

# The affordability of ICT services 2023

## Foreword



I am pleased to introduce the 2023 edition of the *Policy Brief on the Affordability of ICT services*.

ITU's ICT price monitoring programme is the most comprehensive and timely assessment on the state of affordability globally including close to 200 economies.

Affordable connectivity is a prerequisite in our journey towards universal and meaningful connectivity. The latest results shown here offer room for cautious optimism: prices for all mobile and fixed broadband services have become cheaper in 2023 and have reached all-time lows.

Nevertheless, we must not allow these achievements to lull us into complacency. The potential of the Internet keeps expanding, but more time spent online and more intensive applications mean that a mobile subscription with 2 GB of data is hardly sufficient. In low-income countries, a 10 GB data mobile subscription consumes as much as a quarter of monthly income. Moreover, the price gap between high- and low-income countries for such a plan is almost twice as large as for the entry-level, 2 GB plan.

I invite you to consider the insights of this Policy Brief, as it lays the groundwork for informed decision-making. It also points to solutions and shows the critical role of regulation in driving down costs: sounder regulations are associated with greater affordability.

For many individuals, the high cost of connectivity remains an overwhelming obstacle that prevents access to a multitude of opportunities. We must intensify our efforts to eliminate this barrier and forge a path towards universal and meaningful connectivity.

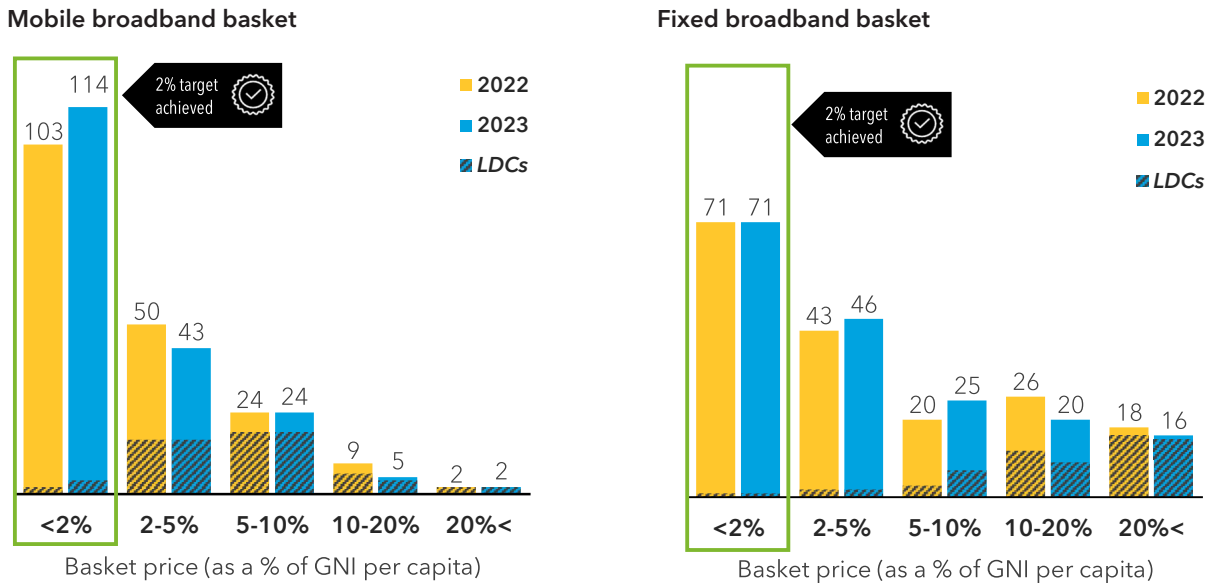


**Cosmas Luckyson Zavazava**  
 Director, Telecommunication Development Bureau  
 International Telecommunication Union

## Highlights

- Globally, ICT services became more affordable in 2023 and the rate of improvement exceeded the long-term trend observed for broadband services.
- As of 2023, 114 economies had met the Broadband Commission affordability target, up from 103 in 2022.
- In an inflationary context, where the price of many goods and services has increased, ICT service prices actually dropped in real terms in 2023.
- The entry-level fixed-broadband basket is more affordable than it was before the pandemic. Despite widespread improvements in advertised speed and affordability, vast differences persist across countries.
- An entry-level mobile-broadband basket costs more than 20 times more in low-income economies than in high-income economies. If the monthly data allowance increases from 2 to 10 GB, the differences become 36-fold, highlighting the gap in the ability to make meaningful use of the Internet.
- Affordability remains a significant barrier to connectivity. Where mobile broadband access costs more than 10 per cent of average monthly income, the share of Internet users was typically less than one third of the global average.

Figure 1: Progress towards the Broadband Commission affordability target



Note: The two charts show the distribution of economies by affordability for 2022 and 2023, defined by the price of the data-only mobile-broadband and fixed-broadband baskets as a percentage of monthly GNI per capita. The LDC component for each year is shown hatched with lines. Only those economies that had basket data available for 2022 and 2023 for mobile broadband (188 economies) and fixed broadband (178 economies) are considered. Source: ITU

## Assessing progress towards the affordability target

Affordability of ICT services is defined as the cost of an established minimum combination of telecommunication services (the usage of Internet data, voice calls, text messaging) relative to a given income. The United Nations [Broadband Commission for Sustainable Development](#) Broadband Advocacy Target 2 calls for broadband to be affordable by 2025, with entry-level broadband services in low- and middle-income countries at less than 2 per cent of monthly gross national income (GNI) per capita. Out of 188 economies for which data is available, a record 114 economies met this target in 2023, up from 103 in 2022.

Fixed-broadband subscriptions are typically shared by multiple members of a household, whereas an entry-level data-only mobile-broadband subscription generally gives access to only one person, and an assessment of the affordability of the two baskets may therefore differ. Nevertheless, when applying the same two per cent threshold for the more costly fixed-broadband basket, 71 economies met the target in 2023, the same total as in 2022 (Figure 1).

In 2023, only 4 out of the 46 least developed countries (LDCs) met the 2 per cent target: Angola, Bangladesh, Bhutan, and Lao P.D.R. There were a further 16 LDCs where mobile-broadband cost less than 5 per cent of monthly GNI per capita, however, LDCs represented more than three quarters of economies where access to mobile broadband services cost more than 5 per cent of GNI per capita.<sup>1</sup>

<sup>1</sup> This analysis is complemented by the [ICT price data visualization tool](#), which provides maps, country-level tables and historical data.

## Regional trends

The affordability of broadband services varies significantly across regions. In 2023, only a quarter of countries in Africa met the 2 per cent target for the entry-level mobile-broadband basket, while in Europe all economies except one met the target (Figure 2, left side).

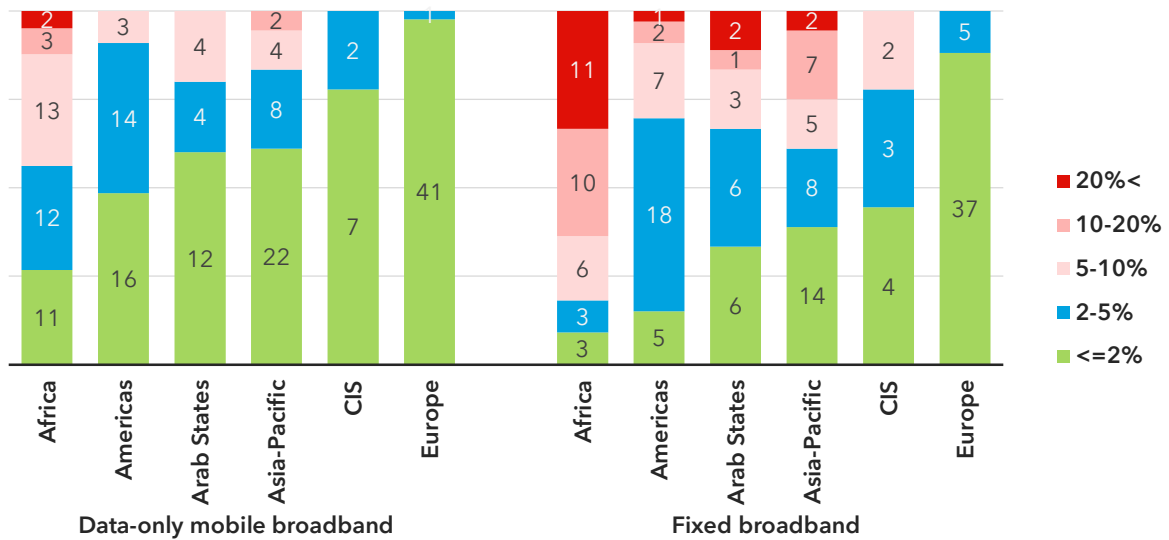
Five per cent of monthly GNI per capita is considered an important threshold below which a positive association is observed between falling prices and increasing penetration rates (see [ITU Global Connectivity Report 2022](#)). Encouragingly, for the data-only mobile broadband basket, no country in Europe, the Community of Independent States (CIS), nor most countries in the Americas, Arab States, and Asia-Pacific regions are below this threshold. In the Africa region, just over half of the economies are below the five per cent threshold for data-only mobile broadband.

In contrast, the entry-level fixed-broadband basket remains too expensive, except in Europe. The basket costs more than five per cent of the average income in about a third of the economies in the Americas, Arab States and the Asia-Pacific regions, and in all but six economies of Africa, and prices above 10 per cent were registered in 36 countries and above 20 per cent in 18 countries (Figure 2, right side).

All five price baskets monitored by the ITU<sup>2</sup> have made significant improvements in affordability since 2018. The six-year trend of improving affordability was clearly impacted by the COVID-19 pandemic (Figure 3). From 2020 to 2021, the stagnating (non-promotional) basket prices combined with a crisis-driven decline in GNI per

<sup>2</sup> An overview of the baskets is provided in the Methodology section.

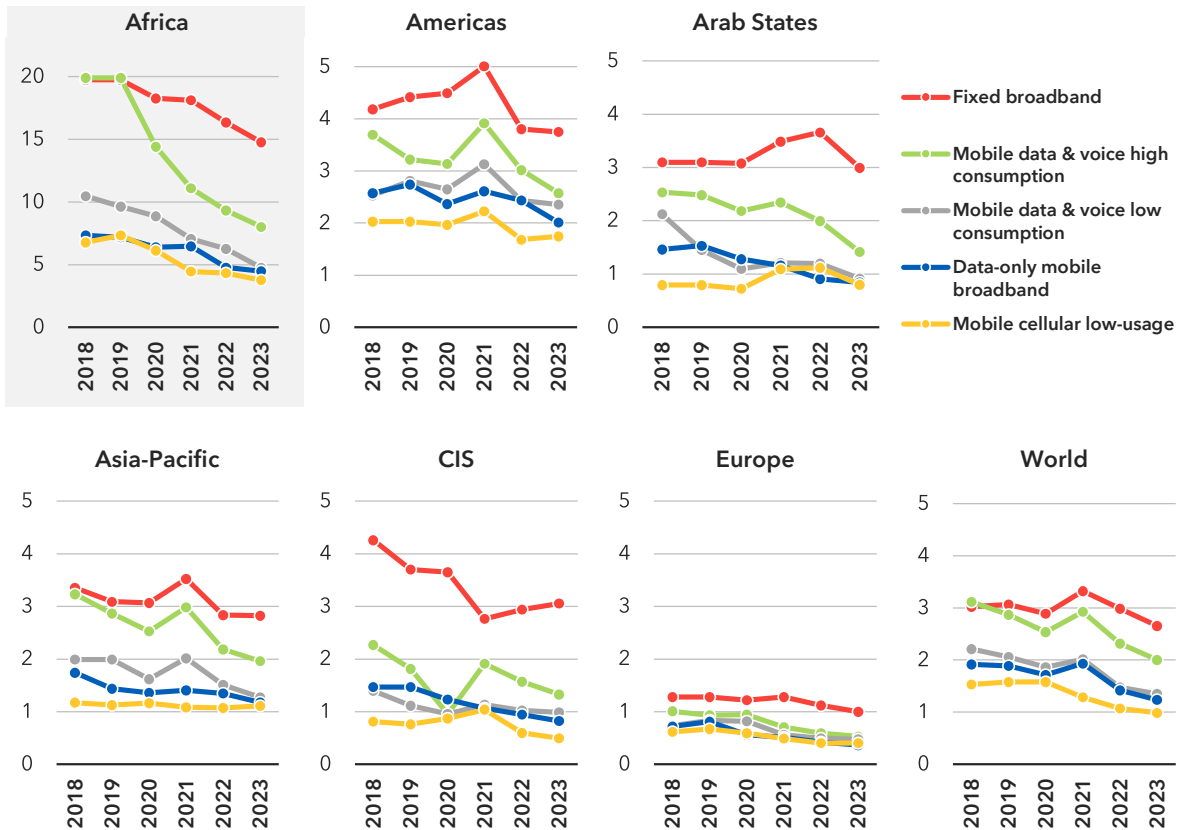
Figure 2: Number of countries by price range of broadband services as a % of GNI per capita, by region, 2023



Note: The stacked columns show the number of countries in a given price range for data-only mobile and fixed broadband basket prices, expressed as a percentage of GNI per capita. The bars are rescaled so that the height shows the total number of countries in a region, while the labels show the number of countries. Only those economies that had basket data available for 2022 and 2023 for mobile broadband (188 economies) and fixed broadband (178 economies) are considered.

Source: ITU

Figure 3: Affordability trends by region

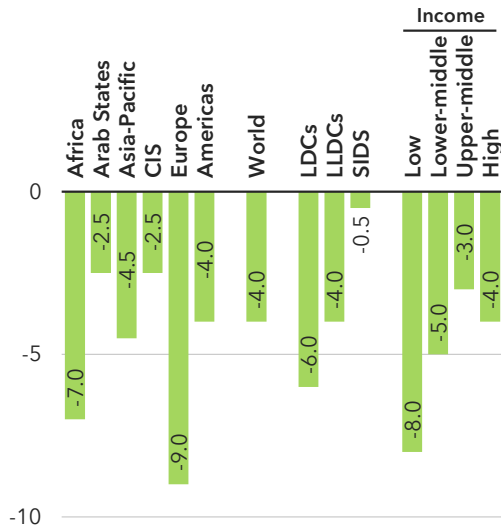


Note: Regions correspond to the [regional grouping](#) of the ITU Telecommunication Development Bureau (BDT). Median values shown in the chart were calculated as a percentage of GNI per capita for the set of economies for which data was available for all years between 2018 and 2023 for a given basket in order to adjust the effect of changing data availability. The chart for Africa is shaded to highlight the different vertical scale from the rest of the charts.

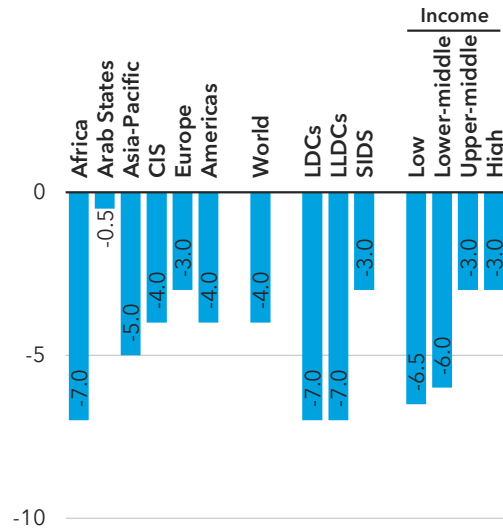
Source: ITU

Figure 4: Real percentage change of basket price in local currency, 2022 to 2023

Mobile broadband basket



Fixed broadband basket



Note: Chart shows the median of the data-only mobile and fixed broadband basket prices in local currency adjusted by consumer price indices (CPI) obtained from the IMF. June 2023 year-on-year CPI rates applied.  
Source: Based on ITU and IMF data

capita levels (used as the denominator for measuring affordability)<sup>3</sup> made ICT services less affordable than before the pandemic. However, in the two years following 2021, the price of all baskets expressed as a percentage of GNI per capita improved significantly, reaching historical lows in 2023.

The Africa region had the least affordable ICT service prices in 2023, and although the reduction in prices for the data-only mobile-broadband basket as a percentage of GNI per capita is encouraging, further acceleration in this direction is needed for this region to reach the two per cent target by 2025.

Affordability has improved in nearly all regions, albeit with some notable exceptions. Diverging from the global trend of declining basket prices expressed as a percentage of GNI per capita, the fixed-broadband basket prices mostly stagnated in the Americas and the Asia-Pacific regions, and even increased in CIS countries.<sup>4</sup> The Arab States region saw an improvement in fixed-broadband affordability in 2023, reversing the prolonged impact of the COVID-19 pandemic in that region.

ICT prices in Europe continue to be low relative to income, with further improvements observed in 2023, when none of the basket medians exceeded 1 per cent of GNI per capita.

<sup>3</sup> Due to data availability, affordability is calculated every year using one-year lagged GNI per capita levels. Hence the 2020 to 2021 affordability change was affected by the -1.9 per cent median global annual change in nominal GNI per capita from 2019 to 2020. Similarly, the 2021 to 2022 affordability change was shaped by a 9.0 per cent increase in GNI per capita, and the 2022 to 2023 change by 12.4 per cent.

<sup>4</sup> In four out of the nine countries of the CIS region prices are consistently below the 2 per cent target, while another four countries have GNI per capita rates consistently above 3 per cent of GNI per capita. As this region has the fewest countries, a price increase in one country in 2023 had an outsized effect.

## ICT services resisted the global inflationary pressure

Despite the inflationary context—with average year-on-year inflation reaching 5.7 per cent in June 2023 for the countries studied,<sup>5</sup> the global median price of data-only mobile-broadband and fixed-broadband baskets barely changed in *nominal terms* and decreased by 4 per cent in *real terms*, although there were variations across regions and income groups (Figure 4). The magnitude of price changes in real terms showed significant variation across baskets, regions and income groups. For instance, the data-only mobile-broadband basket price dropped the most in Europe (by 9 per cent), in low-income economies (by 8 per cent) and in Africa (by 8 per cent), while it hardly changed in SIDS.

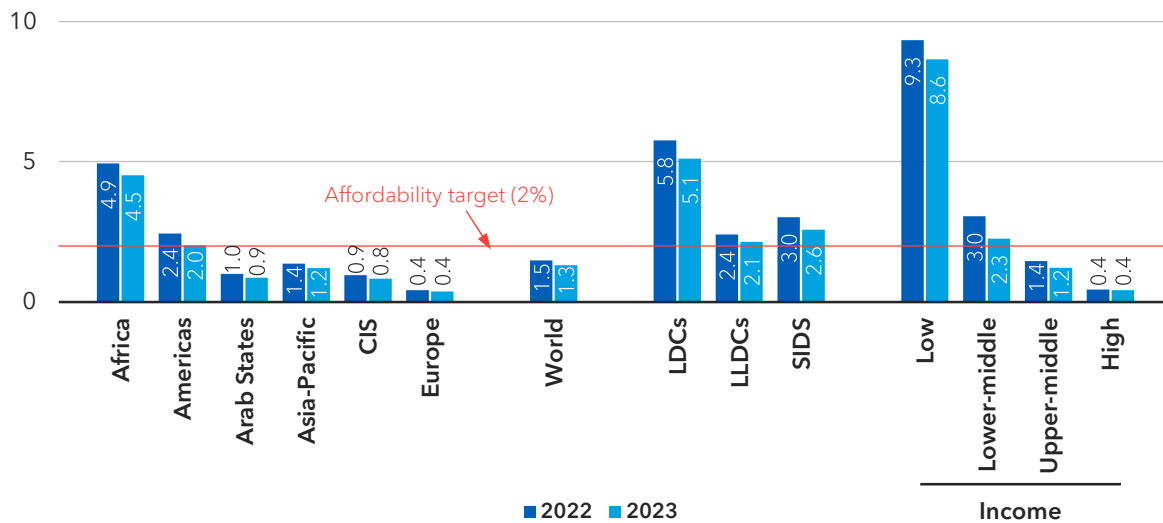
## Trends for selected price baskets

### Data-only mobile-broadband basket

The entry-level data-only mobile-broadband basket is a useful benchmark when comparing prices of mobile broadband services. The global median price of this basket decreased from 1.5 to 1.3 per cent of GNI per capita from 2022 to 2023. Affordability gaps for this basket are widest between income groups, the median price in low-income economies (expressed in per cent of GNI per capita) is about 21 times higher than in high-income economies. Although this means the affordability gap

<sup>5</sup> Based on monthly consumer price indices from the International Monetary Fund.

Figure 5: Data-only mobile broadband basket prices by country groups, as a percentage of GNI per capita



Note: Medians based on the 188 economies for which data was available for both years. Economies are benchmarked according to the price of an entry-level data-only basket, defined as the cheapest data-only mobile-broadband subscription available domestically, with 3G technology or above and a minimum monthly data allowance of 2 GB.

Source: ITU

between the two extremes narrowed between 2022 and 2023, the gap between the low-income and middle-income groups has expanded, as prices in the latter group declined faster over the same period.

Most regions include countries from different income groups, and this explains to a large extent why affordability gaps are narrower across regions than across income groups. Europe and Africa are exceptions, since the former has a majority of high-income economies, while the latter includes a greater number of low-income economies. The 2023 median price of 4.5 per cent of GNI per capita in Africa was more than 12 times higher than in Europe, where the median price is the lowest of all regions at 0.4 per cent (Figure 5).<sup>6</sup>

## Data-only mobile broadband: The premium for larger data allowance

Recent experimental data collection is offering insights into the cost of extra data allowance for three similarly defined baskets with different data allowances (1, 5 and 10 GB) in different markets. In high-income economies with more mature telecommunication markets, the cheapest plan to meet the conditions for the entry-level data-only mobile-broadband basket comes with more than the minimum allowance of 2 GB. By contrast, operators in lower income economies usually tailor their offers to lower disposable income levels by offering lower data allowance (or limited validity periods). To meet growing demand for data, operators are deploying more advanced networks

<sup>6</sup> It is also interesting to examine price level differences across country groups. International dollars, or United States dollars adjusted for purchasing power parity (PPP), offer an established measure for international comparability. The gaps look different in terms of PPP\$. For instance, the median basket price in 2023 was 16.2 PPP\$ in high-income economies, but 11.9 PPP\$ in low-income economies. This implies that network operators face similar fixed costs around the world. Data is available by economy and for groups of economies in PPP\$ terms in the ICT price data visualization tool.

that offer greater capacity, albeit at a staggered pace and with significant coverage gaps.

In 2023, at least 95 per cent of the global population had access to a 3G mobile network and 90 per cent to 4G/LTE networks. However, in low-income economies these networks reached only 78 and 39 per cent of the population, respectively (see [ITU Facts and Figures 2023](#)).

In addition to the stark divides in the affordability of mobile data, the extra cost of larger data allowances reflects another divide, especially between low and high-income economies (Figure 6). In high-income economies, a data-only mobile-broadband basket with 10 GB allowance typically costs 0.7 per cent of GNI per capita. In low-income economies, this costs 26.3 per cent of GNI per capita. With ever-more data-intensive applications, the fact that the affordability gap is even larger for premium plans is a cause of concern.

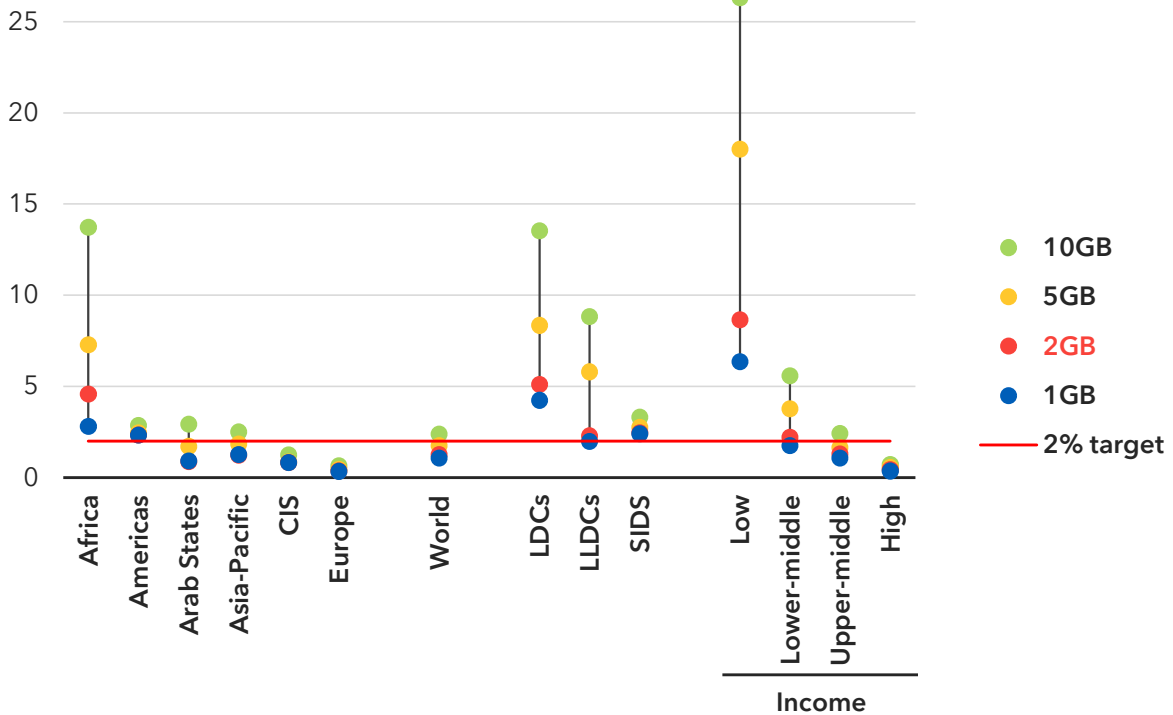
In many regions, even low data allowance can be costly. For instance, in SIDS and in the Americas region, the 1 GB basket already is at the 2 per cent affordability threshold, although the cost for additional data is negligible. This suggests that affordability would improve if operators offered less data at lower prices for lower-income consumers.

## Mobile cellular low-usage basket

The mobile cellular low-usage basket gives access to the most basic form of connectivity: a monthly allowance of 70 minutes and 20 text messages, which translates to just about one two-minute call a day and a message every weekday. The price of this low-usage basket decreased in all regions and all income groups. Yet, in low-income economies it still amounts to 7.4 per cent of monthly income (Figure 7).

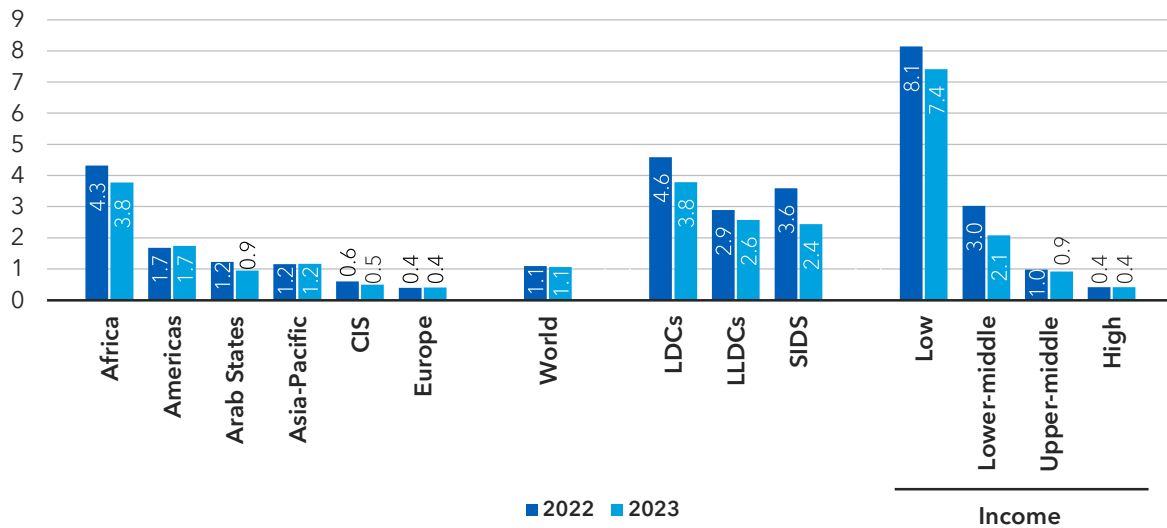
With the growth in smartphone ownership and the spread of voice and data bundles, voice- and SMS-only services

Figure 6: Data-only mobile broadband basket prices by country groups and data allowance, as a percentage of GNI per capita



Note: Medians based on 207 economies for which data were available for 2023. Source: ITU

Figure 7: Mobile cellular low-usage basket prices, as a percentage of GNI per capita



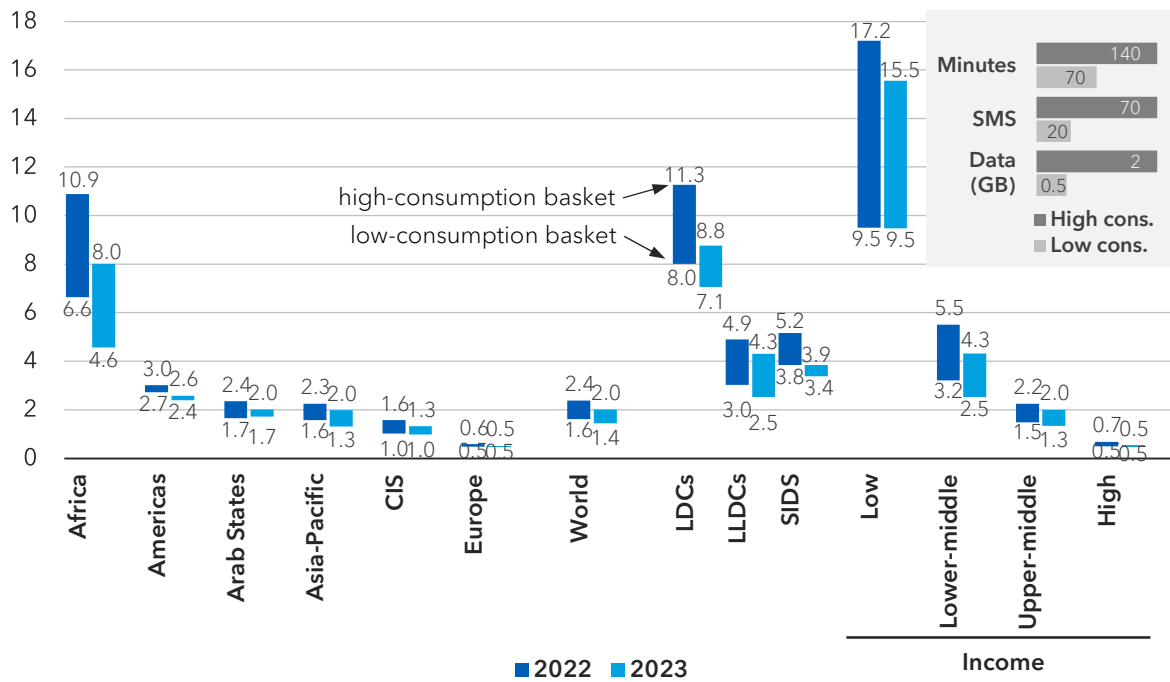
Note: Medians based on the 188 economies for which data were available for both years. Economies are benchmarked according to the price of the cheapest mobile cellular subscription available domestically with a minimum monthly allowance of 70 minutes of voice calls and 20 SMS messages. Source: ITU

are becoming less popular. Indeed, the price gap has been gradually closing<sup>7</sup> between this basket and the mobile data and voice low-consumption basket, which adds 500 MB of data allowance to the monthly 70 minutes

and 20 SMS messages (the bottom of the floating bars refers to the price of the data- and voice low-consumption basket in Figure 8; global trends are shown in Figure 3). For instance, the addition of data results in an increase of 0.1 of a percentage point for high-income economies, 0.4 in the case of middle-income economies, and 2.1 percentage points for low-income economies.

<sup>7</sup> The lower end of each bar in Figure 8 shows the price of the data- and voice low-consumption basket. Global trends are shown in Figure 3.

Figure 8: Mobile data and voice low- and high-consumption basket prices, as a percentage of GNI per capita



Note: Medians based on the 188 economies for which data were available for both baskets from 2022 to 2023 as a percentage of GNI per capita. Bars show the difference between the price of the mobile data- and voice low- and high-consumption baskets. The low- (and high-) consumption baskets are defined as the cheapest data and voice subscription available domestically, with a minimum of 70 (140) minutes, 20 (70) SMS messages, and 500 MB (2 GB) monthly data allowance with a 3G technology or above. Source: ITU

### Mobile data- and voice baskets

The price of the mobile data and voice high-consumption basket dropped to the 2 per cent threshold for the first time in 2023. Mobile network operators increasingly offer a wide range of bundles or packages of two or more services (e.g., voice and data) that allow customers to top up their data, voice or SMS allowances. These service bundles are generally cheaper than the pay-as-you-go rates and contribute to lower basket prices.

ITU monitors the prices of such combined data and voice services with two allowances: a low-consumption basket that includes 70 minutes of calls, 20 SMS messages and 500 MB of data usage, and a high-consumption basket that includes 140 minutes of calls, 70 SMS messages and a 2 GB data allowance. The median prices of the baskets were equivalent to respectively 1.4 per cent and 2 per cent of GNI per capita in 2023 (Figure 8). Over time, the price difference between the baskets has dropped, but still remains significant in lower-middle- and low-income economies, notably in Africa, LDCs and LLDCs. Elsewhere, in more mature markets the cost for the high-consumption basket is negligible because the cheapest plans have allowances that far exceed the low-consumption basket threshold criteria.

In 2023, and for the first time, the median prices of low- and high-consumption baskets in Africa dropped below 5 and 10 per cent of GNI per capita, respectively. In the Arab States and Asia-Pacific regions, the high-consumption basket price decreased to the 2 per cent threshold. In low-income economies, neither basket is affordable, with the high-consumption basket at 15.5 per cent of

GNI per capita. The lack of change from 2022 to 2023 in low-consumption basket prices in low-income economies indicates a structural problem, the combination of the less developed network infrastructure and low disposable income.

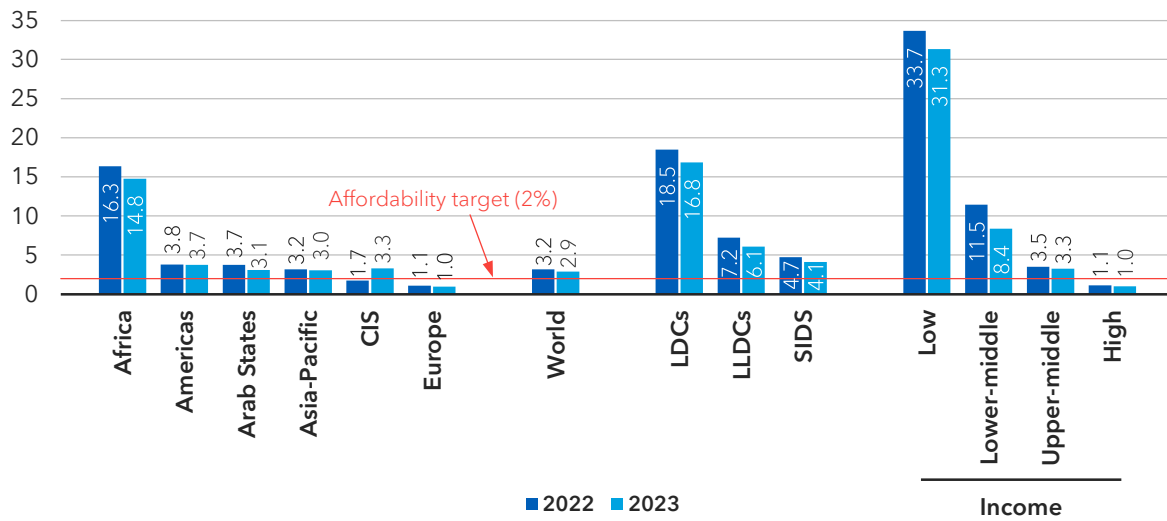
### Fixed broadband

In 2023, the affordability of the fixed broadband basket reached a global median price equivalent to 2.9 per cent of GNI per capita, a 0.3 percentage-point drop since 2022. In relative terms, the most significant drops were observed in lower-middle-income economies, although at 8.4 per cent of GNI per capita, it remains challenging to afford. Affordability gaps are particularly high for the fixed broadband basket across the world. The basket costs just 1 per cent of monthly income in high-income economies, but as much as 31.3 per cent in low-income economies, where this service, if present at all, is in practice reserved for businesses or the most affluent. In terms of differences across regions, the affordability gap remains widest between the Africa region and LDCs, and the rest of the world.

Affordability of the fixed-broadband basket is improving at a slower pace compared to mobile baskets. This can be attributed to the exponential increase in global data traffic, 80 per cent of which is routed through fixed networks, which includes mobile devices connected to Wi-Fi networks (see [ITU Facts and Figures 2023](#)). Internet service providers (ISPs) must constantly upgrade their networks and ICT price basket metadata provides interesting evidence supporting this trend. Between 2019 and 2023,



Figure 9: Fixed broadband basket prices, as a percentage of GNI per capita



Note: Regional and other country group medians are based on the 178 economies for which data was available as a percentage of GNI per capita from 2022 to 2023. Economies are benchmarked according to the price of an entry-level fixed-broadband basket, defined as the cheapest fixed Internet subscription available domestically, with a minimum of 5 GB monthly data allowance and an advertised download speed of at least 256 kbit/s. Source: ITU

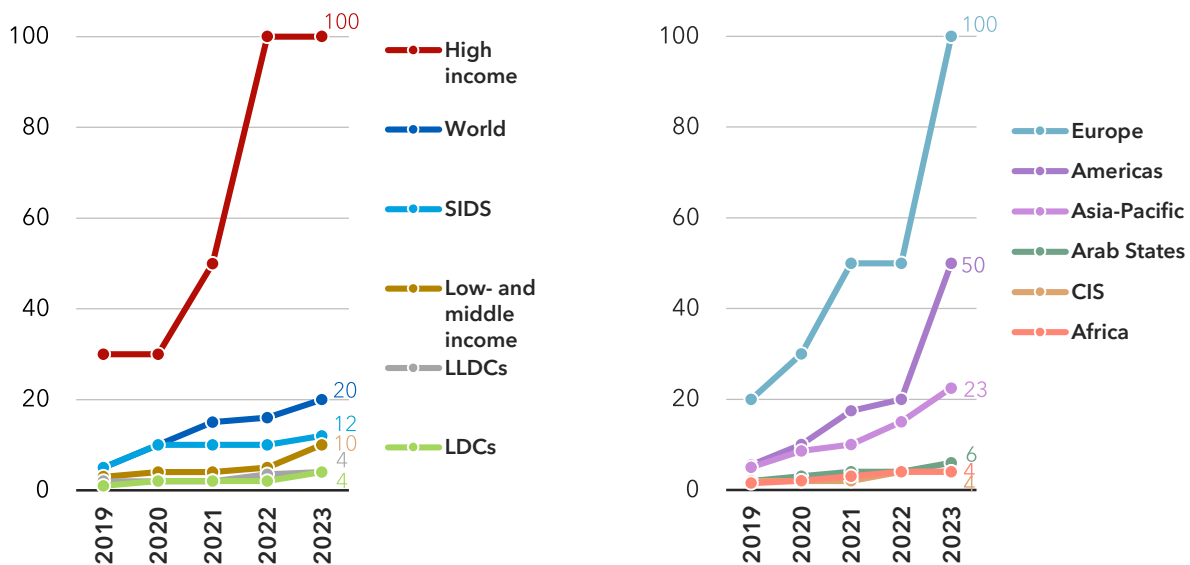
the share of ISPs advertising fibre or high-speed cable as the entry-level fixed broadband basket technology increased from 46 to 61 per cent of the economies with available data. The world median advertised download speed for the entry-level plans in 2019 increased from 5 Mbit/s to 20 Mbit/s by 2023 (Figure 10).

Wide gaps persist between regions in terms of connection speeds. The median advertised download speed in high-income economies was 100 Mbit/s, with speeds of one gigabit or more reported for the cheapest available plan in Hong Kong, China, as well as Iceland, Italy, Japan, and Singapore. In contrast, the median speed in LDCs and LLDCs was just 4 Mbit/s or 25 times slower. But there are

positive trends: in 2023, there were 61 economies with advertised speeds of 100 Mbit/s or faster, up from 36 in 2021. Among them, there were 25 lower-middle-income economies, up from just 5 in 2021. Sixteen economies had an advertised speed of less than 2 Mbit/s, down from 32 in the space of just two years.

In 2019, entry-level plans in 126 economies already included unlimited data usage, and by 2023, that number had increased to 142. During the same period, fixed broadband Internet traffic increased more than two-fold worldwide, while service providers made significant network upgrades, especially optical fibre. With demand for fibre-optic connections remaining high, the median

Figure 10: Median advertised download speeds for entry-level fixed-broadband baskets for income groups and regions (Mbit/s)



Note: Medians based on available data for 2019-2023 on advertised speed for the plans used for the basket. Source: ITU



Table 1: Largest price declines from 2022 to 2023, in percentage points

Basket	% price changes in terms of GNI per capita	% price changes in terms of PPP\$
Data-only mobile-broadband basket	Global median: -0.2 Zimbabwe (-13.7), Haiti (-10.3), Lebanon (-7.8)	Global median: -2.9 Haiti (-23.3), Seychelles (-11.1), Namibia (-10.8)
Mobile-cellular low-usage basket	Global median: -0.04 Chad (-8.8), Central African Rep. (-7.5), Marshall Islands (-4.6)	Global median: 3.8 Timor-Leste (-24.4), Dominica (-24.3), Cabo Verde (-18.5)
Mobile data and voice low-consumption basket	Global median: -0.2 Liberia (-11.5), Central African Rep. (-10.3), Cabo Verde (-7.8)	Global median: 1.9 Cabo Verde (-41.8), Timor-Leste (-26.2), Thailand (-17.8)
Mobile data and voice high-consumption basket	Global median: -0.4 Zimbabwe (-21.3), Liberia (-18.3), Cabo Verde (-18.1)	Global median: -3.4 Cabo Verde (-101.4), Seychelles (-42.4), Timor-Leste (-39.3)
Fixed-broadband basket	Global median: -0.3 Malawi (-16.8), Tanzania (-16.3), Eswatini (-11.5)	Global median: 7.9 Eswatini (-82.3), Timor-Leste (-51.1), Tanzania (-43.7)

Source: ITU

price stabilized from 2019 to 2023 with a slight increase from 39 to 40 PPP\$. Nevertheless, regional differences remain significant: at 75 PPP\$ in Africa it typically cost more than twice as much as in Europe (35 PPP\$).

Affordability is a reflection of the price of the basket (numerator) relative to the GNI per capita (denominator),

both expressed in local currency, and year-on-year improvements can be attributed to both figures. Table 1 presents the three economies where affordability improved the most (in terms of GNI per capita) and where price levels (measured in terms of PPP\$) declined the most for each basket. These changes, expressed as a percentage, by far outperform the global median.

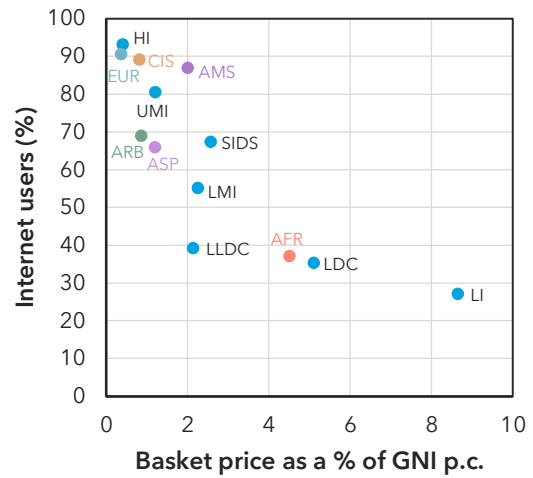
## Overcoming the affordability barrier with better regulation

High costs continue to be an obstacle for people to access the internet (Figure 11). In countries where the data-only mobile-broadband basket costs more than 5 per cent of GNI per capita, Internet use is typically below 40 per cent. Below this 5 per cent threshold, the relationship between affordability and Internet use is weaker with much variation in usage for similar affordability levels.

The cost and affordability of ICT services depend on many factors, including economic development and income levels, geography and degree of urbanization of the country, infrastructure, market conditions, competition, as well as the legal, policy and institutional framework conditions.

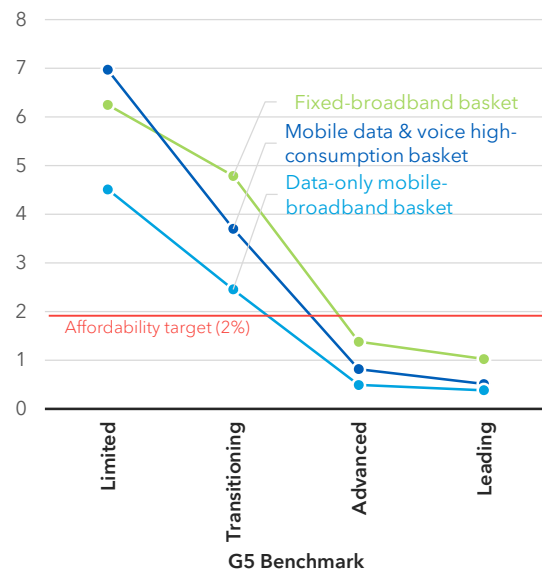
Data show a close association between maturity of the collaborative regulatory environment (measured by the [ITU G5 Benchmark](#)<sup>8</sup>) and affordability of broadband services. Figure 12 shows that the median prices for ICT services are highest in economies with limited regulatory maturity, and lowest in economies that are leaders in terms of having a holistic, multi sectoral, collaborative national regulatory frameworks for digital transformation. This signals a correlation, although causal linkages will require further research, and it highlights the relevance of the policy and regulatory environment for tackling the affordability barrier.

Figure 11: Data-only mobile broadband affordability and Internet use, by country groups, 2023



Note: LI (low income); LMI = lower-middle income; UMI = upper-middle income; HI = high-income economies; AFR = Africa; ARB = Arab States; AMS = The Americas; ASP = Asia-Pacific; CIS = Community of Independent States; EUR = Europe region; LDC = least developed countries; LLDC = landlocked developed countries; SIDS = small island developing states. Figures refer to median basket price and weighted average Internet use shares.  
Source: ITU

Figure 12: Affordability of ICT services by maturity of national enabling environment for digital markets (G5 Benchmark), as a percentage of GNI per capita



Note: The graph shows median price for the group of economies falling within a G5 Benchmark (2023) level of regulatory maturity. The other two baskets not shown in this graph for better readability show similar trends. Further details on the G5 Benchmark methodology are available [here](#).  
Source: ITU






<sup>8</sup> ITU G5 Benchmark is a composite metric based on 70 indicators that capture the broad topics of national collaborative governance, policy design principles, digital development toolbox, and the digital economic policy agenda. Each of the 193 countries studied is associated with one of four levels of policy and regulatory framework maturity based on its score: 'Limited', 'Transitioning', 'Advanced', and 'Leading'.

### Methodology: The five ICT price baskets covered in this brief

The ITU [Expert Group on Telecommunication/ICT Indicators \(EGTI\)](#) has defined five ICT price baskets to benchmark the cheapest price plans in five categories of ICT services and across economies. The main objective is to make an international comparison despite the heterogeneity of markets in low- and high-income economies.

The basket of ICT services is used for global comparison. It covers the base plan and add-ons or pay-as-you-go tariffs that reflect the cheapest non-promotional options from the largest operator in a country and meet a defined set of criteria including minimum monthly allowance, validity period, technology, etc. Figure 13 provides a simplified view of the allowances for each basket used in the 2023 data collection. For international comparison, basket prices collected in a local currency are divided by GNI per capita or purchasing power parity ratios and are available from the World Bank World Development Indicators. Further details on the data collection and price conversion methodology are available [on the ITU website](#).

Figure 13: Overview of basket allowances used data collection, 2023

ICT price baskets	Minimum monthly allowance		
	Voice (min)	SMS (#)	Data
1 Data-only mobile-broadband basket 	-	-	2 GB
2 Mobile data and voice low-consumption basket 	70	20	500 MB
3 Mobile data and voice high-consumption basket 	140	70	2 GB
4 Mobile-cellular low-usage basket 	70	20	-
5 Fixed-broadband basket 	-	-	5 GB

Source: ITU

For further information, visit [www.itu.int/ictprices](http://www.itu.int/ictprices) or write to [indicators@itu.int](mailto:indicators@itu.int)

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Place des Nations, CH-1211 Geneva Switzerland