plans) set at least one target around 4G coverage, fixed access, rural access, device costs, or internet prices.

## How national broadband plans

### make the internet more affordable

#### **They make public investments more effective**

Countries with strong national broadband plans tend to also have a higher score in the ADI for clearly defined and targeted public investment strategies, which supports inclusive digital growth and lowers costs.

#### **They encourage private sector investments**

National broadband plans give confidence for the private sector to plan on a longer-term basis and invest in better coverage and affordability. Open policy-making processes provide stability for dynamic and competitive markets to grow.

#### **They create new partnerships and sources of accountability**

Inclusive practices for drafting national broadband plans have a positive influence on the effectiveness of these plans. This process brings stakeholders across sectors together to align interests and expectations and build trust.



## Governments can lower the cost to connect with better broadband planning

Based on evidence of broadband policy environments in 72 low- and middle-income countries, this report recommends three top-level actions for better broadband planning:

1

**Broad consultation:** Broadband plans must include inputs from a diverse and representative set of players across the private sector, public sector, and civil society.

This is crucial to weigh all interests, identify market problems and solutions, and understand possible impacts on different groups and individuals. Over time, the collaboration involved builds trust and efficiency in the sector and encourages cooperation.

2

**Clear targets:** A plan must have targets that address a country's most critical gaps and have clear, time-bound measurements. These should include at least one target for network coverage and for data affordability each.

These can provide stable objectives through the lifespan of the plan and allows for observers to flag shortcomings in the plan's implementation. These targets are crucial for creating accountability that keeps all stakeholders vested in the plan's success.

3

**Funding commitments:** A plan must come with funding commitments and a transparent assessment and review process at least every other year.

The implementation of national broadband plans requires public funding, as well as ongoing support for collecting and analysing data that can be used to measure progress and publish updates. Without financial support for implementation, national broadband plans fail to make a long-term impact on a country's digital development.

The track record of broadband policy and prices over the past few years has made the value of broadband plans clear. Countries that do not have a plan or that set an unambitious plan risk deferring opportunities for digital growth — in both economic and social terms. As countries look to reset their long-term goals for recovery from the Covid-19 pandemic, broadband planning must be a central part of that process. The experiences of the 72 countries studied in this report provide evidence of what governments can — and must — do.

# 1

## WHAT IS THE STATE OF INTERNET AFFORDABILITY AND POLICY?

“ Covid-19 exposed the digital divide between and within countries and, for nations lagging behind, now is –really– time to prioritize broadband deployment and connect the unconnected. There aren’t any conflicting priorities, as broadband’s contribution is transversal and will support the recovery of all sectors. We cannot afford not to leverage an instrument that can fast-track progress, especially in a context where Covid-19 is expected to push millions of people into extreme poverty and put at risk a decade of progress in terms of human capital. ”

**Boutheina Guermazi,**  
Director of Digital Development, World Bank

**The world was not ready for what came in 2020.** The Covid-19 pandemic has [transformed](#) the ways we live. Over a few weeks, social distancing, face masks, and travel restrictions became everyday features for billions of people. Work and schooling moved to the home — for those able to make the transition, at least. **The internet has become critical for family life, business, education, health, and more.**

The digital divide — still a stubborn feature across the world — has meant that different communities have experienced the pandemic in vastly different ways. [Massive disparities exist](#) across different regions, but the digital divide has caused problems for [professionals in Latin America](#) and [teachers in Southeast Asia](#), and [learners from across Africa](#) to [South Asia](#). This divide exists in [high-income countries](#) just as some [low-income countries](#) are trying first pilots of moving parts of their economy online.



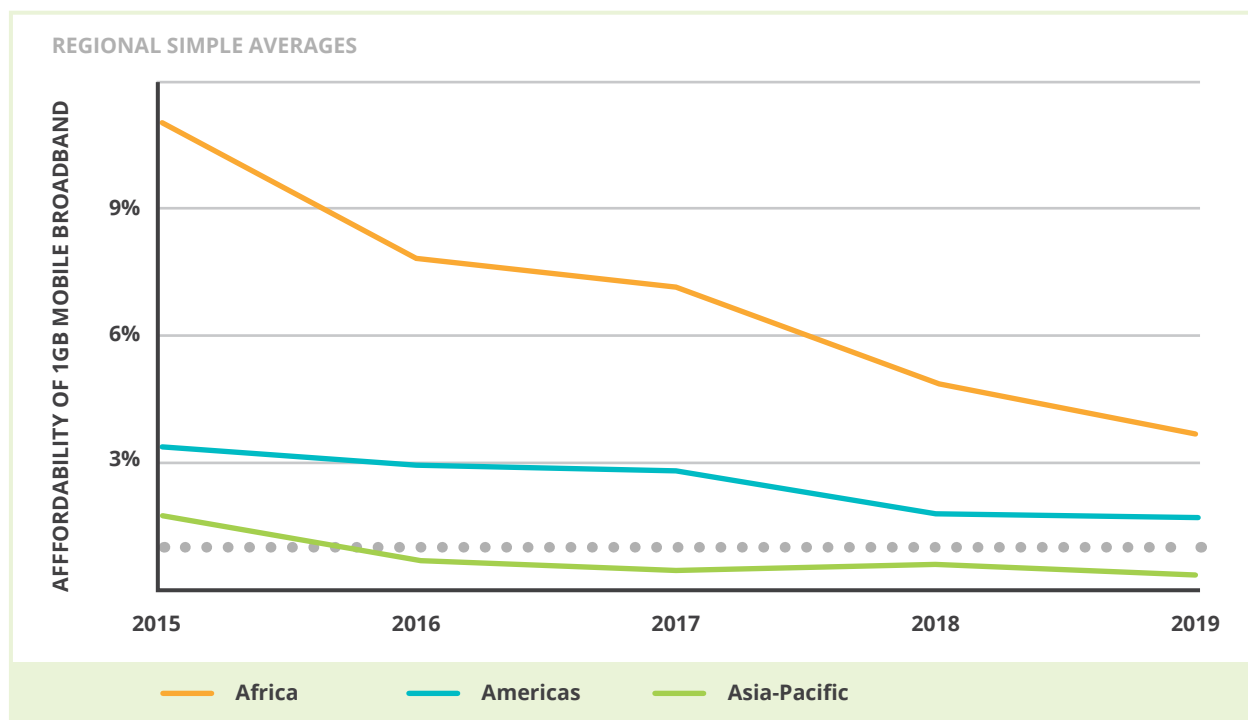
**The boundary between connected and unconnected translates into clear consequences for employment, education, family and social life, and access to information. This pandemic calls us to consider what role the internet will play in building resilience in our societies and our economy.**

For millions, the cost of connectivity is the insurmountable obstacle that keeps them offline. The cost of handsets and internet tariffs remains [one of the most-often cited reasons](#) for someone in a low- or middle-income country to remain unconnected. Over [1 billion people live in the 57 countries](#) across the world that do not provide access to a 1GB data plan that meets the [international standard for affordable internet](#). Nearly [2.5 billion people live in countries](#) where the most affordable smartphone costs more than a quarter of the average monthly income. To close the digital divide, we must make broadband and devices affordable for the billions who do not yet have access.

## 1.1. How prices have changed over the past five years

The UN Broadband Commission defines [internet affordability as '1 for 2'](#) — that is, 1GB of mobile broadband costing no more than 2% of the average monthly income. Several countries, however, still have a long way to go to reach this threshold, especially among low-income countries. In countries like Malawi, Honduras, and Nepal, 1GB can cost from 6% to as much as nearly 16% of a person's total income. The number sits even higher in places like the Democratic Republic of the Congo.

**Figure 1. Affordability of 1GB mobile broadband across low- and middle-income countries, 2015–2019**



Source: Alliance for Affordable Internet

**Despite internet prices remaining unaffordable for many, there has been progress.** Over the past five years, mobile broadband has become more affordable, and scores on the Affordability Drivers Index (ADI) have increased in many countries across all three regions studied in the report. Higher ADI scores have been driven by steady improvements in countries' internet infrastructure, broadband adoption, and equitable access policies. This is a positive trend signaling that countries are doing more to connect the unconnected and reduce the digital divide.

## What is the Affordability Drivers Index?

The ADI is a tool developed by the Alliance for Affordable Internet (A4AI) to assess how well a country's policy, regulatory, and overall supply-side environment is working to lower industry costs and ultimately create more affordable broadband. In particular, policymakers and relevant stakeholders can use this tool to identify where progress is needed most.

The ADI does not measure actual broadband prices, nor does it tell us how affordable broadband is in a given country. Instead, it scores countries across two main policy groups:



**Infrastructure:** The extent to which internet infrastructure has been deployed, as well as the policy framework in place to encourage future infrastructure expansion; and



**Access:** Current broadband adoption rates, as well as the policy framework in place to enable equitable access.

High ADI scores correlate with reduced broadband costs on both the industry side and for consumers. As Figure 1 shows, there is a positive and statistically significant correlation between a country's ADI score and the affordability of a 1GB mobile prepaid broadband plan — reaffirming that improving policies and regulations to lower industry costs should be a priority for all, and particularly for low- and middle-income countries.

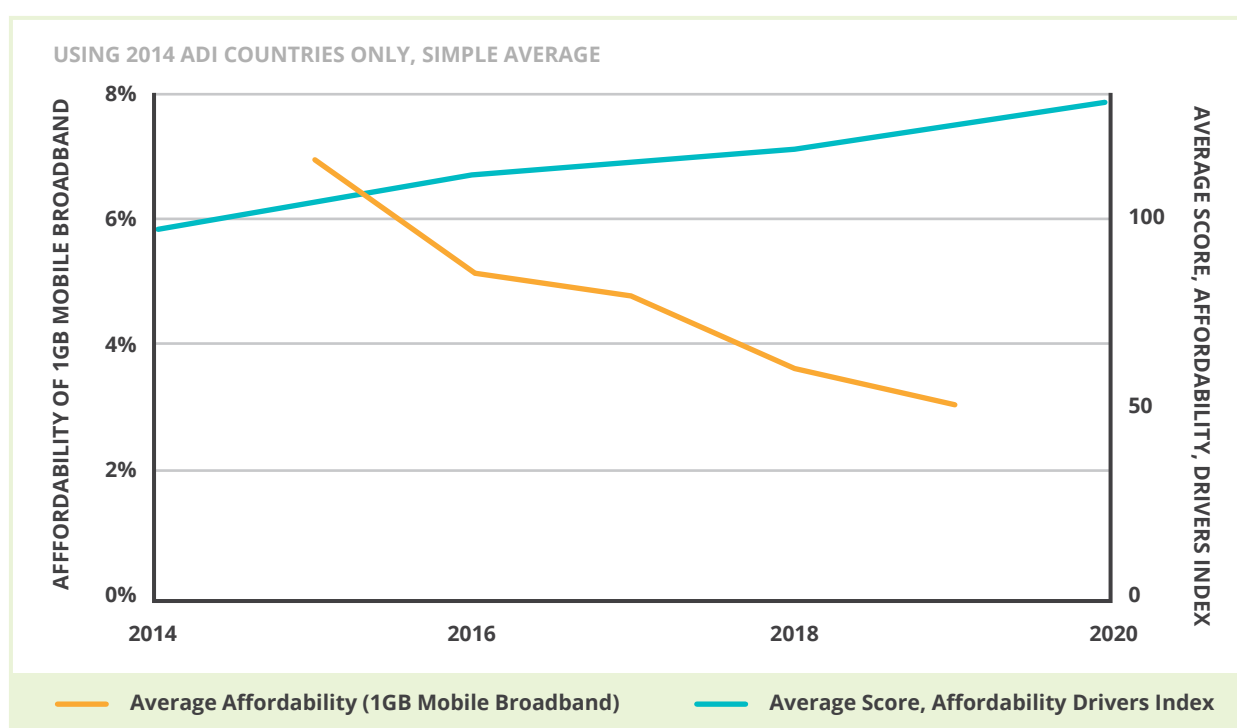
On average, prices in low- and middle-income countries have become more affordable, moving from 7.0% of average monthly income in 2015 to 3.1% in 2019.<sup>1</sup> Countries like Rwanda, Ecuador, and India have seen the cost of 1GB mobile broadband come down by more than 60% during this time period. In the case of Rwanda, the price of 1GB as a fraction of the average monthly income in that country has decreased from 20.16% to 3.39% between 2015 and 2019.

*1. This is based on the 52 low- and middle-income countries where we have collected affordability data over these years. More information is available on the [A4AI website](#).*

## 1.2. How policy can lower the price of internet access

Policies related to internet infrastructure and access have played their role in making mobile broadband more affordable. With the help of steady growth, since 2014, the 52 countries in the sample have increased their ADI average score by 37.5%. One standout – Ethiopia – has seen its ADI score rise from 2.31 in 2014 to 20.37 in 2020, spurred by the [opening up of its telecommunications market](#) over the past two years.

Figure 2. Average affordability and ADI scores over time



*This is based on the 52 low- and middle-income countries where we have collected affordability data over these years. More information is available on the [A4AI website](#).*

However, policy progress remains slow. The top ten countries on the Affordability Drivers Index remain the same except for India dropping down to 11th place and Morocco re-entering the table after four years just missing the cut-off. 44 countries of the 61 returning to this year's index saw less than a 10% shift in their score on the ADI in either direction.

### TOP TEN, 2020 AFFORDABILITY DRIVERS INDEX

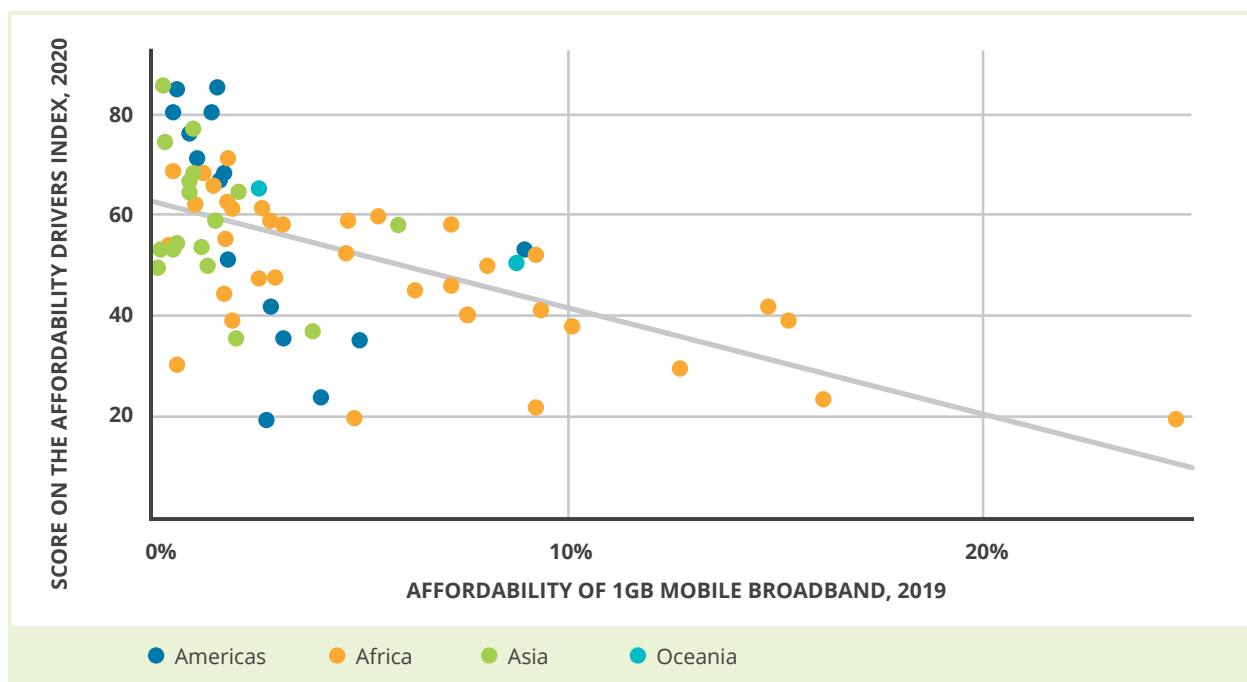
|    |                    |      |       |
|----|--------------------|------|-------|
| 1  | Malaysia           | (=)  | 85.67 |
| 2  | Colombia           | (=)  | 85.26 |
| 3  | Costa Rica         | (=)  | 85.07 |
| 4  | Argentina          | (+3) | 80.56 |
| 5  | Peru               | (-1) | 80.49 |
| 6  | Thailand           | (+2) | 76.92 |
| 7  | Mexico             | (-2) | 76.57 |
| 8  | Turkey             | (-2) | 74.50 |
| 9  | Dominican Republic | (+1) | 71.52 |
| 10 | Morocco            | (+5) | 71.26 |

### TOP TEN, AMONG LEAST DEVELOPED COUNTRIES

|    |            |      |       |
|----|------------|------|-------|
| 1  | Senegal    | 25th | 61.89 |
| 2  | Benin      | 27th | 60.02 |
| 3  | Cambodia   | 29th | 59.27 |
| 4  | Uganda     | 31st | 58.64 |
| 5  | Rwanda     | 32nd | 58.19 |
| 6  | Nepal      | 33rd | 58.17 |
| 7  | Myanmar    | 38th | 53.68 |
| 8  | Tanzania   | 41st | 52.88 |
| 9  | Mali       | 42nd | 52.42 |
| 10 | Bangladesh | 45th | 50.19 |

More must be done to connect the unconnected. An International Telecommunications Union (ITU) report this year estimates that **\$428 billion additional investment is required** over ten years to deliver high-quality broadband for the world's remaining unconnected population. The need is most acute in sub-Saharan Africa, South Asia, Southeast Asia, and the Pacific. This requires a blend of capital investment, policy support, digital skill-building, and operating expenses for internet infrastructure. Effective national broadband planning is essential to this pathway to universal access.

Figure 3. Comparing latest affordability of 1GB to ADI score



Source: Alliance for Affordable Internet

### 1.3. How policies have changed over the past two years

Across the Asia-Pacific region, countries continue to maintain some of the highest policy scores, driven by effective national broadband planning and buoyed with continued support for public access solutions. While the regional average ADI score stayed consistently around 56 points (out of 100), policy scores across the region improved.

The regional average for broadband strategy remained the highest policy cluster score of any theme and any region. The regional average for policies around spectrum management, public access, and gender mainstreaming all rose more than 3%. Countries like Thailand and Nepal have both leveraged their Universal Service and Access Funds to extend connectivity into new areas. [Read more about Nepal here](#); Thailand is featured in a case study below, [page 28](#).

Across themes and in the wake of consistently strong broadband planning across the region, countries in the Asia-Pacific region offer model policies for many other low- and middle-income countries looking to accelerate digital inclusion.

The opposite appears to be true in Latin America and the Caribbean, where policies are stalling or regressing and affordability remains a key challenge for many, especially those on low incomes and for women. Worryingly, the regional average on the ADI only grew 2%, even

when excluding the new entrants from the region who have lower average incomes than their peers. This is in part driven by negative policy environments growing in countries like Bolivia, Brazil, Mexico, and Guatemala.

Some of the greatest strides are occurring in low-income countries and across Africa — where policy reform and investment are needed most. The average ADI score for low income countries rose from 32.4 to 35.42 — more than double the pace (11.3%) of any other income group compared to 2019. Countries across Africa rose an average of 7% in the ADI this year. Malawi has one of the largest year-on-year score increases this year, of over six points, a reflection of its work around the consultation and adoption of its [2019-2023 national broadband strategy](#). In Kenya, [greater transparency around spectrum allocations](#) by posting information publicly and substantial investments in international bandwidth with the country's [fifth submarine cable landing](#) drove the country's score up 15% from 2019.



Of particular concern is an apparent regional trend in Latin America around the abandonment of gender-responsive broadband policymaking. Just as new research documents the [gender gap in meaningful connectivity](#) and the [predominant fears around security and safety](#) for would-be mobile internet users in Latin America, [particularly among women](#), more countries in the region saw decreases in their scores on gender-inclusive policymaking and targets than increases.

## What's at stake?

“ **Broadband access and related policies should not be seen as a standalone or independent element of a government's development agenda, but rather should be fully integrated into every aspect of development, human and economic.** Over the years, the growth of broadband access, the mobile revolution and the dissemination of digital applications in various sectors, have helped demonstrate the key role that a connected world and digital technologies can play to support development objectives, from the UN SDGs to the World Bank Group's twin goals (eliminating extreme poverty and increasing shared prosperity). All aspects of human and economic development can benefit from an inclusive digital transformation, for instance through job creation, easier access to public services, gender equality, food safety, and better, more transparent and participative policymaking.

Yet, a major prerequisite to access opportunities in the digital era is access to good-quality, reliable, affordable, and safe internet connectivity. **Nowadays, 3.6 billion people are still offline – most of them in low-income countries – and therefore are excluded from the digital promises.**

The next stage of broadband development to connect the unconnected is more complex, requiring innovative technological and financing solutions to connect rural and remote areas and marginalised populations, while at the same time promoting investments in next generation connectivity. Broadband policies in all segments of the broadband value chain – international connectivity, national backbone, middle mile and last mile connectivity – fundamentally matter as it is at the core of the digital inclusion agenda, with the ambitious yet necessary global goal to achieve universal internet access by 2030. ”

**Interview with Boutheina Guermazi,  
Director of Digital Development at the World Bank**





# 2

## WHAT IS A

## NATIONAL BROADBAND PLAN?

A national broadband plan (NBP) is a strategic vision for a country's ICT development. Unlike a new law or regulation, national broadband plans are policy documents that set out objectives and aspirations for the ICT sector over the medium- to long-term. They are drafted and published by a government authority, usually the ministry responsible for telecommunications or the relevant regulator. This drafting process can sometimes include other stakeholders – such as private internet service providers and civil society groups – but this is not guaranteed. These documents are frequently, but not always, published online and drafted transparently.

Thematically, national broadband plans can cover a range of issues, such as expanding internet access, regulating the telecommunications market, guiding e-government services, and fostering a digital economy. They exist as a category of similar, but never identical, policy documents. This report investigates what makes a good national broadband plan and summarises the findings of that research.

Over the past decade, national broadband plans have increasingly become a target for international advocacy efforts from the United Nations. National broadband plans have been part of the UN Broadband Commission's objectives since its launch in 2010 and were [the first target](#) of its initial framework. After a [2018 revision](#), national broadband plans remain the central part of the Commission's first target: that each country should have a funded plan.

Despite this, national broadband plans are not universal. Even where they exist, few plans effectively guide the sector. Capacity and implementation remain critical challenges for success.

### 2.1. Why do national broadband plans matter?

National broadband plans help a number of countries stand out in this year's Index. The top three countries — Malaysia, Colombia, and Costa Rica — all stand out with the highest three scores for national broadband planning. Botswana makes one of the largest leaps in the ADI this year, moving up nine positions, and is the closest that a sub-Saharan African country has gotten to the Top 10 in the current model, while also taking the highest score in Africa for broadband strategy. In large part this leap was fueled by the adoption of a [new broadband strategy in mid-2018](#) that has been an exemplar for the region.



## The unaffordability of data in Central America

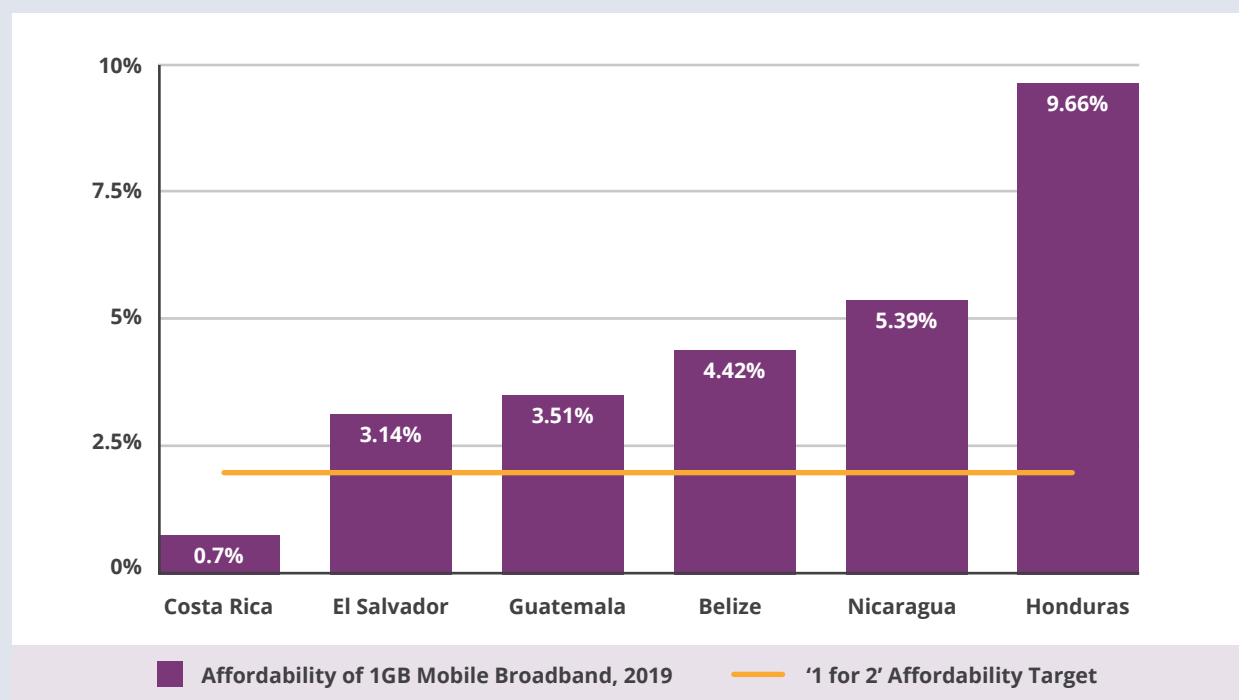
The Central American region is unique for its endemic lack of broadband plans. Among the six countries in the region, only Costa Rica, where access is the most affordable and average incomes are nearly triple anywhere else in the region, has a [National Telecommunications Development Plan](#). In all other countries, the market lacks the stability and other benefits provided by an effective national broadband plan. A bit of history explains this disparity:

“ The difference in broadband planning between Costa Rica and the rest of the region can be explained partially by history. Costa Rica opened up its telecommunications market a decade after other Central American countries did. This enabled stakeholders within Costa Rica to learn from others how to establish a well-functioning modern policy environment. A central feature of the resulting policy environment was a regulator and a ministry that worked together to implement public policy to ensure broad coverage at a low price. Unfortunately, other Central American nations initially lacked the same institutional arrangement. These countries exclusively rely on a regulator to oversee the sector and there is a lack of public policy to guide the development. Nonetheless, they have pursued important reforms and where gaps still exist, USAFs and broadband plans will allow the countries to accelerate their progress. ”

**Allan Ruiz,**  
**Director of Comtelca**

Mobile broadband remains above the '1 for 2' affordability threshold in all of these countries except for Costa Rica, where the cost of 1GB mobile broadband is [one of the most affordable](#) among low- and middle-income countries in the Americas.

Figure 4. Affordability of 1GB Mobile Broadband in Central America



Source: Alliance for Affordable Internet

The adoption of a broadband plan in these countries not only promises increases in these countries' ADI scores, but also positive opportunities for lower internet prices for consumers through targeted public investment and greater market cooperation.

“ A lack of political will continues to stifle progress. However, Comtelca, a major public telecommunications stakeholder in the region, has strived to change this by working with policy makers to develop the Mesoamerican Digital Agenda along with other country initiatives meant to accelerate progress. ”

**Allan Ruiz,**  
**Director of Comtelca**

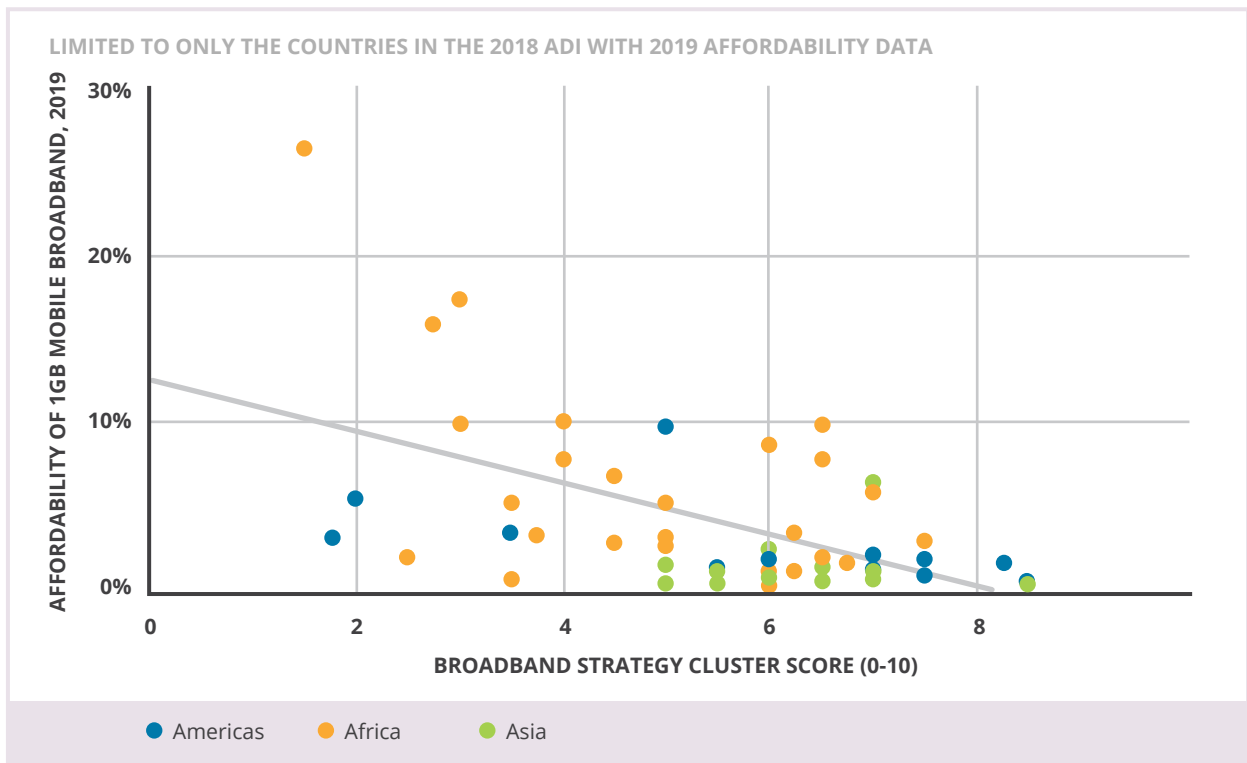
**National broadband plans correlate positively with greater internet affordability. Countries with a national broadband plan that sets clear, time-bound targets and interventions for reducing broadband cost and increasing penetration tend to have lower internet prices relative to average income.** This behaviour<sup>2</sup> suggests that these policies could lay the groundwork for more affordable internet prices and greater broadband access.

2. The model is detailed on Table 6 in Annex 3.

In addition to greater affordability overall, stronger national broadband plans correlate to greater affordability among the poorest 20% of society. This suggests that national broadband plans hold the potential not just to reduce prices in general, but also bring them to a point where they are more affordable for the most marginalised.<sup>3</sup>

**These plans can determine to what degree the internet can be a meaningful tool in people’s lives.** The number of people who have access to the internet and the cost at which they pay for that service is, in part, affected by a national broadband plan’s ability to guide the ICT sector. As such, the evaluation of national broadband plans has been part of the [Affordability Drivers Index \(ADI\)](#) since its first edition in 2013. The Index brings together a wide range of policy, market, and infrastructure indicators to assess countries’ orientation towards an environment that correlates with cheaper internet prices.

**Figure 5. Comparison of 2018 Broadband Strategy scores vs. 2019 affordability**



Source: Alliance for Affordable Internet

3. The model is detailed on Table 7 in Annex 3.

## 2.2. What does a national broadband plan look like?

**National broadband plans come in extraordinary variety.** As of September 2020, [174 countries report having a national broadband plan](#) of some kind. These plans have a variety of names: strategies, policies, plans, and agendas, to name a few examples<sup>4</sup>. They also respond to the unique political priorities and geography of their country: the plan in Burkina Faso looks very different from the plan in Fiji. These plans also vary in their political lifespan: some countries plan in scales of two years, others in five to ten, and some see their national broadband plans as indefinite<sup>5</sup>. However, there are some general characteristics by which we can understand what a national broadband plan looks like.

Of the 72 countries in this year's report, 65 have or have recently had a national broadband plan in effect. Of the plans with an end date, the average timeframe is six years; the median is five. This remains consistent across regions and income groups, although countries in Latin America and the Caribbean have slightly shorter average timeframes, with a median validity of four years.

This means these documents occupy a middle-level in the policy environment: they are not as permanent as laws but also not as short-lived as a specific regulatory action or a policy project. They bridge between the two spaces to give strategic coherence to the multitude of smaller actions and help interpret how the foundational principles of the country's laws respond to contemporary questions and innovations.

This lifespan also means that national broadband plans can be politically vulnerable. In countries like Brazil, Guatemala, and Mexico,

changes in political power have led to changes in policy priorities. In the past two years, the broadband strategy cluster scores for Brazil and Guatemala have fallen to around half of their values in 2018, and these countries now hold two of the lowest positions for broadband strategy in their region. This year, Brazil and Mexico saw less than a 1% change to their ADI score, while Guatemala fell 12% from its 2019 position, compared to a 6% average increase across all countries.

**Table 1. Broadband strategy cluster scores\* in Latin America and Caribbean**

|                           | 2018 |   | 2020 |
|---------------------------|------|---|------|
| <b>Costa Rica</b>         | 8.5  | = | 8.5  |
| <b>Peru</b>               | 8.3  | ▼ | 8    |
| <b>Dominican Republic</b> | 7    | ▲ | 8    |
| <b>Colombia</b>           | 7.5  | = | 7.5  |
| <b>Argentina</b>          | 6.5  | ▲ | 7.5  |
| <b>Ecuador</b>            | 7    | ▼ | 6.8  |
| <b>Mexico</b>             | 7.5  | ▼ | 6    |
| <b>Jamaica</b>            | 6    | = | 6    |
| <b>Bolivia</b>            | 5    | ▲ | 5.5  |
| <b>Honduras</b>           | 5    | ▼ | 3.5  |
| <b>Brazil</b>             | 5.5  | ▼ | 3    |
| <b>Venezuela</b>          | 3    | = | 3    |
| <b>Nicaragua</b>          | 2    | ▲ | 2.5  |
| <b>Guatemala</b>          | 3.5  | ▼ | 1.5  |
| <b>Haiti</b>              | 1.8  | ▼ | 1    |
| <b>Regional Average</b>   | 5.6  |   | 5.2  |

\* A composite score tallied by averaging policy scores for targeted public spending in telecommunications and for broadband planning.

4. A list of the plans analysed as part of this report's conclusions are available as Annex 4.

5. Among the 72 countries included in the policy survey for this report, Jordan's 2019-2021 ICT Strategy had the shortest intended duration while Thailand's Digital Economy and Society Development Plan has a 20-year policy arc. 14 countries passed plans with no end date.

## 2.3. What should a national broadband plan do?

National broadband plans should set ambitions for ICT development. While broadband plans in general address questions of economic performance, digital inclusion, and infrastructure, each plan will have different strategies and priorities. For example, planning can focus on building out 3G, 4G, or 5G networks, depending on the ubiquity of each generation of technology and where coverage gaps may exist.

Geography is an important factor. Among a handful of policy issues we measured within broadband plans this year, countries most consistently set targets around ensuring and expanding internet access in rural areas (45 of 65, 69%). This illustrates the pressing nature of the ongoing urban-rural digital divide, but is just one example of a policy theme in a broadband plan. Most plans will aim to address multiple themes over multiple years. In addition to geography and coverage, digital skills and the affordability of devices and data tariffs remain persistent challenges and are addressed with varying frequency.

Good national broadband plans set targets around their priorities. All national broadband plans are aspirational. The effectiveness of an individual plan comes, crucially, at the point between aspiration and implementation: how well does a plan motivate policy change and positive actions from all stakeholders in the sector?

The most effective national broadband plans have regular reviews and iterations. The three leading countries in both this year's and the 2019 indices — Malaysia, Colombia, and Costa Rica — demonstrate the impact of national broadband plans on internet affordability and the importance of iterative reviews in achieving excellence in this space. These three countries earned the highest scores this year of any countries on the indicator for the quality of targets within their national broadband plans and the widespread impact of these targets.

In these three countries, their broadband plans set targets, led the sector, and left evidence of impact in their wake. In Malaysia and Colombia, the timely sequencing of successive plans built on the achievements and addressed the shortcomings of each plan before it. In Costa Rica, the national broadband plan details a procedure for reviewing progress over the duration of the plan's lifespan, including biennial updates published by the Ministry. This practice is unmatched among the countries in this report for its regularity, transparency, and depth. These activities ensure that the national broadband plan is not a once-off performance in these countries but the launching point for further and continued activity in the sector.

Check out the good practices case studies for each of these three countries and how they leveraged their national broadband plans into impact.

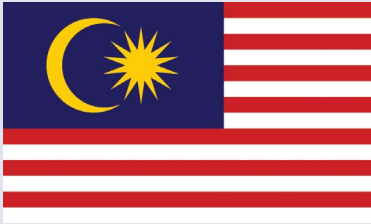
Click on the flag for more:



**COLOMBIA**



**COSTA RICA**



**MALAYSIA**

The iterative review process, paired with transparent and measurable policy targets, creates accountability and keeps national broadband plans relevant. In these high-performing countries and elsewhere, national broadband plans are not the finish line. They are the starting point for ongoing dialogue, cooperation, and development.

With clear targets, national broadband plans can lay out an agreed roadmap for all stakeholders to contribute and to challenge others in the sector to do more where performance falls short. This function can, when performed effectively, keep stakeholders engaged in broadband policymaking over time and ensure that each policy action conforms with the ambitions and targets of the national broadband plan.

Not all countries have a national broadband plan, and many people live in countries where the national broadband plan falls short of the quality that it could — and should — have. This has real consequences, not just economic. It defers the potential for higher service quality for a family whose children are now learning from home. It keeps prices so high that a freelancer has to ration out their data over time to make sure they don't go over their spending limit. It leaves entire communities — usually the poorest, most isolated, and most vulnerable — unconnected.



# 3

## HOW DO NBPs

## MAKE THE INTERNET CHEAPER?

These plans have an impact and correlate positively with outcomes like more affordable internet prices, including for the poorest in society. But how does a policy document translate into action? For national broadband plans, they bridge together various policy instruments – laws, regulatory interventions, investments, and more – to provide a multi-year narrative arc for a country’s ICT development. This is achieved, in part, through the relationships that the plan stewards among stakeholders.

National broadband plans help set out roles and, through that clarity, can create new efficiencies and collaborations to accelerate greater access and affordability. This section details some examples of how governments, private sector, civil society, and cross-sectoral partnerships have all been enabled by national broadband plans.

**Table 2. How a broadband plan sets roles and impacts the market**

| ACTOR                       | PLAN IMPACT                           | CONSEQUENCE   |
|-----------------------------|---------------------------------------|---|
| Public Sector               | Guide infrastructure and investment   | Makes public money smarter  |
| Private Sector              | Catalyse private investments          | Connects private investment with social benefits                    |
| Civil Society               | Facilitate new policymaking processes | Uses a wide range of experiences to set realistic targets           |
| Public-Private Partnerships | Create new efficiencies               | Enables innovative, new solutions to stubborn connectivity problems |

Source: Alliance for Affordable Internet

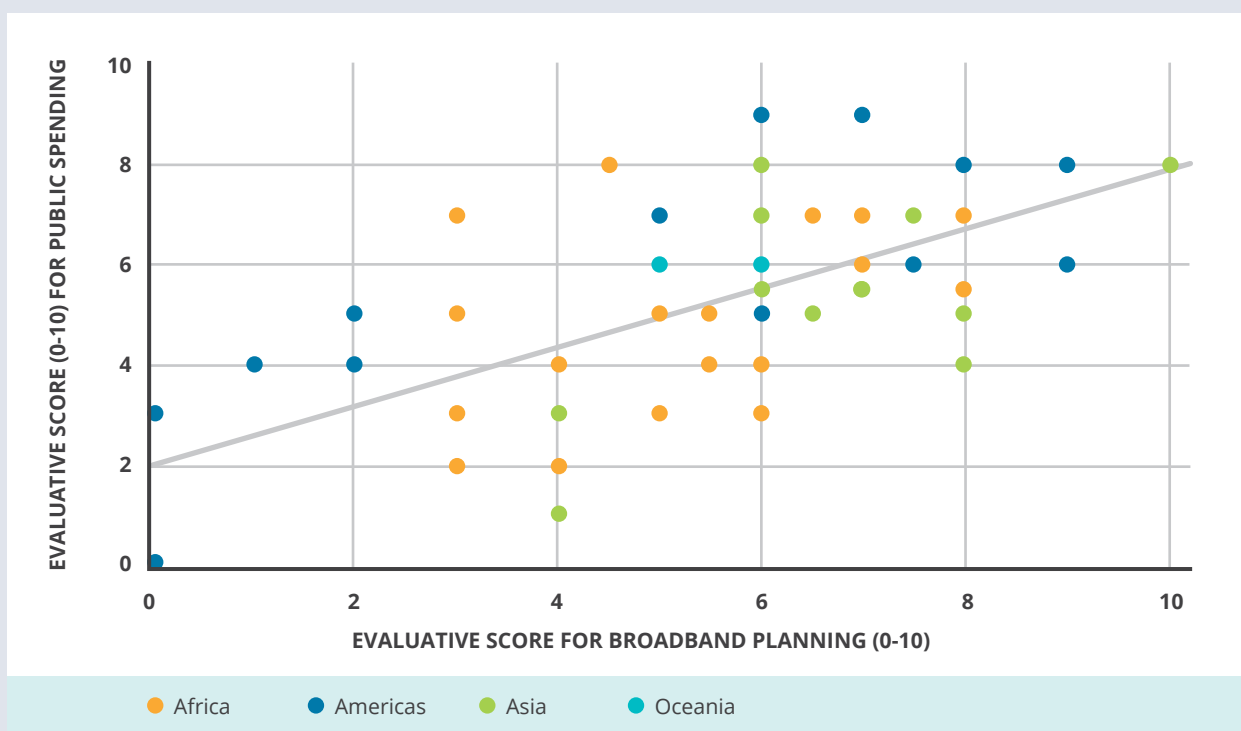


### 3.1. NBPs guide infrastructure and public investment

**Public investment serves as the core of almost every national broadband plan.** National broadband plans featured in [last year's Affordability Report](#) because of how they guide governments on investing in infrastructure, particularly at the first and middle mile. Particularly in situations where the service demand does not yet exist to justify private investment, public money frequently serves as a risk guarantee for network development while internet use continues to grow.

This relationship between public money and national broadband plans is clear in the policy survey data: countries with stronger national broadband plans also tend to have a higher score for more clearly defined and targeted public investment strategies. These plans can help distinguish smart investments from less impactful projects. In turn, this financial efficiency can accumulate over time and turn multiple projects into greater returns on otherwise similar amounts of funding.

Figure 6. Comparison between broadband plans and public spending targets, 2020 ADI

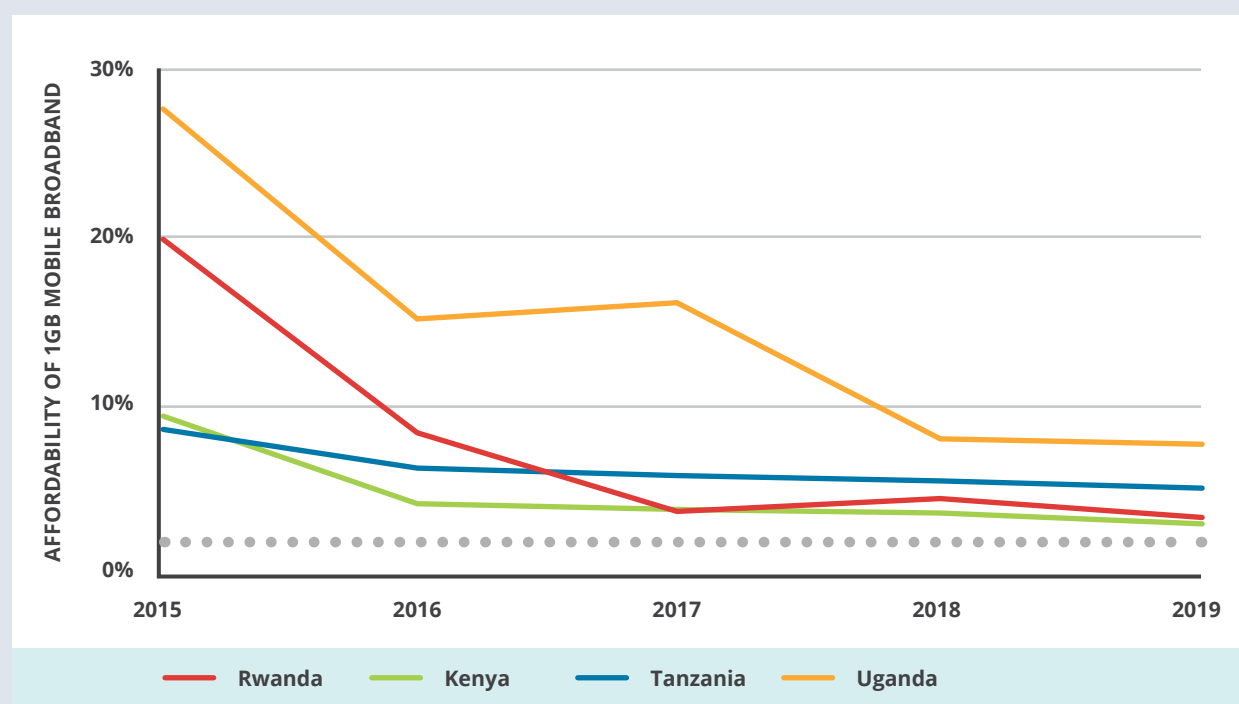


Source: Alliance for Affordable Internet

6. Details about the linear models supporting this conclusion are available in Annex 3.

Countries like Malaysia and Rwanda demonstrate the accelerating impact of effective national broadband planning in expanding access and reducing prices. In Malaysia, the country has benefited from a strong sequence of national broadband plans, starting with the 1994 Multimedia Supercorridor to more recent plans such as the 2013 [Digital Malaysia, National Digital Economy Initiative](#) and the 2019 [National Fiberisation and Connectivity Plan](#). In Rwanda, the [2017 ICT Sector Strategic Plan](#) offers clear targets and funding commitments to reach them. This comes after a legacy of successful implementations of projects such as the [Korea Telecom-backed 4G network](#) and the [Digital Ambassadors Programme](#).

**Figure 7. Affordability of 1GB Mobile Broadband in East Africa (2015–2019), Comparing Rwanda with its neighbours**



Source: Alliance for Affordable Internet

These policies have come with an extraordinary pace in falling internet prices compared to neighbouring countries. The cost of 1GB in Malaysia has fallen to nearly a third of what it cost as a fraction of someone’s income in 2015, while in Indonesia, the cost is still 79% of what it was in 2015. In Rwanda, the cost of 1GB has fallen to less than a fifth of what it meant for a user in 2015, faster than in neighboring Kenya, Tanzania, or Uganda. In turn, this affordability has allowed the digital economies in both [Malaysia](#) and [Rwanda](#) to grow and these countries to become regional leaders in the digital economy.

The recent governmental change in Mexico and the lack of a coherent broadband strategy from the new government exemplifies how the absence of an effective national broadband plan has consequences. Mexico's [Red Compartida](#) (shared network) featured in [last year's Affordability Report](#) as one of the most advanced examples of a wholesale open access network — a unique investment strategy to expand backbone and middle mile networks.

However, since the last policy survey in 2018, the policy environment for broadband has shifted with the [general elections results](#) in the same year. The new Mexican president, López Obrador, has promised a ['fourth industrial transformation'](#), with digital technology playing a catalysing role for the Mexican economy.

However, with [only high-level themes clarified](#) in this government's new national digital strategy, much remains uncertain in expanding

affordable internet access to the widest number of people. As a result, Mexico's score on the Affordability Drivers Index has stagnated this year and risks deferring potential growth in greater internet access and affordability.

National broadband plans can do more than guide investment at the backbone level, the high-capacity cables that link countries and cities. They can also help governments identify and tackle challenges for universal access, which can be the most stubborn at the last and most remote 'mile' of the network. This year's policy survey catalogued the national broadband plans of 65 low- and middle-income countries<sup>7</sup>. Of five themes — 4G networks, fixed internet access, rural access, data affordability, and device costs — plans most regularly set targets around rural access (45 of 65). This trend was consistent across different regions and income groups.

**Table 3. National Broadband Plans with Targets, by Theme**

|                           | AFRICA    | AMERICAS  | ASIA      | OCEANIA  | LOW       | LOWER-MIDDLE | UPPER-MIDDLE |
|---------------------------|-----------|-----------|-----------|----------|-----------|--------------|--------------|
| <b>Number of Plans</b>    | <b>33</b> | <b>12</b> | <b>18</b> | <b>2</b> | <b>15</b> | <b>29</b>    | <b>20</b>    |
| <b>4G Connectivity</b>    | <b>11</b> | <b>4</b>  | <b>9</b>  | <b>0</b> | <b>5</b>  | <b>10</b>    | <b>8</b>     |
| <b>Fixed Access</b>       | <b>17</b> | <b>8</b>  | <b>12</b> | <b>0</b> | <b>7</b>  | <b>16</b>    | <b>13</b>    |
| <b>Rural Access</b>       | <b>21</b> | <b>8</b>  | <b>14</b> | <b>2</b> | <b>8</b>  | <b>20</b>    | <b>16</b>    |
| <b>Data Affordability</b> | <b>14</b> | <b>2</b>  | <b>11</b> | <b>0</b> | <b>7</b>  | <b>10</b>    | <b>9</b>     |
| <b>Device Costs</b>       | <b>13</b> | <b>4</b>  | <b>4</b>  | <b>1</b> | <b>7</b>  | <b>7</b>     | <b>7</b>     |

Source: Alliance for Affordable Internet

This trend makes sense: rural areas have some of the most difficult business cases. They feature lower population density, more difficult terrain and environmental conditions, and have lower average incomes. All of these features make them less economically desirable than urban areas. To fill this gap, governments can employ [innovative policies to support rural connectivity](#) to help fill gaps and to provide sufficient support to make these areas economically profitable. Universal Service and Access Funds — such as in the case of the [Net Pracharat](#) program in Thailand — can also play a key role to achieve this.

7. See Annex 4 for more information about the plans analysed in this year's report.

## Case study: Thailand's Net Pracharat

The [Net Pracharat](#) program, most active in 2017, is an example of Universal Service and Access Fund providing financing and strategic direction to provide new coverage to rural areas. These areas are less likely to be economically profitable without additional support from the public sector, and USAFs can be a key tool in financing this kind of project.

The program's success saw the number of rural households without internet access nearly halved (from 13% to 7%) from 2016 to 2018, and another [1.7 million rural households come online](#).

“ The Net Pracharat program focuses on installing connectivity to unserved and underserved areas and citizens. It was established as a part of the national plan of Digital Thailand, which identified six strategies including “Developing country wide high-efficiency digital infrastructure” as a top priority and a basis for the other five strategies. The plan targeted more than 74,000 local villages to be connected with high-speed internet, provided either by telecom operators or government-owned telecommunication companies. Through the project, almost all of the villages where the most of Thai citizens reside are able to connect to high-speed internet.

Aside from the ambitious targets and successful outcomes, the plan also addressed long-term sustainability by training a volunteer network which was designed for enhancing the awareness programme for how to access the internet and the benefit of being connected and maintenance of the network. The connectivity itself is important, but the adaptation to the connected society and skill-building by local citizens is also important. ”

**Interview with Jongbong Park,  
Director for project development for the Asia–Pacific Telecommunity**

**Through national broadband plans, targeted public investments become the foundation for a flourishing digital economy.** From the investment at the backbone and with support to cover the most remote areas, other actors are able to build extensions to the network, reach new communities, and generate market competition. The strength and reliability of this backbone over time, provided through the national broadband plan, impacts the opportunities available to private actors in the sector.

“ That said [financing forbearance], this should not prevent policy-makers from looking at public access solutions that can boost demand growth, and therefore create a business case! Likewise, it is worth looking at ways to improve traditional instruments such as Universal Service Funds with new priorities that could have a stronger impact, for instance on school connectivity or women inclusion. ”

**Boutheina Guermazi,**  
**Director of Digital Development, World Bank**

### 3.2. NBPs catalyse private sector investments

On top of publicly-financed projects, national broadband plans give confidence for the private sector to plan on a longer term and make further advancements in coverage and affordability. This is in part achieved through the positive and collaborative relationship that can be sustained through the policymaking process, but also because regulatory certainty, such as spectrum allocation or licensing fees, can affect the cost of business. Effective plans cultivate these positive relationships between the public and private sector and provide stability for a competitive market to grow.

“ National broadband plans are meant to accelerate broadband deployment, and the best way to achieve this objective is to promote competition and incentivise the private sector, especially in a context of limited public resources. Another critical aspect of a good national broadband plan is its ability to provide regulatory predictability for the private sector, particularly in areas such as spectrum policy, licensing, and tax policy. ”

**Boutheina Guermazi,**  
**Director of Digital Development, World Bank**

Tunisia's rapid development of 4G mobile networks offers an example of how effective broadband planning and market competition work in harmony. The first 4G licences in Tunisia were [awarded concurrently](#) to the three major network operators in March 2016. At the same time, the government set out [a five-year plan for nationwide 4G coverage](#) as part of its strategy, *Tunisie Digitale 2020*. Using market competition among the three operators, each of whom had [strong 3G infrastructure in place](#), and building on [some of the highest spectrum availability among its peer nations](#), the telecommunications market in Tunisia has offered not just improved service but competitive pricing as well. As of 2019, [over 90% of Tunisians](#) were covered by at least two 4G networks, while the country has met the '1 for 2' affordability target and is the [second-most affordable country in Africa for 10GB](#) of mobile broadband.

Other countries, such as Namibia and Guatemala, have had their broadband planning process frustrated by a lack of clarity in the roles between the public and private sectors. Namibia moves modestly (2.5 to 4) up from having the second-worst score in Africa for broadband strategy to a score between the first and second lowest quartiles, while Guatemala moves (3.5 to 1.5) down to less than half of its original score for broadband strategy in 2018. Both countries have seen the regulatory process for telecommunications suffer from imperfect relationships between the public and private sector, be it due to mistrust or complicity.

In Namibia, the situation has been captured by the extensive [governmental ownership](#) of the two major network operators in the country. Here, the boundary between regulation in the public interest and in private financial interest for maximised profits have blurred. While Namibia reached the ['1 for 2' affordability target](#) for [mobile broadband in 2019](#), this affordability is a reality only for the richest 20% of the population. For all of the remaining income quintiles, the average affordability for 1GB exceeds 2% of their average monthly income, rising up to nearly 14% for the poorest 20% of Namibians. The situation may hopefully change as Namibia adopted a new [National Broadband Policy and accordant Action Plan](#) in mid-2019. However, the situation in Guatemala remains less optimistic where the political momentum following the [2017 Nación Digital agenda](#) has faded away.

National broadband plans have the potential to foster a collaborative relationship between the public and private sectors. This matches with the ambitions of the [ITU's fifth \(and latest\) generation](#) of ICT regulatory environments. However, despite the opportunities available, this requires a sufficient amount of trust between the public and private sectors that may not always exist. National broadband plans can be the first building block towards a more positive relationship where one does not exist.

“ T[here has been t]he issue of mistrust between government and industry. We have issues where the governments have looked at the private-owned telecommunication sector as cash cows to milk rather than partners in the development exercise. ”

**Kenneth Ashigbey,**  
**Chief Executive Officer, Ghana Chamber of Telecommunications**

### 3.3. NBPs facilitate inclusive policymaking

Part of the reason why national broadband plans can be such effective relationship builders is through the interaction of various stakeholders in the drafting and consultation process. The inclusion of civil society creates greater accountability among the public and private sectors; however, such practices are not guaranteed.

Across our entire dataset this year, one of the most promising indicators paired with a strong national broadband plan that sets targets and has impact is the inclusivity of the drafting process. Countries with ‘open’ and inclusive, consultative processes outnumbered countries with ‘closed’ drafting, 42 to 23.

These countries also had higher average evaluative scores for their national broadband plan and its impact and for the clarity around public spending on infrastructure. These plans also were more likely to set policy targets, such as those around rural access or affordability, and for those policy targets to have greater detail, such as a measurable goal, a time limit, and/or implementation detail about the responsible authority. This trend is very promising for its consistency: even as we divide by region or by income group, the distinguishing factor of public consultation holds true.

**Table 4. Average Scores & Policy Targets, based on Consultations with National Broadband Plan**

|                     |                |    | TOTAL SCORE, ADI 2020 (0-100) | NBP SCORE, ADI 2020 (0-10) | PUBLIC SPENDING SCORE, ADI 2020 (0-10) | AVERAGE NUMBER OF POLICY TARGETS (OF 5 THEMES) |
|---------------------|----------------|----|-------------------------------|----------------------------|--|--|
| All Study Countries | OPEN PROCESS   | 42 | 59.17                         | 6.10                       | 5.90                                   | 2.86   |
|                     | CLOSED PROCESS | 23 | 49.37                         | 4.98                       | 4.54                                   | 1.52   |
| Africa              | OPEN           | 20 | 51.11                         | 5.63                       | 5.50                                   | 2.85   |
|                     | CLOSED         | 13 | 47.29                         | 4.88                       | 4.42                                   | 1.46   |
| Americas            | OPEN           | 7  | 75.03                         | 6.14                       | 7.00                                   | 2.86   |
|                     | CLOSED         | 5  | 52.69                         | 4.30                       | 5.20                                   | 1.20   |
| Asia                | OPEN           | 14 | 63.35                         | 6.82                       | 5.93                                   | 2.93   |
|                     | CLOSED         | 4  | 47.97                         | 5.88                       | 3.75                                   | 2.25   |
| Oceania             | OPEN           | 1  | 50.92                         | 5.00                       | 6.00                                   | 2.00   |
|                     | CLOSED         | 1  | 65.39                         | 6.00                       | 6.00                                   | 1.00   |
| Low-income          | OPEN           | 9  | 41.69                         | 5.11                       | 5.33                                   | 3.00   |
|                     | CLOSED         | 6  | 35.24                         | 4.42                       | 4.33                                   | 1.17   |
| Lower-middle        | OPEN           | 16 | 57.21                         | 5.66                       | 5.72                                   | 2.50   |
|                     | CLOSED         | 13 | 52.50                         | 5.19                       | 4.27                                   | 1.77   |
| Upper-middle        | OPEN           | 16 | 70.37                         | 6.97                       | 6.34                                   | 3.00   |
|                     | CLOSED         | 4  | 60.39                         | 5.13                       | 5.75                                   | 1.25   |

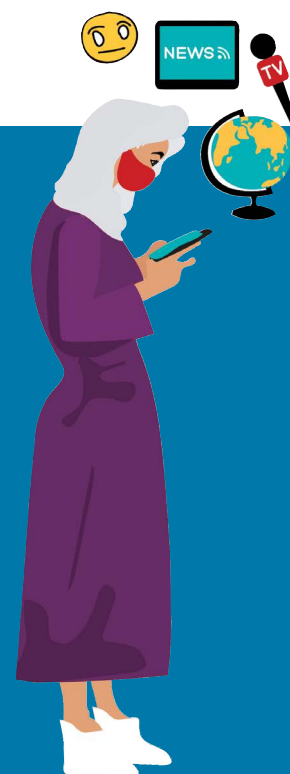
Source: Alliance for Affordable Internet

**Levels of transparency and consultation vary greatly among different countries.** There is a large question of capacity here, connected to average income and government revenue. As the table above demonstrates, countries in higher income groups are more likely to have an open process surrounding their national broadband plan. This diversity, however, provides an opportunity for knowledge exchange among different countries. Dr. Jongbong Park, the director for project development for the Asia-Pacific Telecommunity (APT), reflected on the experience of countries across the region: “Most [member countries] have limited expertise in formulating suitable policies or regulatory frameworks to their nations which require to set a playing field for all stakeholders to work together and provide foreseeable and transparent future directions.” Best practice forums, such as APT and Smart Africa, offer support for policymakers looking to make the process more inclusive and transparent.

Positive case study examples of inclusive policymaking exist across the globe. In Costa Rica, the broadband plan [underwent several consultations](#) with different constituencies, including local government, consumer groups, and other stakeholders, as part of the drafting and validation process. In Nigeria, the [2020 national broadband plan](#) was stewarded by a committee chaired by someone working in the private sector. The [2018 broadband strategy](#) in Botswana makes specific recommendations for a coordination committee to carry the plan’s targets into implementation and reserves space on this committee for multiple governmental ministries, the private sector, academia, and consumer advocates. All three also held online, public consultations to allow any individual to give comment before finalisation of each plan. Each of these three countries is now a regional leader with some of the highest scores for broadband strategy in Central America, West Africa, and Southern Africa, respectively.

“ Because of the consultations with the private sector and civil society, we’ve come up with a plan that is realistic, ambitious, but achievable. I think the Covid-19 pandemic shows we were spot on in terms of what is required to improve broadband access in Nigeria. We set targets for access, for connectivity to schools, to health facilities, to all local government areas in the country, urban and rural areas, digital inclusion, and gender parity... I believe the broad consultations and the composition of the committee ensured that we came up with the right plan for Nigeria and really addressed the issues because we brought a lot of experience of the realities of the country into putting the plan together. ”

**Funke Opeke,**  
**Chief Executive Officer of MainOne Cable Company**





Strong practices for transparency and inclusion require dedication from all stakeholders. Successful and genuinely inclusive processes rarely happen without intentional capacity building and invitations to previously excluded stakeholders to engage. This offers an opportunity for leadership from any sector to instigate a more open process in broadband policy making. Positive practice exists, and countries looking to improve their process can and should look to the expertise of their peers.

**Inclusive policy making practices hold some of the greatest potential to set ambitious targets and achieve them. The drafting process, when inclusive, offers an opportunity to align interests and expectations among stakeholders from across the sector and in turn, build trust. This alignment of interests and the consequent mutual accountability are positives in their own right; however, they also permit further partnerships that can advance progress in digital development.**

“ National broadband plans set out national strategies with their vision and achievable milestones, in the areas of enhancing connectivity, quality of service, interconnections, network neutrality, awareness programme, and so forth. The plan provides a blueprint for the stakeholders to contribute and work together. ”

**Jongbong Park,**

**Director for Project Development, Asia–Pacific Telecommunity**

### **3.4. NBPs create new partnerships and sources of accountability**

Effective broadband planning, when inclusive to all stakeholders and responsive to individual barriers, opens up new opportunities. The Internet Para Todos partnership in Peru demonstrates how innovative policy changes can extend internet access to new communities and realise policy goals in the context of a national broadband plan. This project combines the government’s interest in increased internet use and mobile network coverage, especially in more remote areas, and the options for shared infrastructure among multiple private sector stakeholders to support an innovative business model that helps make internet service profitable in areas where traditional business models could not.

“ Broadband policies, from concept to implementation, require a close collaboration with private stakeholders to support competition, innovation and investments, and co-design targeted digital policies that improve inclusion and consumer protection without being perceived as ineffective burdens. This multi-stakeholder approach is essential to identify and enable new business and financing models (e.g. infrastructure sharing), especially in situations where the business case for investments is not clear. It is also critical to address swiftly emerging issues such as network security and set up new policy and regulatory framework for a safe integration of data-driven infrastructure in the value chain. ”

**Boutheina Guermazi,**

**Director of Digital Development, World Bank**

This is such an example of a partnership that comes out of a trusting relationship between the public and private sectors and is replicable across different geographies. Earlier this year, the Ghanaian Universal Service and Access Fund, GIFEC, financially backed the [deployment of 2,000 new sites](#) based on the same technology as Internet Para Todos. Focused on rural connectivity, the plan aims to help multiple network operators reach these more remote communities in a way that is economically viable by sharing common physical infrastructure.

Where stakeholders disagree on the way forward, national broadband plans can become advocacy tools and reminders for the agreed objectives around expanding internet access and affordability. Ghana provides a good example of this dynamic. The controversial Communications Service Tax applies a specific levy on electronic communications that was [increased in 2019](#) to 9%. It was then [reduced temporarily to 5%](#) during the Covid-19 pandemic in tandem with [reduced tariffs from operators](#). While this is a temporary improvement, this is still a tax burden that raises the cost of business and makes affordability a harder goal to reach. Other policy tensions around spectrum licensing and their associated fees again expose the distinction of how much of a political priority broadband access is for the public sector vis-a-vis other goals.

“ The issues of regulatory independence in Ghana is a major concern. The policymakers have overreaching influence on the regulators so that when it comes to the issue of making spectrum available, those decisions are not necessarily a regulatory one. Therefore, the regulator can't necessarily implement the strategy here. Politicians might want to raise some amount of money to reduce the deficit rather than ensuring that we can expand broadband to everyone in the country. Another example is with the issue of taxation: the implementation of the CST law where the CST (Communications Service Tax) was introduced for only communications services and then increased. That's not aligned with the broadband policy, but because of political expediency, it happens anyway. ”

**Kenneth Ashigbey,**

**Chief Executive Officer, Ghana Chamber of Telecommunications**

### 3.5. NBPs can make the internet more affordable

National broadband plans help reduce internet prices over time by providing clarity to the potential roles for all stakeholders within the sector. This, in turn, creates new efficiencies by making both private and publicly-funded investments smarter and better informed of the lived realities of the people that these plans aim to support.

National broadband plans can provide clear expectations for public investment in the internet at each level of the network. Furthermore, plans can lay out the role for the private sector to build in complement to public investment and leverage market competition to the greatest benefit of consumers. With inclusive and transparent procedures, national broadband plans create accountability and enable civil society groups to advocate for continued progress. Plans can align actors across different stakeholder groups to encourage common action that results in greater internet affordability and creates accountability where tensions arise.



# 4

## WHAT NEEDS

## TO HAPPEN?

National broadband plans are increasingly a necessity for success in digital development. Where these plans have fallen short so far, or where no plan is in place, governments have the opportunity to take big steps for transformative change in broadband policy.

Based on the evidence collected from 72 countries about their broadband policy environments and the Affordability Drivers Index results this year, this report makes three top-level suggestions for better broadband planning in the future:

1

A plan must have **inputs from a diverse and representative set of players across the private sector, public sector, and civil society** before publication.

2

A plan must have **targets that address a country's most critical gaps, have a clear measurement and a time limit**, and at least one target for network coverage and data affordability each.

3

A plan must come with **funding commitments** and a stated plan for transparent **assessment and review** that occurs at least every other year.

### 4.1. Collect inputs from the private sector, public sector, and civil society

The most promising national broadband plans in this study were the products of consultations. Consultative processes start the chain reaction of correlating factors from a stronger national broadband plan to a higher overall score on the Affordability Drivers Index to lower internet prices for consumers.



“Winning the challenge of universal and equitable digital transformation requires a whole-of-society approach to broadband policy making; a multi-stakeholder approach that involves governments, private sectors, users, civil society, and partners working hand in hand.”  
**Boutheina Guermazi,**  
**Director of Digital Development, World Bank**

“A whole-of-government approach is required when it comes to looking at national digital development/roadmaps/plans, etc. All sectors need to embrace the shift to digital, and along with it a paradigm shift in how we look at the productivity and progress of each sector. It’s not a matter of tasking, for example, the ICT Ministry with developing a digital plan but rather it’s about ensuring all parts of government – and the sectors they look after – are not only a part of the plan but tasked with implementing the plan as well.”  
**Rajnish Singh,**  
**Regional Vice President for Asia-Pacific, Internet Society**

Consultations allow stakeholders to negotiate and align interests to facilitate the next generation of digital development. This alignment helps build trust and efficiency in the sector by replacing tensions with cooperation. From Tunisia’s 4G advancement to Internet Para Todos in Peru, positive collaborations are coming out of effective consultative processes. These collaborations extend access to new areas and keep the broadband market competitive and dynamic.

“We all have something to offer and should be part of the process from the initiation stage within the [broadband policy] framework. It’s not just about waiting to be called into the framework, but being an integral and equal partner in the development of the framework. It should not always be government-led: it should be more a collaborative effort between the public sector, private sector, the third sector, and customers, too.”  
**Kenneth Ashigbey,**  
**Chief Executive Officer, Ghana Chamber of Telecommunications**

Importantly, consultations should not just be a bilateral effort between public and private sectors. In addition to these stakeholder groups, it is essential that civil society is able to participate in the broadband planning process. This mimics the [national coalition model](#) that A4AI adopts as the foundation for its country-level interventions. This inclusion has extraordinary potential in supporting all parts of the ICT ecosystem, including [community networks](#) and [public access points](#). **As such, policymakers should be proactive in seeking out the contributions of civil society and the general public, and do so without assumption that civil society is monolithic:** consumer groups, library associations, women’s groups, gender equality advocates, people with disabilities and their support groups, and rural community representatives are just a few examples. In addition, civil society groups looking to ensure their voice is heard can do so by championing each other’s voices into broader coalitions, such as was done at the [Nigeria Broadband Infrastructure Forum](#), hosted in 2018 by A4AI.

“ Such underserved communities are where the greatest needs lie — as well where the greatest impact from digital opportunities can be had for social and economic development. In other words, the national broadband plan should have an emphasis on ensuring such communities are able to get connected quickly and efficiently. Unfortunately, this is not the case and in most instances establishing a community network is beset with a number of regulatory challenges, from connecting to upstream providers to the need for ISP licenses to spectrum and a host of other approvals needed, depending on the location and country in question. ”

**Rajnish Singh,**

**Regional Vice President for Asia-Pacific, Internet Society**

Bringing together a wide range of stakeholders creates the greatest opportunity to assemble a comprehensive list of problems in the market. This diversity is crucial to understanding all sides of these issues and the individual impacts of a single pain point on multiple, different parts of society. A key example of this, too often under-addressed in national broadband planning, are the market impacts of affordability and accessibility on women and girls and confronting the digital gender gap. [Gender-responsive targets](#) remain woefully underwhelming across different regions and income groups. If an inclusive group of informed and expert stakeholders is unable to share a complete understanding of the problem to be tackled, such issues stubbornly remain over time while other, more superficial indicators may indicate progress.

## 4.2. Set clear targets within national broadband plans

Targets turn a policy vision into objectives. Good targets have five important details: what needs to be done, who needs to do it, by when they need to do it, how much it will cost, and how we all make sure it's been done (or, at least, how we make sure that we're on the right path). The targets in the broadband plans for Malaysia, Colombia, and Costa Rica have been driving forces for their progress on the Affordability Drivers Index. Targets keep stakeholder interests in alignment from the publication date through the lifespan of the plan.

Targets create accountability. With a common understanding of the facts of what progress has been made and where gaps still exist, stakeholders can call attention to shortcomings in the implementation of a national broadband plan and suggest alternative ways forward. They also provide the evidence and grounding to the claims of those who have been most likely to be excluded from the policymaking process.



## 4.3. Commit funding and promise to review

Governments cannot consider the job done once a national broadband plan has been written. The work of expanding internet access and reducing internet prices begins after the plan has been set and the stakeholders have agreed to the targets. From policy changes to investments, governments must then begin the process of carrying out the actions that have been agreed. This typically requires its own line of public spending and internal champions to lead the plan's implementation.

Even after a project is agreed in a broadband plan, the cost of that project typically is not limited to just the capital expenditure required to lay the cable or build the tower. Of the [US\\$428 billion projected](#) to provide universal access to broadband connectivity by 2030, US\$46 billion — a little over 10% — is needed for policy and regulation and for ICT skills and content. The relevant institutions — be it the regulator or the Universal Service and Access Fund or otherwise — must have sufficient funds to carry out their responsibilities. Ongoing support is also required for collecting and analysing data to measure progress, publish updates, and convene subsequent workshops. The credibility of a national broadband plan depends not just on how it is received on its first day, but on how relevant it remains over time. Without financial support for implementation and review, national broadband plans have little chance to create a legacy in a country's digital development.



# 5

## CONCLUSION

“ [In] early 2020, some governments were still skeptical regarding the importance of broadband deployment compared to other development priorities. Covid-19 highlighted how broadband and the digital applications it empowered can support national resilience, from the dissemination of public health information and telemedicine to remote work/school solutions and digital cash transfers to the most in need. It is now crystal clear to all that broadband is an essential infrastructure that enhances people’s lives and supports the functioning of our modern societies. ”

**Boutheina Guermazi,**

**Director of Digital Development, World Bank**

This report was researched and written during a transformative period of time. The value of internet connectivity — for individuals, businesses, communities, and entire countries — was laid bare as a consequence of the global Covid-19 pandemic. In the coming years and decades, the internet is only going to become more important for participation in an increasingly digitised economy and society.

While the theme for this year’s report seems counterintuitive in the current climate — how do you plan for unplannable disasters — this theme may be more important than ever before. Digital technology has proven its essential character in helping people and societies be resilient. The internet is no longer a niche policy issue: it affects the economy, education, health, transportation, and more. The decisions made as part of broadband policy have the potential to affect millions of people, from different backgrounds and across different parts of society. As we emerge out of lockdowns and recover, this will be a moment to return to the drawing board.





# ANNEX 1

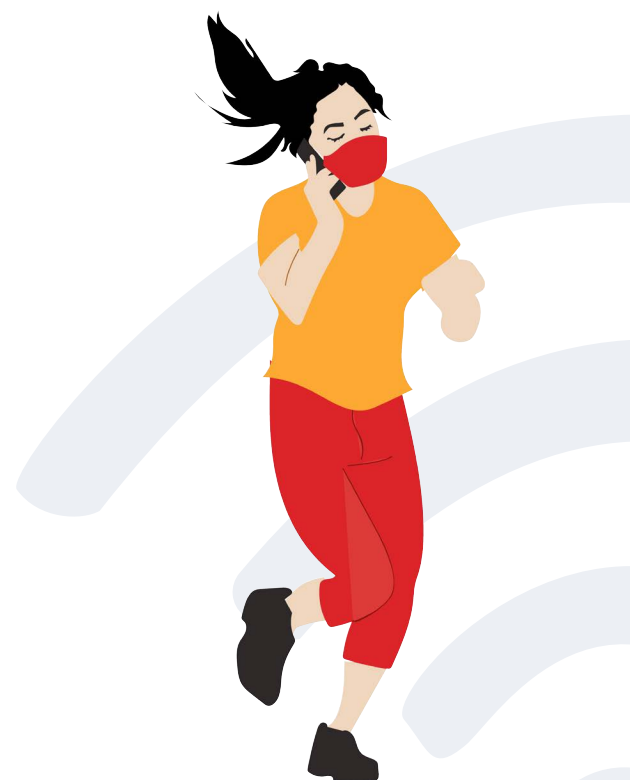
## FULL ADI RESULTS, 2020

| COUNTRY            | ADI SCORE | ACCESS SUB-INDEX | INFRASTRUCTURE SUB-INDEX | ADI RANK (CHANGE)* | WORLD BANK INCOME GROUP, 2020 |
|--------------------|-----------|------------------|--------------------------|--------------------|-------------------------------|
| Malaysia           | 85.67     | 95.65            | 67.16                    | 1 (0)              | Upper middle                  |
| Colombia           | 85.26     | 86.94            | 75.08                    | 2 (0)              | Upper middle                  |
| Costa Rica         | 85.07     | 94.85            | 66.83                    | 3 (0)              | Upper middle                  |
| Argentina          | 80.56     | 85.51            | 67.60                    | 4 (+3)             | Upper middle                  |
| Peru               | 80.49     | 79.78            | 73.20                    | 5 (-1)             | Upper middle                  |
| Thailand           | 76.92     | 85.85            | 60.34                    | 6 (+2)             | Upper middle                  |
| Mexico             | 76.57     | 74.50            | 71.02                    | 7 (-2)             | Upper middle                  |
| Turkey             | 74.50     | 77.21            | 64.38                    | 8 (-2)             | Upper middle                  |
| Dominican Republic | 71.52     | 76.90            | 59.02                    | 9 (+1)             | Upper middle                  |
| Morocco            | 71.26     | 73.54            | 61.89                    | 10 (+5)            | Lower middle                  |
| India              | 69.77     | 71.38            | 61.21                    | 11 (-2)            | Lower middle                  |
| Brazil             | 68.80     | 71.56            | 59.20                    | 12 (0)             | Upper middle                  |
| Botswana           | 68.72     | 77.49            | 53.11                    | 13 (+9)            | Upper middle                  |
| Indonesia          | 68.67     | 75.41            | 55.10                    | 14 (+2)            | Upper middle                  |
| Mauritius          | 68.66     | 76.70            | 53.80                    | 15 (-2)            | High                          |
| Ecuador            | 68.33     | 68.91            | 60.96                    | 16 (-5)            | Upper middle                  |
| Jamaica            | 67.50     | 71.25            | 57.04                    | 17 (0)             | Upper middle                  |
| Pakistan           | 66.91     | 71.76            | 55.41                    | 18 (-4)            | Lower middle                  |
| Nigeria            | 66.19     | 70.65            | 55.15                    | 19(0)              | Lower middle                  |
| Fiji               | 65.39     | 66.55            | 57.71                    | 20 (new)           | Upper middle                  |
| Jordan             | 64.78     | 64.49            | 58.63                    | 21 (-2)            | Upper middle                  |
| Viet Nam           | 64.69     | 64.32            | 58.62                    | 22 (+3)            | Lower middle                  |
| Ghana              | 63.41     | 67.12            | 53.39                    | 23 (-2)            | Lower middle                  |
| Tunisia            | 61.95     | 65.57            | 52.18                    | 24 (-2)            | Lower middle                  |
| Senegal            | 61.89     | 62.94            | 54.67                    | 25 (+4)            | Lower middle                  |
| South Africa       | 61.77     | 66.78            | 50.62                    | 26 (-2)            | Upper middle                  |

| COUNTRY                 | ADI SCORE | ACCESS SUB-INDEX | INFRASTRUCTURE SUB-INDEX | ADI RANK (CHANGE)* | WORLD BANK INCOME GROUP, 2020 |
|-------------------------|-----------|------------------|--------------------------|--------------------|-------------------------------|
| <b>Benin</b>            | 60.02     | 57.56            | 56.51                    | 27 (+3)            | Lower middle                  |
| <b>Kenya</b>            | 59.30     | 59.10            | 53.60                    | 28 (+10)           | Lower middle                  |
| <b>Cambodia</b>         | 59.27     | 66.37            | 46.26                    | 29 (+10)           | Lower middle                  |
| <b>Côte d'Ivoire</b>    | 59.25     | 64.32            | 48.28                    | 30 (-2)            | Lower middle                  |
| <b>Uganda</b>           | 58.64     | 57.25            | 54.19                    | 31 (+6)            | Low                           |
| <b>Rwanda</b>           | 58.19     | 63.99            | 46.59                    | 32 (0)             | Low                           |
| <b>Nepal</b>            | 58.17     | 55.97            | 54.58                    | 33 (+7)            | Lower middle                  |
| <b>Algeria</b>          | 55.62     | 65.60            | 40.10                    | 34 (new)           | Lower middle                  |
| <b>China</b>            | 54.52     | 48.04            | 55.58                    | 35 (+2)            | Upper middle                  |
| <b>Egypt</b>            | 54.18     | 59.47            | 43.51                    | 36 (-1)            | Lower middle                  |
| <b>Philippines</b>      | 54.16     | 60.62            | 42.30                    | 37 (-9)            | Lower middle                  |
| <b>Myanmar</b>          | 53.68     | 51.70            | 50.31                    | 38 (+7)            | Lower middle                  |
| <b>Kazakhstan</b>       | 53.53     | 57.46            | 44.27                    | 39 (+11)           | Upper middle                  |
| <b>Honduras</b>         | 53.51     | 50.02            | 51.68                    | 40 (-4)            | Lower middle                  |
| <b>Tanzania</b>         | 52.88     | 46.63            | 53.86                    | 41 (-7)            | Lower middle                  |
| <b>Mali</b>             | 52.42     | 53.27            | 46.35                    | 42 (0)             | Low                           |
| <b>Bolivia</b>          | 51.54     | 48.17            | 49.79                    | 43 (-11)           | Lower middle                  |
| <b>Papua New Guinea</b> | 50.92     | 49.83            | 46.95                    | 44 (new)           | Lower middle                  |
| <b>Bangladesh</b>       | 50.19     | 48.48            | 46.91                    | 45 (-1)            | Lower middle                  |
| <b>Gambia, The</b>      | 49.94     | 54.40            | 40.52                    | 46 (+7)            | Low                           |
| <b>Sri Lanka</b>        | 49.79     | 53.76            | 40.87                    | 47 (-19)           | Lower middle                  |
| <b>Zambia</b>           | 48.14     | 48.27            | 43.22                    | 48 (+1)            | Lower middle                  |
| <b>Cameroon</b>         | 47.77     | 48.91            | 41.87                    | 49 (-2)            | Lower middle                  |
| <b>Burkina Faso</b>     | 46.42     | 45.07            | 43.15                    | 50 (+2)            | Low                           |
| <b>Mozambique</b>       | 45.16     | 45.40            | 40.41                    | 51 (-3)            | Low                           |
| <b>Namibia</b>          | 45.13     | 39.51            | 46.27                    | 52 (-7)            | Upper middle                  |
| <b>El Salvador</b>      | 42.32     | 32.21            | 48.22                    | 53 (new)           | Lower middle                  |
| <b>Malawi</b>           | 42.29     | 40.04            | 40.32                    | 54 (+2)            | Low                           |
| <b>Zimbabwe</b>         | 42.03     | 44.59            | 35.29                    | 55 (+2)            | Lower middle                  |
| <b>Venezuela</b>        | 40.35     | 41.39            | 35.30                    | 56 (-5)            | Upper middle                  |

| COUNTRY             | ADI SCORE | ACCESS SUB-INDEX | INFRASTRUCTURE SUB-INDEX | ADI RANK (CHANGE)* | WORLD BANK INCOME GROUP, 2020 |
|---------------------|-----------|------------------|--------------------------|--------------------|-------------------------------|
| <b>Madagascar</b>   | 39.69     | 41.69            | 33.74                    | 57 (new)           | Low                           |
| <b>Angola</b>       | 39.60     | 40.29            | 34.97                    | 58 (new)           | Lower middle                  |
| <b>Niger</b>        | 38.54     | 43.85            | 29.39                    | 59 (new)           | Low                           |
| <b>Afghanistan</b>  | 37.44     | 34.65            | 36.50                    | 60 (new)           | Low                           |
| <b>Guatemala</b>    | 36.17     | 34.65            | 34.09                    | 61 (-2)            | Upper middle                  |
| <b>Laos</b>         | 36.06     | 35.78            | 32.76                    | 62 (new)           | Lower middle                  |
| <b>Nicaragua</b>    | 35.73     | 41.42            | 26.48                    | 63 (+1)            | Lower middle                  |
| <b>Sudan</b>        | 31.03     | 34.42            | 24.55                    | 64 (-1)            | Low                           |
| <b>Burundi</b>      | 30.24     | 34.03            | 23.43                    | 65 (new)           | Low                           |
| <b>Belize</b>       | 24.63     | 17.18            | 29.64                    | 66 (new)           | Upper middle                  |
| <b>Liberia</b>      | 24.32     | 26.88            | 19.34                    | 67 (0)             | Low                           |
| <b>Sierra Leone</b> | 22.77     | 21.87            | 21.40                    | 68 (0)             | Low                           |
| <b>Ethiopia</b>     | 20.37     | 21.45            | 17.25                    | 69 (+2)            | Low                           |
| <b>Congo, DR</b>    | 20.22     | 18.18            | 20.25                    | 70 (-1)            | Low                           |
| <b>Haiti</b>        | 19.90     | 16.89            | 20.93                    | 71 (-1)            | Low                           |
| <b>Yemen</b>        | 0.00      | 0.00             | 0.00                     | 72 (0)             | Low                           |

\*For fairness, rank change is measured only in comparison to other countries that were included in the 2019 Affordability Drivers Index.



## ANNEX 2

# ADI METHODOLOGY

The Affordability Drivers Index (ADI) is a composite measure that summarises in a single score an assessment of the drivers of internet affordability in various countries. Benefiting from the research framework established by the Web Index, the 2020 ADI covers 72 countries and focuses on two key aspects driving affordability: telecommunications infrastructure and access to the internet.

Two different data sources are used in the construction of the Index: data from other providers ('secondary data') and data gathered through our own research ('primary data').

The primary data is only collected every two years through a multi-country expert survey. The survey includes questions — scored on a scale of 0–10 — on different issues regarding policy, regulation, and other aspects around broadband and affordable access to the internet. (The questions and the scoring guidance for each of those questions are available in [the codebook](#) provided to each researcher.) The questions were specifically designed by A4AI, the Web Foundation, and their advisers. These primary data, based on and aligned with the [A4AI Policy and Regulatory Good 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. The scores were checked and verified by a number of peer reviewers.

This year, we conducted a new round of policy surveys on the 72 countries covered by the ADI between April and June 2020 by regional policy experts, including a peer-review process to improve the accuracy of the results.

In addition, we draw on a range of secondary indicators to derive the sub-indices described above as well as the final composite index. All secondary indicators have been updated with the latest available data as of September 2020.

## Data sources and data providers

We employ 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 fulfil four basic criteria:



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).



Data releases should be regular, with new data released at least every three years. There should be at least two data years for each indicator, so that a basic statistical inference could be made.



The latest data year should be no older than three years back from publication year.



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 below, where they are grouped by sub-index and type (primary sources or secondary sources). The primary indicators (codes A1–A14) are collected via the policy surveys described earlier. The secondary sources include data collected by the ITU, GSMA Intelligence, World Bank, and Packet Clearing House.

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.

The factors that the ADI covers are grouped into two sub-indices — infrastructure and access:



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.



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 and Access Funds.

Table 5. List of indicators included in the Affordability Drivers Index

| TYPE (CODE)                     | ACCESS SUB-INDEX INDICATORS  |
|---------------------------------|--|
| <b>Primary (A5)</b>             | Clear, time-bound targets in National Broadband Plan for reducing cost and increasing penetration  |
| <b>Primary (A12)</b>            | Universal Service/Access Funds (USAFs) used to subsidise access for underserved and underprivileged populations  |
| <b>Primary (A4)</b>             | ICT regulatory decisions informed by adequate evidence   |
| <b>Primary (A13)</b>            | Specific policies to promote free or low-cost access   |
| <b>Primary (A11)</b>            | To what extent have Universal Access/Service Funds (USAF) prioritised infrastructure investments that will reduce costs and increase access for underserved communities and market segments? |
| <b>Primary (A2)</b>             | To what extent does the government ICT regulator perform its functions according to published and transparent rules, with the ICT regulatory decisions influenced by public consultations?   |
| <b>Primary (A14)</b>            | To what extent do the country's broadband policies include strategies and programs to improve access and use among women and girls?  |
| <b>Secondary (WI)</b>           | Market Concentration, as Herfindahl-Hirschman Index (HHI)  |
| <b>Secondary (ITU_K)</b>        | Existence of National Broadband Plan   |
| <b>Secondary (WI_C)</b>         | Mobile broadband connections (% of all connections)  |
| <b>Secondary (ITU_EYE)</b>      | Cluster of ITU indicators (bundled)  |
| <b>Secondary (ITU_N)</b>        | Percentage of individuals using the Internet   |
| <b>Secondary (Mobile_penet)</b> | Market penetration, as mobile internet unique subscribers  |
| <b>Secondary (Smart_Phadt)</b>  | Smartphone adoption  |

| TYPE (CODE)                  | INFRASTRUCTURE SUB-INDEX INDICATORS   |
|------------------------------|---|
| <b>Primary (A1)</b>          | Flexible, technology and service neutral ICT licensing frameworks   |
| <b>Primary (A8)</b>          | Specific guidelines for public infrastructure funding and telecoms subsidies  |
| <b>Primary (A9)</b>          | Time bound government plan to make available broadband spectrum for high-speed data services  |
| <b>Primary (A10)</b>         | Transparent, competitive, and fair process for increasing spectrum availability   |
| <b>Primary (A3)</b>          | To what extent does the regulator and/or the competition commission enforce the country's ICT licensing requirements and regulations? |
| <b>Primary (A6)</b>          | National policies in place facilitating efficient access to public rights of way and tower zoning permissions                         |
| <b>Primary (A7)</b>          | To what extent does the government facilitate resource sharing across telecommunications operators?                                   |
| <b>Secondary (ITU_A)</b>     | International bandwidth per internet user (bits/s)  |
| <b>Secondary (ITU_L)</b>     | Investment per telecom subscriber (average over 3 years)  |
| <b>Secondary (WB_A)</b>      | Secure internet servers (per 1 million people)  |
| <b>Secondary (WBE)</b>       | Access to electricity (% of population) <sup>8</sup>  |
| <b>Secondary (PCH)</b>       | Existence of Internet Exchange Points (IXPs)  |
| <b>Secondary (ITU_EYEbn)</b> | Existence of number portability between mobile network operators  |
| <b>Secondary (3G)</b>        | 3G Network coverage, by population  |

8. In previous editions of the ADI this indicator was coded as IEAA, Electrification Rate by the International Energy Agency. Due to limited data availability this indicator has changed this year to WBE, Access to electricity (% of population) from the World Bank. Correlation tests have been performed to ensure that the change does not translate into significant changes to the model.

## Index Computation

There are several steps in the process of constructing a composite index. Some of those involve deciding which statistical methods 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 86 countries originally covered by the [Web Index](#) and the 23 countries that are exclusively part of the ADI, for a total sample of 109 countries. Impute missing data for every secondary indicator for the sample of 109 countries over the period 2015–2019 where appropriate. Broadly, the imputation of missing data was done using two methods: country-mean substitution if the missing number is in the middle year (e.g., have data for 2016 and 2018, but not for 2017), 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.

**2**

Normalise<sup>9</sup> the full (imputed) dataset using z-scores ( $z=(x-\text{mean})/\text{standard deviation}$ ), making sure that for all indicators, a high value is 'good' and a low value is 'bad'.<sup>9</sup>

**3**

Where applicable, cluster some of the variables, 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. The formula for this is:  $[(x - \text{min})/(\text{max} - \text{min})]*100$ .

**6**

Compute overall composite scores by averaging the sub-indices (at z-score level).

*9. As an exception, for the WI indicator, a higher value indicates a more concentrated market and, therefore, weights as a more negative value in the Index's calculation.*



## ANNEX 3

# LINEAR MODELS AND REGRESSION DETAILS

**TABLE 6.**  
NATIONAL BROADBAND PLANS  
AND INTERNET AFFORDABILITY.  
MULTI-YEAR MODEL 2015 - 2019<sup>10</sup>

|   | OLS                  |
|---|----------------------|
| <b>(Intercept)</b>  | 0.279***<br>(0.043)  |
| <b>Broadband Planning Score,<br/>Previous Year ADI from<br/>Dependent Variable</b><br><i>Source: A4AI</i> | -0.005*<br>(0.002)   |
| <b>Average Monthly Income,<br/>Per Capita</b><br><i>Source: World Bank</i>                                | 0.000<br>(0.000)     |
| <b>Population</b><br><i>Source: World Bank</i>  | -0.007*<br>(0.003)   |
| <b>Enabling Infrastructure<sup>11</sup></b><br><i>Source: GSMA</i>  | -0.002***<br>(0.000) |
| <b>NBP in effect that year</b><br><i>Binary Variable. Source: ITU ICT-EYE</i>                             | 0.020**<br>(0.010)   |
| <b>Number of observations</b>   | 156                  |
| <b>R2</b>   | 0.440                |
| <b>R2 Adj.</b>  | 0.421                |
| <b>F</b>  | 23.562               |

\*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

**TABLE 7.**  
NATIONAL BROADBAND PLANS IN  
2018 AND INTERNET AFFORDABILITY  
FOR THE POOREST 20% IN 2019

|  | OLS                  |
|--|----------------------|
| <b>(Intercept)</b>   | 0.213*<br>(0.116)    |
| <b>Average Monthly Income,<br/>Per Capita</b><br><i>Source: World Bank</i> | -0.000***<br>(0.000) |
| <b>Price of 1GB Mobile<br/>Broadband, 2019</b><br><i>Source: A4AI</i>      | 0.002***<br>(0.005)  |
| <b>Gini Coefficient</b><br><i>Source: World Bank</i>                       | 0.000<br>(0.002)     |
| <b>Broadband Planning ADI<br/>Score, 2018</b><br><i>Source: A4AI</i>       | -0.021**<br>(0.010)  |
| <b>Number of observations</b>  | 42                   |
| <b>R2</b>  | 0.691                |
| <b>R2 Adj.</b>   | 0.651                |
| <b>F</b>   | 17.33                |

\*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

10. Data from 2015 to 2019 was used to build the model. This is a simple OLS model with no time dimension. Several years were used to get a larger sample. The ADI scores lagged one year with respect to the affordability of the data.

11. The Enabling Infrastructure variable includes: international bandwidth per user, number of secure servers, access to electricity, and number of internet exchange points (IXPs).

## ANNEX 4

# NATIONAL BROADBAND PLAN CATALOGUE

As part of our analysis, we assembled a catalogue of currently-enforced national broadband plans across the 72 countries in this year's study. This table summarises the plans that formed the basis of our study and provides a link to that plan, or information about it, where that information is publicly available on the internet. More detailed information — including dates of enactment and expiry, existence of policy targets, and evidence of public consultation — is [publicly available as a spreadsheet](#).

| COUNTRY             | PLAN NAME  |
|---------------------|--|
| <b>Afghanistan</b>  | <a href="#">ICT Policy for Afghanistan</a>                                     |
| <b>Algeria</b>      | Stratégie du haut et du très haut débit  |
| <b>Angola</b>       | <a href="#">Plano de Desenvolvimento Nacional</a>                              |
| <b>Argentina</b>    | <a href="#">Argentina Conectada: Plan de Telecomunicaciones y Conectividad</a> |
| <b>Bangladesh</b>   | <a href="#">ICT Policy</a>   |
| <b>Benin</b>        | ennovbenin2021   |
| <b>Bolivia</b>      | <a href="#">Broadband National Plan</a>  |
| <b>Botswana</b>     | <a href="#">National Broadband Strategy</a>                                    |
| <b>Brazil</b>       | <a href="#">Structural Plan of Telecommunication Networks (PERT)</a>           |
| <b>Burkina Faso</b> | <a href="#">National Strategy for the Development of Digital Economy</a>       |
| <b>Burundi</b>      | Burundi Broadband Strategy   |
| <b>Cambodia</b>     | <a href="#">Cambodian ICT Masterplan 2020</a>                                  |
| <b>Cameroon</b>     | <a href="#">Strategic Plan for a Digital Cameroon by 2020</a>                  |

| COUNTRY                   | PLAN NAME   |
|---------------------------|---|
| <b>China</b>              | <a href="#">Broadband China Strategy and Implementation Plan</a>      |
| <b>Colombia</b>           | <a href="#">Plan TIC – El Futuro Digital de Todos</a>                 |
| <b>Congo, DR</b>          | <a href="#">Plan National du Numérique</a>                            |
| <b>Costa Rica</b>         | <a href="#">Plan Nacional de Telecomunicaciones</a>                   |
| <b>Côte d'Ivoire</b>      | <a href="#">ICT Sector Development Strategy</a>                       |
| <b>Dominican Republic</b> | <a href="#">Digital Agenda of the Dominican Republic</a>              |
| <b>Ecuador</b>            | <a href="#">National Plan for the Development of Broadband</a>        |
| <b>Egypt</b>              | <a href="#">eMISR National Broadband Plan</a>                         |
| <b>Ethiopia</b>           | National ICT Policy and Strategy                                      |
| <b>Fiji</b>               | <a href="#">Fiji National Broadband Policy</a>                        |
| <b>Gambia, The</b>        | <a href="#">Gambia Broadband Strategic Plan</a>                       |
| <b>Ghana</b>              | <a href="#">National Broadband Policy and Implementation Strategy</a> |

| COUNTRY           | PLAN NAME  |
|-------------------|--|
| <b>Honduras</b>   | <a href="#">Agenda Digital de Honduras</a>   |
| <b>India</b>      | <a href="#">National Broadband Mission</a>   |
| <b>Indonesia</b>  | <a href="#">Indonesia Broadband Plan</a>   |
| <b>Jamaica</b>    | <a href="#">MSET's Strategic Business Plan</a>   |
| <b>Jordan</b>     | <a href="#">ICT Strategy</a>   |
| <b>Kazakhstan</b> | <a href="#">Digital Kazakhstan</a>   |
| <b>Kenya</b>      | <a href="#">Kenya National Broadband Strategy</a>                                      |
| <b>Laos</b>       | <a href="#">National Broadband Plan: Vision 2030</a>                                   |
| <b>Liberia</b>    | <a href="#">Liberia ICT Policy</a>   |
| <b>Madagascar</b> | <a href="#">Digital for Everyone and the Digital Development Project of Madagascar</a> |
| <b>Malawi</b>     | <a href="#">National Broadband Strategy</a>  |
| <b>Malaysia</b>   | <a href="#">The National Fiberisation and Connectivity Plan</a>                        |
| <b>Mali</b>       | <a href="#">Digital Mali 2020 - Strategy for the development of digital economy</a>    |
| <b>Mauritius</b>  | <a href="#">National Broadband Policy</a>  |
| <b>Morocco</b>    | <a href="#">Plan national pour le développement du haut et très haut débit</a>         |
| <b>Mozambique</b> | <a href="#">National Broadband Strategy</a>  |
| <b>Myanmar</b>    | <a href="#">Wireless Broadband Plan for the Union of Myanmar</a>                       |
| <b>Namibia</b>    | <a href="#">National Broadband Policy (NBP) for the Republic of Namibia</a>            |
| <b>Nepal</b>      | <a href="#">National Broadband MasterPlan</a>  |
| <b>Nicaragua</b>  | <a href="#">Good Government Plan</a>   |
| <b>Niger</b>      | <a href="#">Telecommunications and ICT Sector Policy</a>                               |

| COUNTRY                 | PLAN NAME   |
|-------------------------|---|
| <b>Nigeria</b>          | <a href="#">Nigerian National Broadband Plan</a>  |
| <b>Pakistan</b>         | <a href="#">Telecommunications Policy</a>   |
| <b>Papua New Guinea</b> | <a href="#">National Broadband Policy</a>   |
| <b>Peru</b>             | <a href="#">Ley de Promoción de la Banda Ancha y Construcción de la Red Dorsal Nacional de Fibra Óptica</a> |
| <b>Philippines</b>      | <a href="#">National Broadband Plan: Building Infostructures for a Digital Nation</a>                       |
| <b>Rwanda</b>           | <a href="#">ICT Sector Strategic Plan</a>   |
| <b>Senegal</b>          | <a href="#">National Broadband Plan of Senegal (Plan National Haut Débit du Sénégal)</a>                    |
| <b>Sierra Leone</b>     | <a href="#">National ICT Policy</a>   |
| <b>South Africa</b>     | <a href="#">SA Connect</a>  |
| <b>Sri Lanka</b>        | <a href="#">National Digital Policy</a>   |
| <b>Sudan</b>            | <a href="#">National Strategic Development Plan</a>   |
| <b>Tanzania</b>         | <a href="#">National ICT Policy</a>   |
| <b>Thailand</b>         | <a href="#">Digital Thailand Plan</a>   |
| <b>Tunisia</b>          | <a href="#">Plan National Stratégique Tunisie Digitale 2020</a>   |
| <b>Turkey</b>           | <a href="#">National Broadband Strategy and Action Plan</a>   |
| <b>Uganda</b>           | <a href="#">National Broadband Policy 2018</a>  |
| <b>Venezuela</b>        | <a href="#">Tercer Plan Socialista de Desarrollo Económico y Social de la Nación</a>                        |
| <b>Viet Nam</b>         | <a href="#">Wireless Broadband Masterplan</a>   |
| <b>Zambia</b>           | <a href="#">SMART Zambia Master Plan</a>  |
| <b>Zimbabwe</b>         | <a href="#">National ICT Policy</a>   |



# A global coalition working to make broadband affordable for all

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