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International Telecommunication Union
Development Sector

Measuring digital development

Facts and Figures: Focus on Landlocked Developing Countries

April 2024

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ISBN

978-92-61-38911-6 (Electronic version)
978-92-61-38921-5 (EPUB version)
978-92-61-38931-4 (Mobi version)

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Foreword

I am pleased to present *Facts and Figures: Focus on Landlocked Developing Countries*, a comprehensive assessment of digital connectivity challenges and advancements in LLDCs.

This special edition of ITU's flagship *Facts and Figures* series coincides with the third United Nations Conference on Landlocked Developing Countries. This landmark event presents a once-in-a-decade opportunity to craft innovative solutions that can unlock the full potential of these nations.

Digital technology provides LLDCs with pathways to overcome physical barriers, facilitating access to education, healthcare, and trade. It serves as a catalyst for resilience, empowering these countries to effectively respond to crises and to engage more fully in the global economy. Therefore, it must be a priority on the development agenda for any nation. Against this backdrop, *Facts and Figures* aims to offer insights that inform decisions to enhance digital connectivity.

The challenge of connectivity has intensified over the past decade. It is no longer sufficient to simply connect everyone. Universal and meaningful connectivity (UMC) – which we define as the opportunity for everyone to have a safe, satisfying, enriching, and productive online experience at an affordable cost–has emerged as the new imperative.

Our data indicates that LLDCs are at various stages in their journey toward UMC, yet they share common obstacles and can benefit from mutual learning. Infrastructure development is part of the solution, but robust policy frameworks that promote investment, adoption, and innovation in ICTs are equally vital. Achieving UMC will not happen overnight, but decisive and focused interventions, including regulatory improvements, can lead to rapid and substantial gains.

As we strive to assess state of connectivity around the world, we are faced with persistent data shortages that affect the accuracy and granularity of measurement. Increased investment in data infrastructure and statistical capacity is essential, enabling more effective and more targeted interventions.

I would like to express my gratitude to UNCTAD for their contributed section, which illustrates the symbiotic relationship between digital infrastructure and digital trade.

This publication is a testament to ITU's efforts to assist LLDCs in leveraging the benefits of connectivity and digital technologies. It also serves as a call to action for everyone to maintain their commitment to ensuring that no landlocked nation is left behind in the digital era.

Cosmas Luckyson Zavazava
Director, ITU Telecommunication Development Bureau

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Introduction

Landlocked Developing Countries (LLDCs) face unique challenges that distinguish their development trajectories from countries with a coastline border, including higher transportation costs, trade barriers, and limited connectivity, which can impede integration into the global economy and affect overall development. LLDCs rely on neighbouring countries for access to maritime trade routes, with all the uncertainties such dependency entails. The resultant delays and increased costs of importing and exporting goods affects the competitiveness of LLDCs in the global market. Additionally, these countries often have less developed infrastructure, including roads, railways, and ports, further exacerbating logistical hurdles and increasing the cost of doing business. Moreover, LLDCs typically lack domestic and foreign investment, which limits the resources available for infrastructure and human capital development.

Information and communication technologies (ICTs) present a transformative opportunity for LLDCs, by facilitating the flow of information and services, by enabling businesses to reach global markets without the need for extensive physical infrastructure, and by helping to alleviate geographic and topological constraints. E-commerce, for instance, allows for the buying and selling of goods and services over the Internet, reducing the need for physical storefronts and costly distribution networks.

ICTs can significantly improve the efficiency of transportation and logistics through advanced tracking and management systems, helping LLDCs to better manage their trade processes and reduce costs. The implementation of ICTs in public services can also streamline governance, improve the delivery of public services, and foster transparency.

In addition, ICTs play a crucial role in education and capacity building. Through distance learning and online training programmes, people can acquire the skills necessary to compete in the digital economy. Access to global knowledge resources and collaboration tools can empower local entrepreneurs, researchers, and students, contributing to the development of a skilled workforce and innovative industries.

The figures presented in this report suggest that universal and meaningful connectivity – the possibility for everyone to enjoy a safe, satisfying, enriching, productive and affordable online experience – remains a distant prospect for those living in LLDCs. ITU and the Office of the UN Secretary-General's Envoy on Technology have established a set of aspirational targets for universal and meaningful connectivity for 2030. While some countries will meet some of the targets by 2030, and indeed some already have, many LLDCs will fall short.

ICT regulation and digital policy frameworks

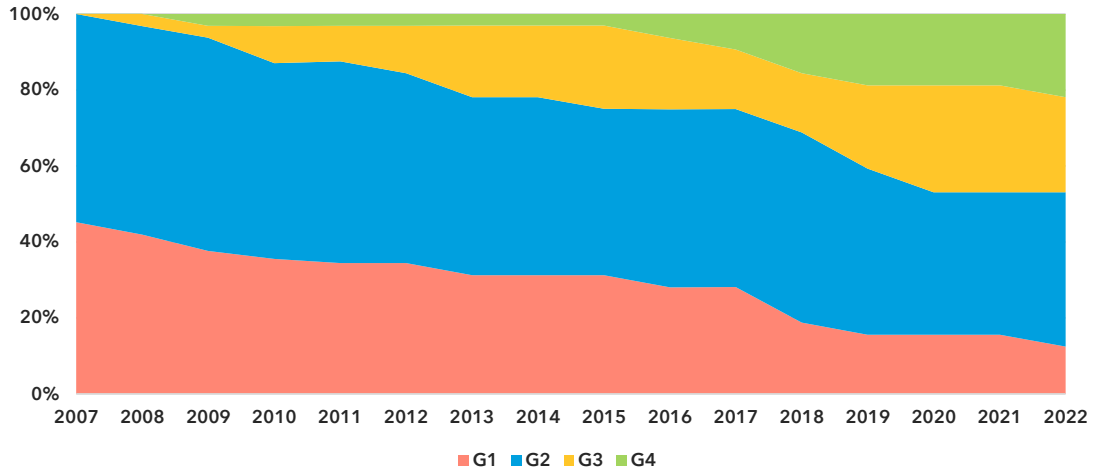
ICT regulation and digital policies are key enablers of universal and meaningful connectivity and digital transformation. Such policies facilitate investment and ensure fair competition in both ICT and digital markets. This section provides insights into the trends, patterns and current state of ICT regulation and digital policies in LLDCs.

Evolution of ICT regulation in LLDCs is gaining momentum

Since the adoption of the Vienna Programme of Action for LLDCs in 2014, digital connectivity and services have transformed societies, economies and governance systems. Countries around the world have been grappling with shifting priorities for policymakers and regulators, markets and users. While some LLDCs have fast-tracked ICT regulatory reform over the past decade, most have been moving at a slower pace.

The number of LLDCs at an advanced level of ICT regulation (G3 or G4) has more than doubled, from 22 per cent in 2014 to 47 per cent in 2022. In 2014, only one LLDC, Uganda, was among the 42 countries in the fourth generation of ICT regulation, G4, the most advanced stage of regulation. By 2022, Armenia, Burkina Faso, Malawi, Moldova, North Macedonia and Rwanda had joined the G4 group, which now comprises 74 countries worldwide.

Evolution of the generations of ICT regulation in LLDCs



Note: The 'Generations of ICT regulation' provides a high-level conceptual framework for the overall development of national legal instruments, policies and governance for the ICT and digital sectors. Generations 1 through 4 are based on ICT Regulatory Tracker scores:
G1 – Command and control approach: 0 < 40
G2 – Early open markets: 40 < 70
G3 – Enabling investment and access: 70 < 85
G4 – Integrated telecommunication regulation: 85 ≤ 100
Source: ITU

The level of ICT regulatory maturity varies significantly among LLDCs, as reflected in the 83-point gap between the two countries in this group with the most and least advanced level of ICT regulation. The majority of LLDCs, 53 per cent, remain in the less advanced stages of ICT regulation (G1 and G2). Their policy and regulatory frameworks require further action to create an enabling environment for universal and meaningful connectivity.

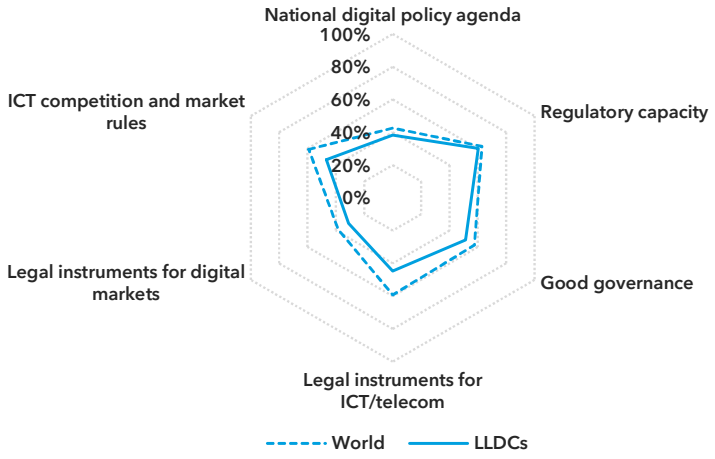
Readiness of national frameworks for digital transformation: LLDCs approaching world averages

According to ITU benchmarks, LLDCs perform in line with world averages in key areas such as national digital policy agendas and regulatory capacity. LLDCs are 6 to 8 percentage points behind the rest of the world on legal instruments for telecommunication and digital markets and on the good governance benchmark. The gap is much wider, at 12 percentage points, for ICT competition and market rules. LLDCs achieve 43 per cent of the overall benchmark for the readiness of national legal, policy and governance frameworks for digital transformation, below the world average of 51 per cent, in 2023.

Further market reform in both ICT and digital markets regulation stands out as a common priority for most LLDCs. What's more, well-developed competition frameworks for ICT and digital markets can provide predictability for infrastructure rollout, foster innovation, enhance consumer choice and drive down prices. Such frameworks will also promote market efficiency and encourage investment in new technologies and services, giving LLDCs an advantage in the global digital economy.

Overall, the development of policy and regulatory instruments in LLDCs is in line with world averages. However, to truly advance, LLDCs need to focus on effective implementation.

Benchmarks for the readiness of national frameworks for digital transformation in key areas, 2023



Note: The six thematic benchmarks (national digital policy agenda, regulatory capacity, good governance, legal instruments for ICT/telecommunications and digital markets, and ICT competition and market rules) each comprise a sub-set of indicators, as part of the ITU Unified Framework for the readiness of national policy, legal and governance frameworks for digital transformation. The percentage of achievement on each benchmark indicates the proportion of met versus unmet indicators.
Source: ITU

Connectivity policies to support structural transformation in LLDCs: boosting digital agendas and implementation is essential

Structural impediments constitute one of the major barriers to sustainable development in LLDCs. Policy measures that enable the development of digital infrastructure can allow LLDCs to take full advantage of the opportunities created by the digital transformation of society and the economy.

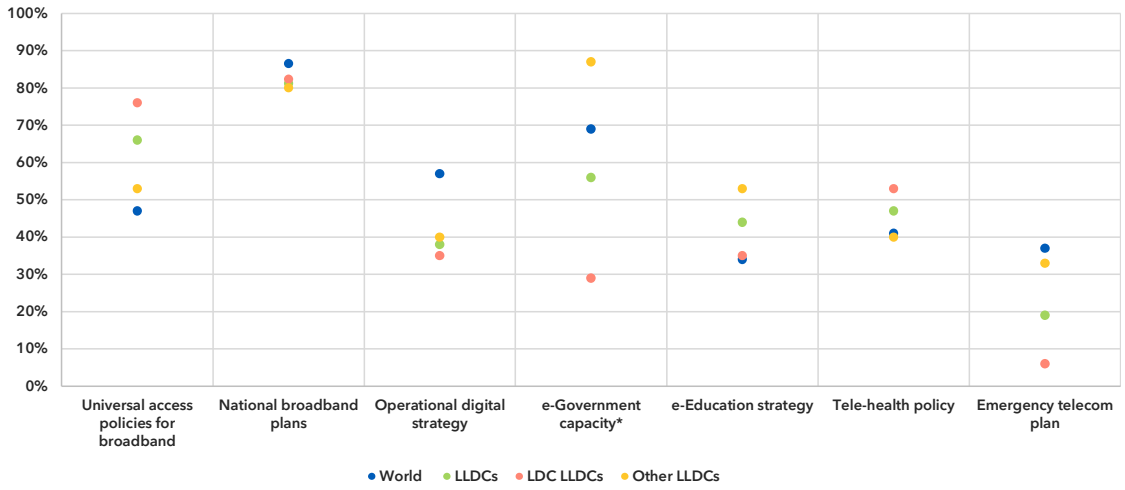
The level of adoption of key connectivity policies varies significantly within the LLDC group of countries. While they perform well above the world average with 66 per cent having a universal service or access policy in place, only 38 per cent have an operationalized digital strategy – one having implementation mechanisms and operational objectives – compared to the world average of 57 per cent. The lag in developing national digital connectivity frameworks that are built on sound telecommunication policy requires urgent attention, as digital connectivity is an enabler of bridging not only digital divides but also general structural gaps across geographies and demographic groups.

In the public sector, digitalization policies exist in less than half of LLDCs, although as a group, they perform slightly better than world averages. Around 45 per cent of LLDCs have ICT in education and tele-health policies.

Differing policy patterns occur among LLDCs

With regards to e-government capacity, a significant gap persists among LLDCs which are in the group of least developed countries (LDCs) and those which are not. Less than a third of LDCs have a high e-government capacity, while close to 90 per cent of non-LDCs have achieved this level. Strengthening institutions is paramount for public sector development and digital transformation and should be an important focus of future government action.

Connectivity and digital society instruments, 2022



* e-Government capacities equivalent to very high and high E-Government Development Index (EGDI) scores are included.
Source: ITU, based on data from ITU and UNDESA (for EGDI)

Emergency telecommunication plans, such as in the event of natural disasters or pandemics are critical for LLDCs. To help mitigate challenges unique to LLDCs, the majority of countries in this group need to further build their capabilities and frameworks to minimize the impact of climate change and disasters. As of 2023, only 19 per cent of countries had adopted such a plan.

Enhancing complementary connectivity policies alongside implementation of concrete policy initiatives can accelerate progress towards universal and meaningful connectivity.

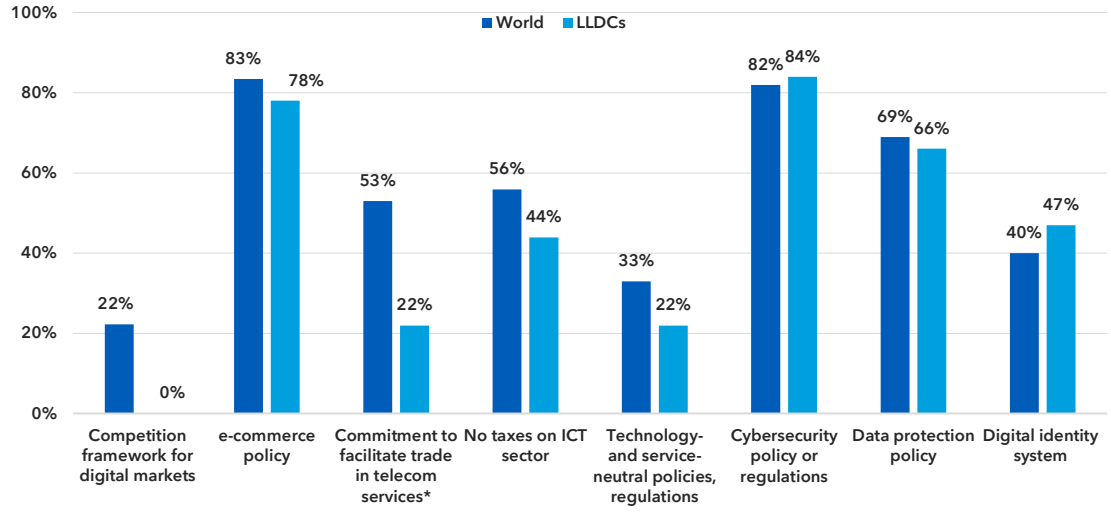
LLDCs need to fast-track policies to support digital economies

Sound digital economy policy instruments drive economic growth and enhance competitiveness. They reinforce the performance of both the public and private sectors and accelerate the achievement of sustainable development policy goals.

The level of development of policies that support the creation of digital economies in LLDCs is uneven. While almost 80 per cent of LLDCs have an e-commerce policy, only around 20 per cent have made a commitment to facilitate trade in telecommunication services under the General Agreement on Trade in Services of the World Trade Organization (WTO). With trade policies shaping the regulatory environment for cross-border digital transactions and e-commerce influencing the dynamics of international trade, disparities in the level of adoption can result in missed opportunities to boost digital economies.

Data governance policies and systems are part of the foundational digital economy stack. While data protection frameworks are in place in two thirds of LLDCs, digital identity systems have been established in less than half of LLDCs. Over 80 per cent of LLDCs had a cybersecurity policy in place in 2023, slightly exceeding the world average.

Key digital economy policy instruments, 2023



Notes: The values for each indicator reflect the proportion of countries adopting policy or legal instruments in the respective areas. * Under the General Agreement on Trade in Services of the World Trade Organization (WTO).
Source: ITU, based on data from ITU, UNCTAD and WTO

Many LLDCs are lagging behind in key digital economy policy areas. No LLDC has adopted a competition policy framework for digital markets and only 22 per cent have technology and service neutral policies and regulations, which are key instruments for levelling the playing field in digital markets. In addition, such instruments need to be complemented by sound enforcement mechanisms and effective regulatory oversight. More than half of LLDCs still apply ICT sector-specific taxes to market players, which may hinder the development of digital services and the entry of new market players.

The implementation of policy and legal frameworks in all cross-cutting areas such as data protection and market entry of new and emerging technologies needs to be further strengthened and institutional capacities reinforced to ensure a solid foundation of digital economies in LLDCs.

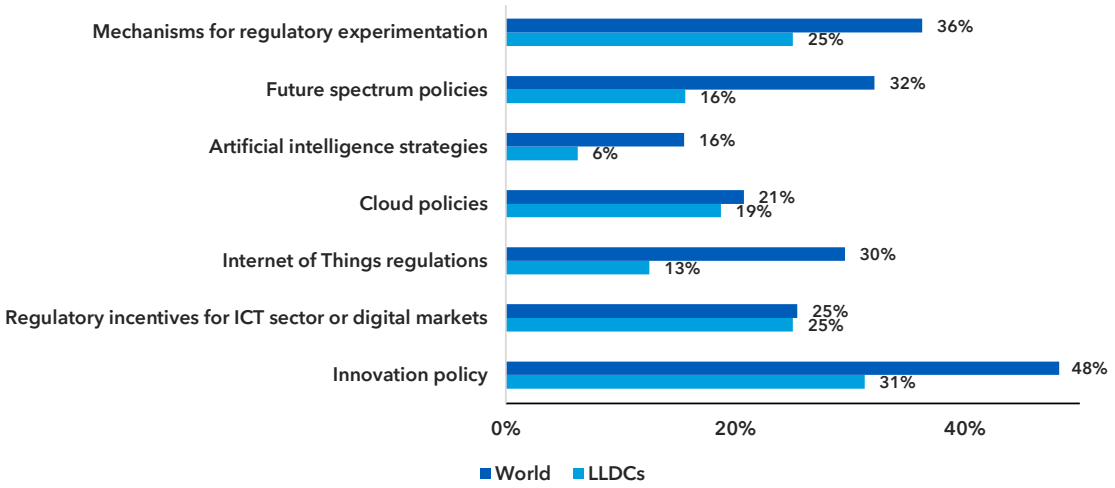
Creating an enabling environment for emerging technologies and digital innovation can unleash transformative sustainable development in LLDCs

Emerging digital technologies and innovation can contribute to sustainable development in LLDCs through productivity gains and diversification. However, their successful integration and deployment require agile and anticipatory regulatory frameworks that also minimize the risks of new and emerging technologies.

LLDCs are less likely to have these frameworks in place. Close to a third of LLDCs have adopted innovation policies and a quarter of LLDCs have introduced market mechanisms that enable new and innovative digital services and technologies to reach markets, such as regulatory experimentation spaces and regulatory incentives for ICT and digital market players.

Policies that frame future spectrum technologies, including 5G, fixed wireless access, satellite and space technologies, or a mix of technologies for mobile broadband, are needed to achieve universal and meaningful connectivity but such policies are present in only 16 per cent of LLDCs. A key enabler of environment and climate sensing systems, Internet of Things regulations have been adopted by 13 per cent of LLDCs. Artificial intelligence policy instruments are in place in only two countries, Mongolia and Rwanda.

Policy instruments enabling emerging technologies, 2023



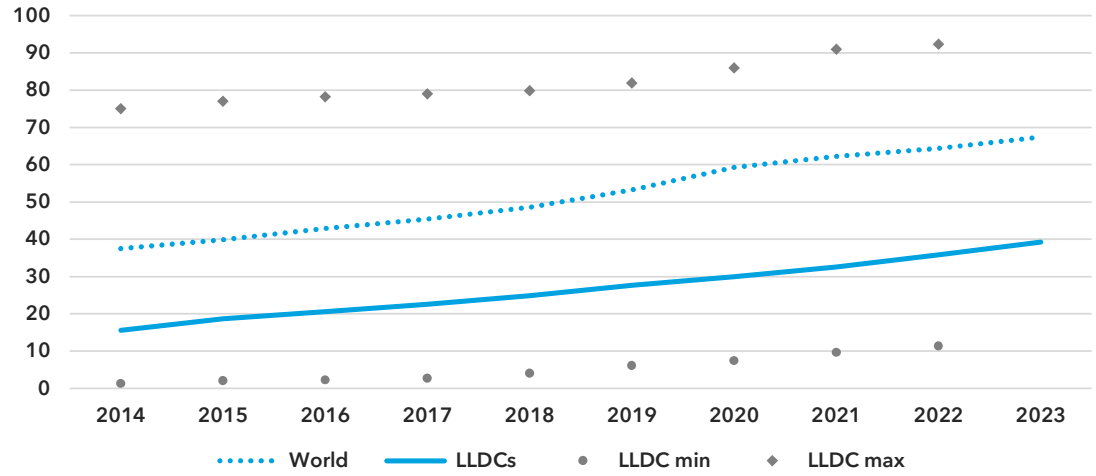
Source: ITU

Adopting emerging technology and innovation policies will be a cornerstone of LLDC efforts to create a conducive and fit-for-future environment for structural transformation and economic resilience. Countries need to continue to advance digital transformation and universal and meaningful connectivity policy agendas to achieve national priorities and sustainable development goals (SDGs).

Internet use

Only 39 per cent of the population in LLDCs is online

Percentage of individuals using the Internet



Note: In any given year, *LLDC min* and *LLDC max* represent the LLDC with the lowest and highest value.
Source: ITU

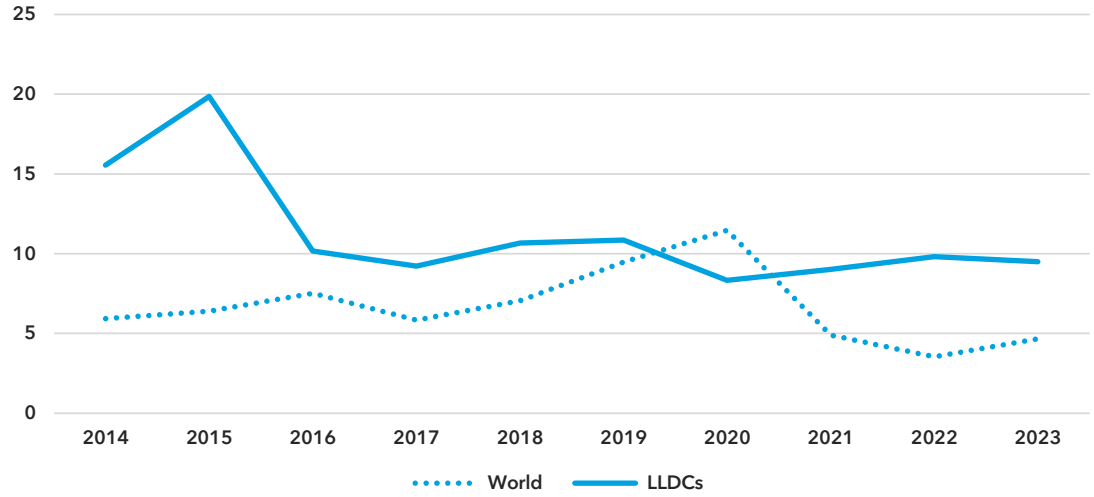
In 2023, about 226 million people in LLDCs were using the Internet. This accounts for 39 per cent of the population of these countries, compared with 67 per cent of the world's population using the Internet. The remaining 351 million people still offline in LLDCs is equal to 13 per cent of the world's offline population, even though the LLDC population accounts for only 7 per cent of the world's population.

Such overall percentages conceal significant disparities in the group of 32 LLDCs. For example, in 2022, Internet use ranged from 11 per cent of the population in Burundi to 92 per cent in Kazakhstan, which is on a par with the Internet use in many advanced economies (see *Disparity between LLDCs* section). In 2023, Internet use stood at 63 per cent in the 12 LLDCs in Asia, while in the 16 LLDCs in Africa the average was 26 per cent.[1]

Since the second UN Conference on Landlocked Developing Countries in 2014, Internet use in LLDCs has more than doubled, increasing from 15 per cent to 39 per cent of the population. This corresponds to a compound annual growth rate of 10.8 per cent, much higher than the 6.7 per cent growth rate worldwide.[2] The COVID-19 pandemic did not accelerate growth in Internet use in LLDCs, with a growth rate that was slightly lower in 2020 than the preceding and following years. In more advanced economies, the growth rate in 2020 typically was twice the growth rate in 2019.

[1] See Annex 1 for the composition of the subregions.
[2] All growth rates in this publication are computed as compound annual growth rate – or CAGR.

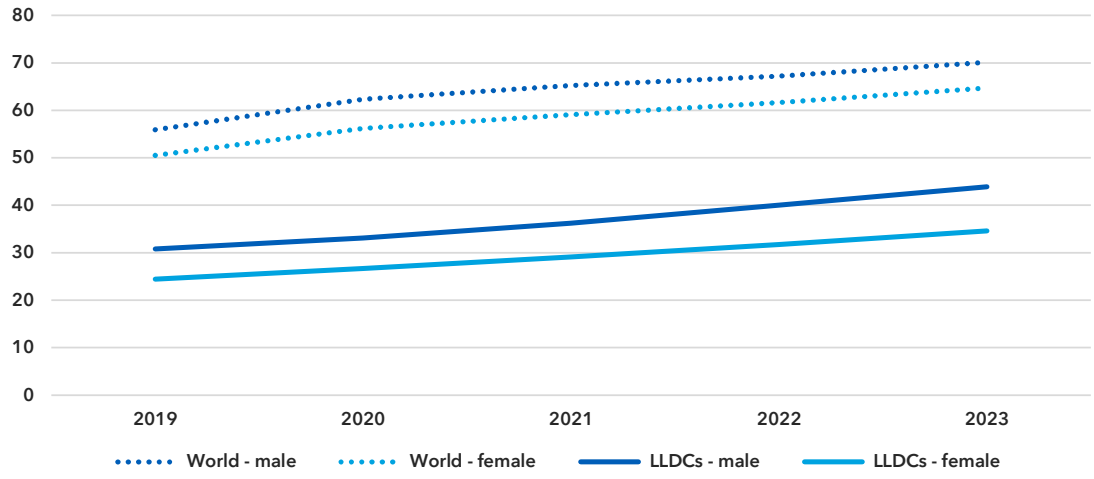
Annual growth rates of Internet use



Source: ITU

The gender gap in Internet use shows no sign of narrowing in LLDCs

Percentage of individuals using the Internet, by gender

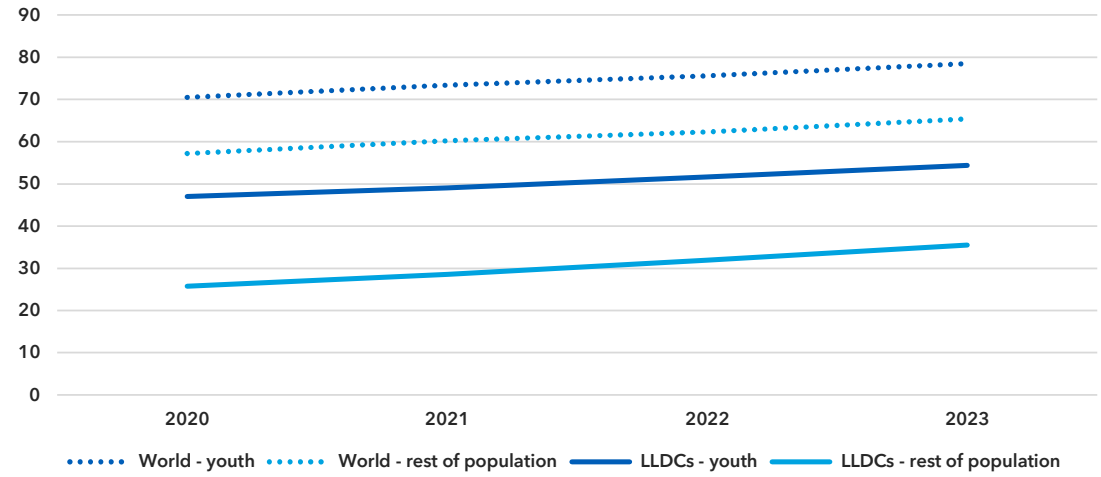


Source: ITU

When expressed in terms of Internet use, the digital gender gap in LLDCs remains significant with no sign of narrowing. In 2023, 44 per cent of the male population in LLDCs was online, up from 31 per cent in 2019. That is 9 percentage points more than the share among the female population (35 per cent), *an increase* of 3 percentage points since 2019. This translates into a gender parity score – the percentage of females using the Internet divided by the percentage of men using the Internet – of 0.79, almost unchanged since 2019. In contrast, the world average, with a score of 0.92, is much closer to gender parity, defined as a score between 0.98 and 1.02.

The young are leading the way in Internet use

Percentage of individuals aged between 15 and 24 years using the Internet

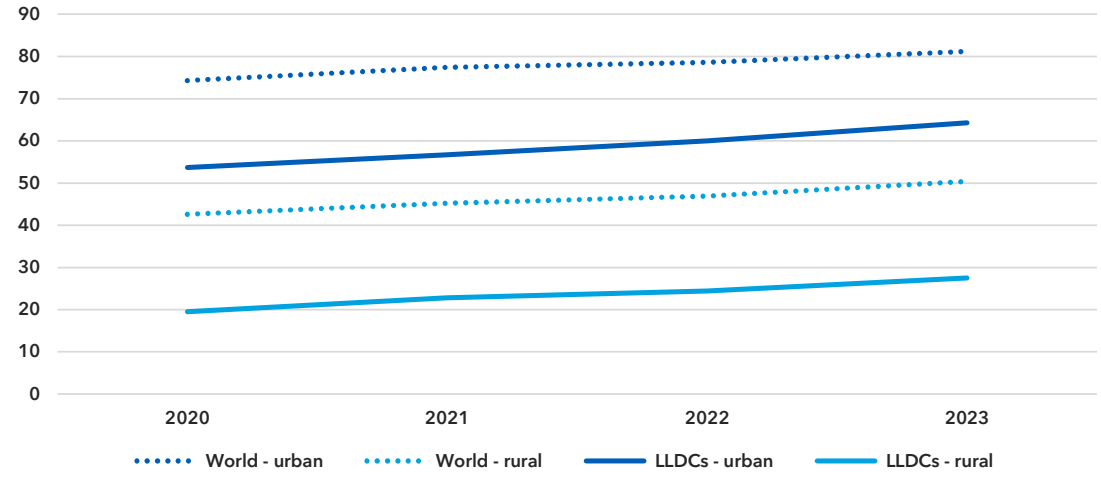


Source: ITU

In 2023, more than half of 15- to 24-year-olds in LLDCs were online (54 per cent), 19 percentage points more than the rest of the population in LLDCs. Despite narrowing over the last four years, this gap in Internet use in LLDCs is wider than it is in the rest of the world, both in relative and absolute terms.

Internet use in rural areas is far behind, but growing faster than in urban areas

Percentage of individuals using the Internet, by location



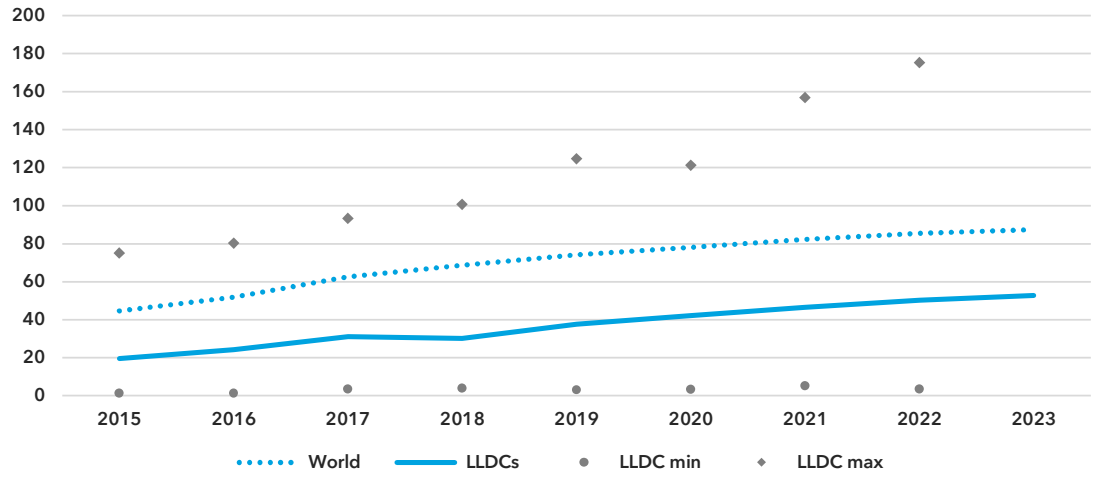
Source: ITU

In LLDCs, 28 per cent of the population in rural areas was online in 2023, compared with 64 per cent of the population in urban areas. This represents a gap of 36 percentage points, which is wider than the global gap of 31 percentage points. Between 2020 and 2023, the urban-to-rural ratio in LLDCs narrowed from 2.8 to 2.3, as rural areas recorded 'catch-up' growth of 12.1 per cent annually, almost double the rate in urban areas (6.2 per cent).

Broadband subscriptions

Despite a decade of strong growth, mobile broadband is far from ubiquitous

Active mobile broadband subscriptions per 100 inhabitants

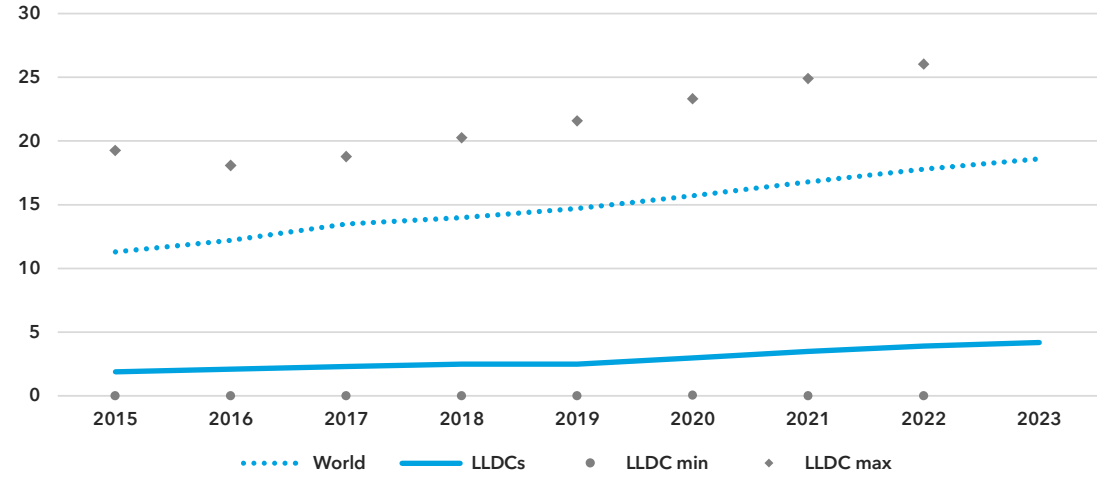


Note: In any given year, *LLDC min* and *LLDC max* represent the LLDC with the lowest and highest value.
Source: ITU

The number of mobile broadband subscriptions in LLDCs grew from 20 per 100 inhabitants in 2015 to 53 per 100 inhabitants in 2023. Despite this strong growth – an average of 13.3 per cent *per annum* – the penetration rate remains well below the world average of 87 active mobile-broadband subscriptions per 100 inhabitants. Significant regional disparities exist in the group of LLDCs: penetration in LLDCs in Asia (76 subscriptions per 100 inhabitants) is almost double the rate in LLDCs in Africa (40 subscriptions per 100 inhabitants). Country-level disparities in 2022 ranged from only 3 subscriptions per 100 inhabitants in Chad to 175 subscriptions per 100 inhabitants in Kyrgyzstan.

Fixed broadband plays a much smaller role in LLDCs, which seem to be caught in a vicious cycle of high costs and low demand, with only 4 fixed-broadband subscriptions per 100 inhabitants in 2023, compared with the world average of 19. The situation is better in LLDCs in Asia, with 11 subscriptions per 100 inhabitants, than in LLDCs in Africa, with only 0.4 subscriptions per 100 inhabitants. At the country level, fixed broadband penetration rates varied from almost zero subscriptions per 100 inhabitants in some LLDCs to 26 subscriptions per 100 inhabitants in Uzbekistan. Fixed-broadband networks are unavailable in many parts of LLDCs, especially in rural areas, and if they are available, they are often prohibitively expensive (see *Affordability* section).

Fixed broadband subscriptions per 100 inhabitants



Note: In any given year, *LLDC min* and *LLDC max* represent the LLDC with the lowest and highest value.
Source: ITU

E-commerce and the digital economy

Digital trade in LLDCs: an opportunity to overcome geography

This section was prepared by UNCTAD in collaboration with the United Nations Office of the High Representative for the Least Developed Countries, Landlocked Developing Countries and Small Island Developing States (UN-OHRLLS), in support of the preparatory process for the forthcoming Third UN Conference on LLDCs.

The digitalization of economic activities could facilitate the participation of LLDCs in international trade by helping to overcome traditional trade barriers and to move more commerce online. UNCTAD has assessed the readiness of LLDCs to engage in digital trade based on their connectivity, legal/regulatory frameworks, e-payment systems, financing, logistics, and skills[3], but statistics are still lacking on the size of e-commerce and the digital economy.[4] Such statistics can improve the readiness of LLDCs to seize opportunities from digitalization by improving the awareness of e-commerce opportunities and market information to support investment in e-commerce startups. LLDCs can refer to UNCTAD methodology to include digital economy measurement in regular business surveys and produce core indicators that are internationally comparable.[5]

Core indicators on the digital economy, including e-commerce, are needed to track progress towards international connectivity and development targets.[6] They are also key inputs to national and regional e-commerce strategies and digital economy policy. In the meantime, data on the enabling environment for e-commerce and the digital economy, as well as data on international trade in ICT goods, ICT services, and digitally-deliverable services, can provide a partial picture of digital development in LLDCs. The indicators on international trade can be compiled from existing databases on exports and imports.

Exports of ICT goods

After the COVID-19 pandemic, global exports of ICT goods increased by 4 per cent, to over USD 2.3 trillion in 2020, reflecting growing reliance on digital technologies to manage the economic slowdown. The growth in ICT goods trade contrasts with the contraction of overall merchandise trade by around 7.5 per cent that year.

The share of ICT goods exports as a percentage of total trade for LLDCs has remained below 1 per cent over the last decade, reaching 0.6 per cent in 2021. The reliance of LLDCs on ICT goods imports underscores the need to ensure the affordability of such goods to facilitate the participation of these countries in the digital economy.

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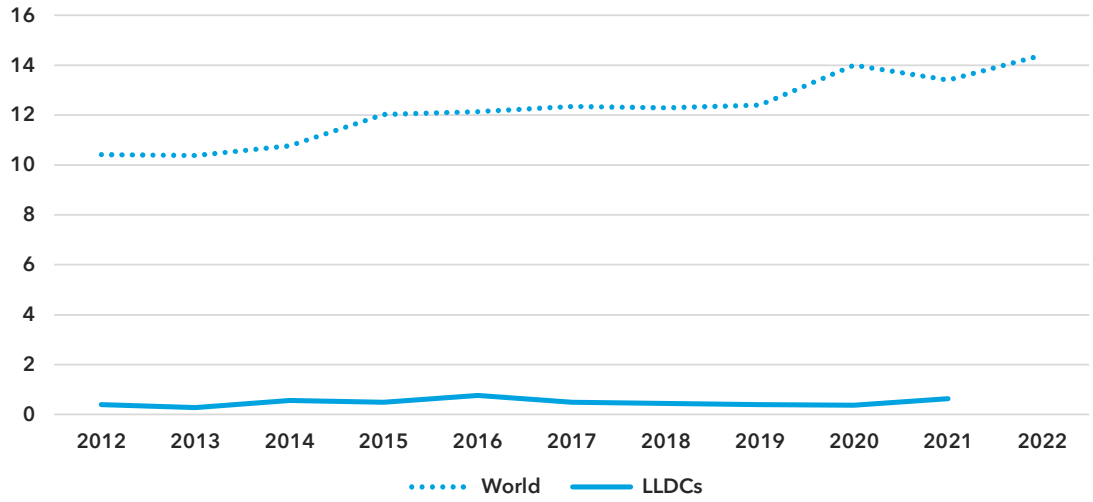
3 https://unctad.org/system/files/official-document/dtlstictmisc2019d8_en.pdf

4 See the UNCTAD Data Center for available data at https://unctadstat.unctad.org/datacentre/. The last update of the digital economy tables by UNCTAD was in 2023, and the next one will be in 2025.

5 See https://unctad.org/publication/manual-production-statistics-digital-economy-2020 for methodological guidance.

6 https://www.itu.int/en/ITU-D/Statistics/Documents/intlcoop/partnership/Thematic_ICT_indicators_for_the_SDGs.pdf

Share of ICT goods exports as a percentage of total trade

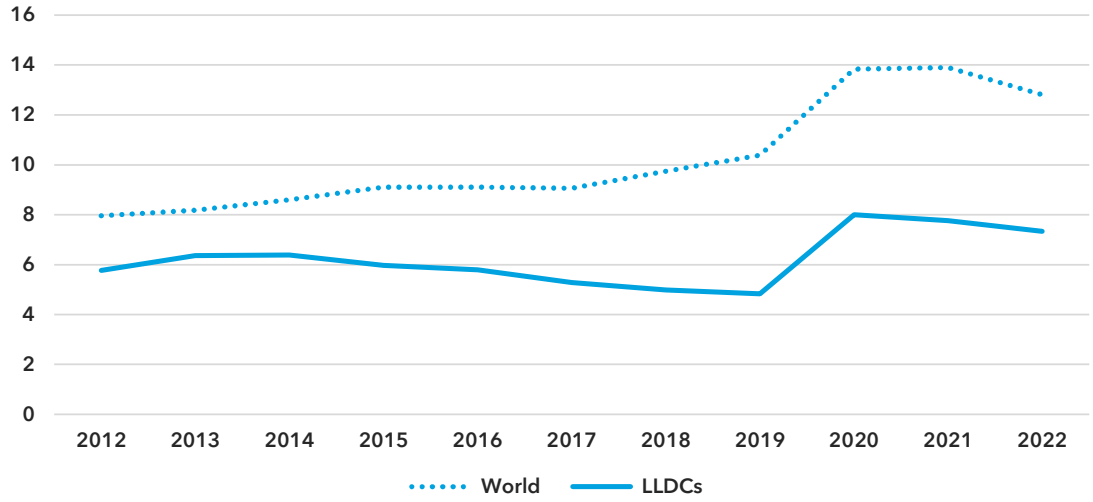


Source: UNCTAD

Exports of ICT services

Although there is a high entry barrier for developing countries, including LLDCs, to engage in ICT goods production and exports, the competitive domestic production of ICT services may hold more opportunities for countries to create and capture value in the digital economy.[7] Although ICT services exports from LLDCs as a share of total services exports have historically lagged behind those of developing countries overall, UNCTAD published figures for 25 LLDCs in 2021 and 18 LLDCs in 2022, showing a diversified market. Within LLDCs and over the last decade, there are large differences and fluctuations in ICT services exports, but in LLDCs the share of ICT services grew from 5.8 per cent of total trade in services in 2012 to 7.3 per cent in 2022.[8]

Share of ICT services exports as a percentage of total trade in services



Source: UNCTAD

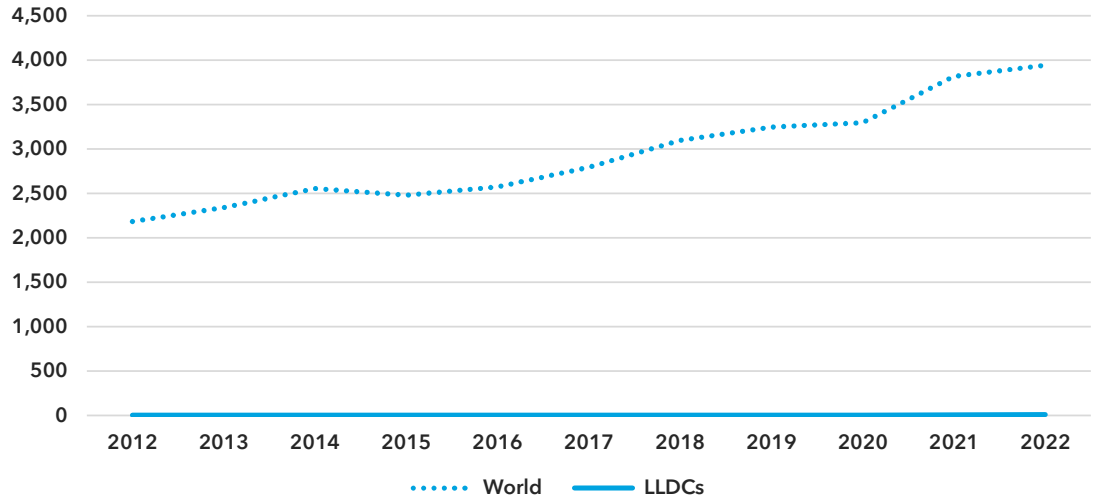
[7] https://unctad.org/system/files/official-document/der2019_en.pdf
[8] https://unctad.org/system/files/official-document/dgff2021_en.pdf

Exports of digitally-deliverable services[9]

Beyond ICT services, the digital transformation of the global economy has led to other services being increasingly tradeable and delivered remotely. The offshoring of business services represents an opportunity for LLDCs to become part of digital value chains by producing and exporting such services. Exports in digitally-deliverable services were also resilient following the global trade slowdown due to the COVID-19 pandemic, experiencing exceptional growth of 16 per cent in 2021 and a more moderate growth of 3 per cent in 2022.

Despite continued growth in all regions, developed economies still dominated the market with 76 per cent of digitally deliverable services exports in 2022. LLDCs accounted for merely 0.3 per cent of digitally-deliverable services exports.[10] In the last decade, the exports of digitally-deliverable services from LLDCs grew from USD 6.1 billion in 2012 to USD 10.6 billion in 2022.

Exports of digitally deliverable services, USD billions at current prices

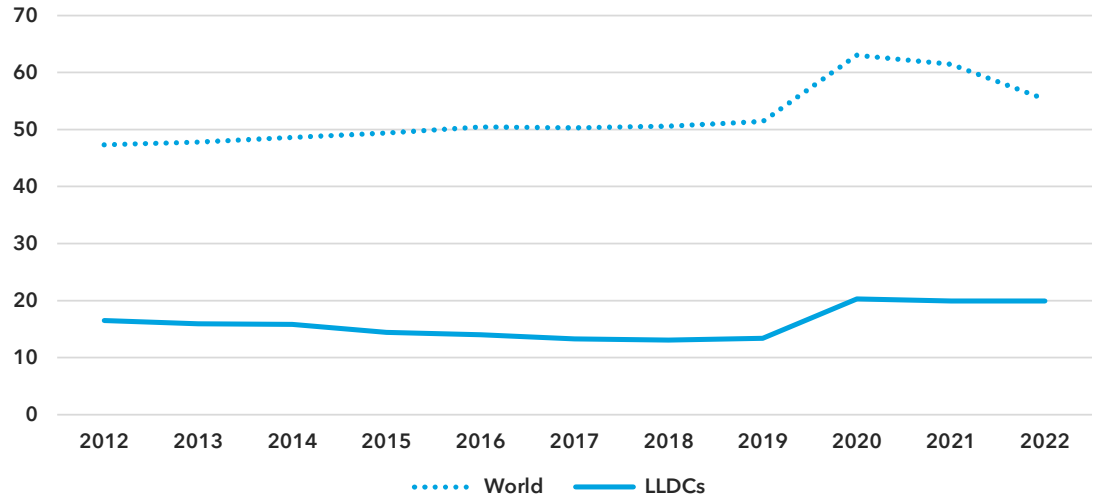


Source: UNCTAD

Concerning the significance of digitally-deliverable services exports in terms of their own total trade in services, LLDCs have shown a fluctuating but generally growing trend over the last decade. The share of digitally-deliverable services exports as a percentage of total trade in services for LLDCs overall has grown from 16.5 per cent in 2012 to almost 20 per cent in 2022. LLDCs in Asia have shown the most growth, rising from 15.2 per cent in 2012 to almost 27.5 per cent in 2022.[11]

[9] Digitally-deliverable services are services that can be delivered remotely over computer networks.
[10] https://unctad.org/news/digitally-deliverable-services-boom-risks-leaving-least-developed-countries-behind
[11] See also https://unctad.org/system/files/official-document/tdstat48_FS06_en.pdf

Share of digitally deliverable services exports as a percentage of total trade in services



Source: UNCTAD

Data gaps related to e-commerce and the digital economy

LLDCs need more and better data on e-commerce and the digital economy, particularly on the use of ICTs by enterprises. As digitalization progresses, LLDCs will also need to know the extent businesses are using the Internet and adopting e-commerce, the value of e-commerce transactions, and the barriers to adoption that policy could address. The UNCTAD eTrade readiness assessments of LLDCs recommend that indicators to monitor e-commerce activities and volumes of transactions, as well as gender disaggregated data (share of women entrepreneurs involved in digital economy activities), are included as part of national e-commerce strategies.

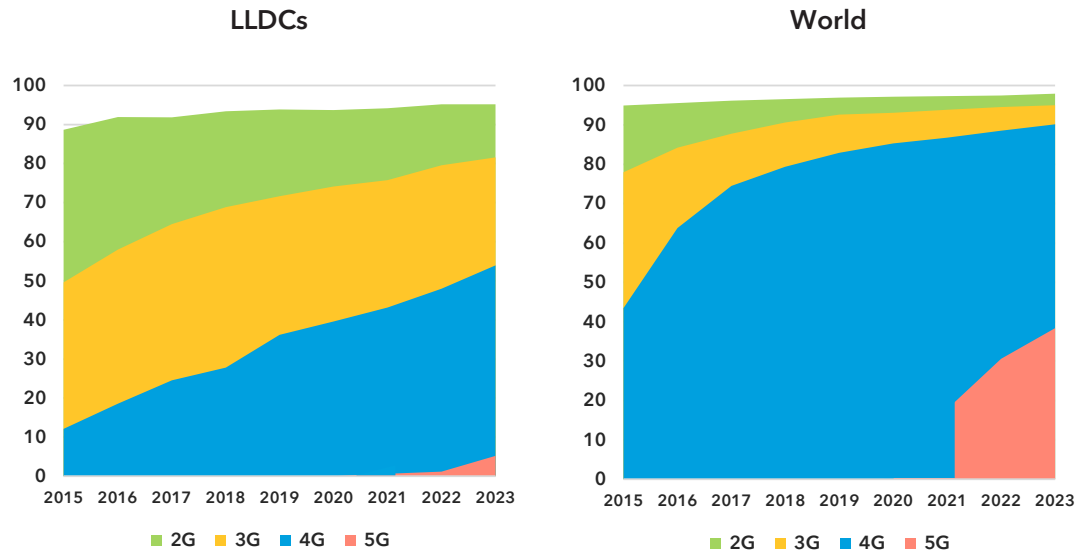
While exports of digitally deliverable services measure one dimension of digital trade, there are few statistics on the use or value of digitally ordered trade (international e-commerce) in developing countries. Measurement is also needed for domestic e-commerce, which tends to be more significant than international e-commerce.[12] Building the capacity of national statistical offices to measure e-commerce and other aspects of the digital economy is key to enabling evidence-based policymaking on these issues.

[12] https://unctad.org/system/files/official-document/dtlecde2023d3_en.pdf

Mobile network coverage

Universal broadband coverage still elusive in LLDCs

Percentage of population covered by type of mobile network



Note: The values for 2G, 3G and 4G networks show the incremental percentage of the population that is not covered by a more advanced technology network (e.g. in 2023, 82 per cent of the population in LLDCs was covered by a 3G network or above, that is 5 per cent + 49 per cent + 28 per cent). There are insufficient data to produce estimates for 5G coverage prior to 2021.
Source: ITU

In LLDCs, and most developing countries, mobile broadband (3G or above) is the main way – and often the only way – to connect to the Internet. And yet, only 82 per cent of the LLDC total population is covered by a mobile broadband signal, compared with 95 per cent of the world's population. For LLDCs, this leaves an *access gap* of 18 per cent of the population who cannot access the Internet: 5 per cent have no mobile signal at all, while 13 per cent are only covered by a narrowband (2G) cellular signal that does not connect to the Internet. The access gap in LLDCs is more than three times larger than the global access gap of 5 per cent, made up of the 2 per cent of the population without mobile signal and 3 per cent with only a 2G signal. Similar to other connectivity measures, performance varies across LLDCs. For instance, the access gap is only 3.4 per cent in LLDCs in Asia, but 20 per cent in LLDCs in Africa.

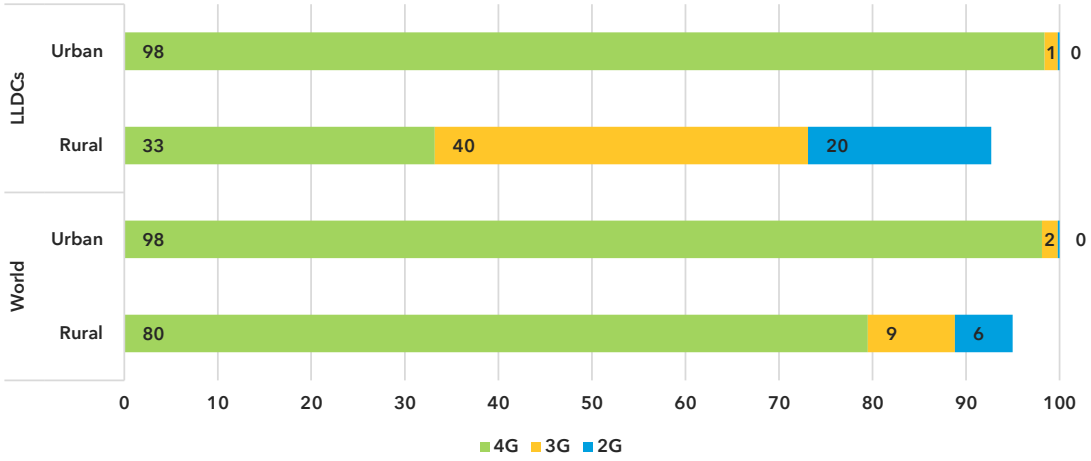
These results show that as a group, LLDCs are far from reaching the Sustainable Development Goals Target 9.c of universal mobile broadband coverage despite having passed the deadline to meet that target three years ago ("to significantly increase access to information and communications technology and strive to provide universal and affordable access to the Internet in least developed countries by 2020").

Network connection and access are pre-requisites for using the Internet: while 18 per cent of the population in LLDCs cannot access the Internet, another 43 per cent has access to it but does not use it. This *usage gap* is a reminder that there are other barriers besides access that stand in the way of Internet use.[13]

[13] For a discussion of the usage gap and the barriers to connectivity, see The Global Connectivity Report 2022 published by ITU.

Virtually all urban areas in LLDCs are covered by a mobile broadband network, 98 per cent of those to a 4G network. However, in the rural areas of LLDCs, 7 per cent of the population has no mobile signal at all and another 20 per cent only has access to a 2G network, meaning that 27 per cent cannot access the Internet. Forty per cent can only rely on a 3G network. This means that only a third of the rural population of LLDCs is covered by a much faster 4G network.

Population coverage by type of mobile network and location, 2023

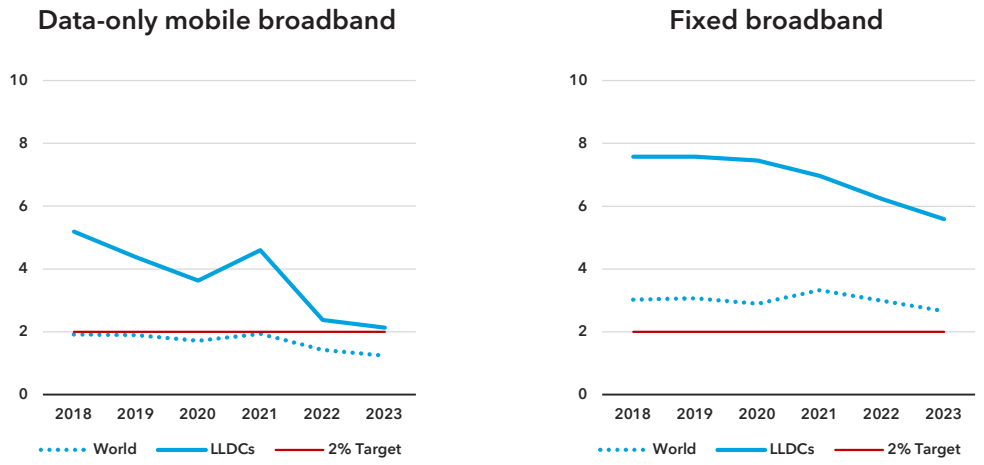


Note: The values for 2G and 3G networks show the incremental percentage of the population that is not covered by a more advanced technology network (e.g. 89 per cent of the world's rural population is covered by a 3G and above network, that is 80 per cent + 9 per cent). It Is not yet possible to estimate 5G coverage in urban and rural areas.
Source: ITU

Affordability

Despite rapid falls in mobile-broadband prices, affordability targets remain elusive

Price of broadband services as a percentage of gross national income per capita



Note: Data-only mobile broadband refers to a basket of services including 2 GB monthly data allowance at 3G or higher technology. Fixed broadband services include 5 GB monthly allowance at 256 kbit/s or higher speeds. To eliminate the effect of annual changes in data availability on price trends, median values shown here were calculated based on a comparable set of countries for which data is available for each year from 2018 to 2023 (30 LLDCs for the mobile-broadband basket and 25 for the fixed-broadband basket).
Source: ITU

Affordability is one of the main barriers to universal and meaningful connectivity. In most LLDCs, prices are typically higher than the world medians. But the level of affordability varies across countries and types of service (fixed or mobile broadband).

For instance, the price of the entry-level mobile-broadband basket expressed in per cent of monthly gross national income (GNI) per capita varied in 2023, from 0.6 per cent in Azerbaijan to 32.7 per cent in Chad. The differences are also significant across regions: in LLDCs in Africa, the median price of this basket was 4.8 per cent of GNI per capita, more than four times the price (1.1 per cent) in LLDCs in Asia, which is below the world median (1.3 per cent).

In LLDCs, the price gap between mobile and fixed broadband is wider than elsewhere in the world. The fixed broadband basket typically costs more than twice the global median in LLDCs in general. In addition, fixed broadband affordability differs significantly between LLDCs in Asia and Africa, as the median price in Africa, at 12.8 per cent of GNI per capita, was nearly three times that in Asia and more than four times the world median.

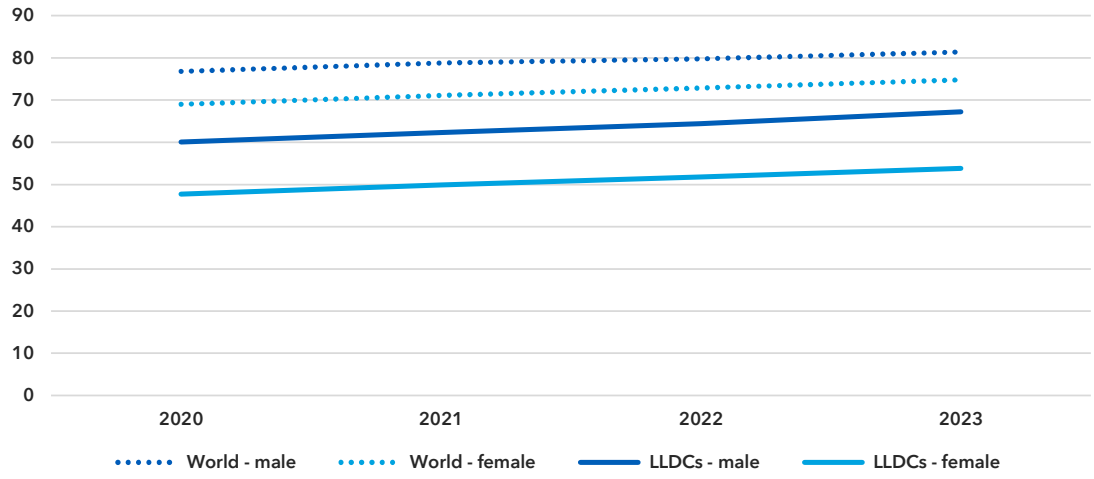
The United Nations Broadband Commission has set as target that the price of an entry-level broadband subscription should not exceed 2 per cent of GNI per capita. In 2023, only 12 of the 31 countries for which data is available met this affordability target. There were a further 11 LLDCs where mobile broadband services cost less than 5 per cent of monthly GNI per capita.

The affordability of broadband services in LLDCs improved faster than in the rest of the world. The median price for a data-only mobile subscription dropped from 5.2 per cent of monthly GNI per capita in 2018 to 2.1 per cent in 2023. The rate of decline was faster in LLDCs in Africa than in Asia. In contrast, during the same period, the price of the fixed-broadband basket *increased* in LLDCs in Asia, with higher retail prices triggered by investments in network deployment and technology upgrades.

Mobile phone ownership and subscriptions

Amidst high mobile phone ownership, the gender divide remains wide

Percentage of individuals owning a mobile phone, by gender

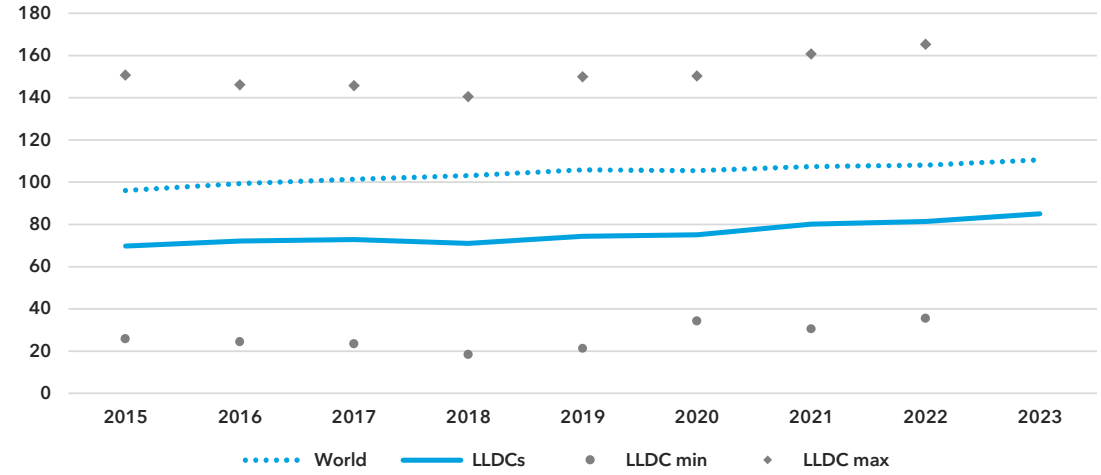


Note: Individuals aged 10 or older
Source: ITU

In 2023, six out of ten people owned a mobile phone in LLDCs, which is closer to the global average (78 per cent) than observed for other indicators such as Internet use where the gap is nearly 30 percentage points. Not surprisingly, this was also the case for mobile cellular subscriptions: the LLDC average of 85 subscriptions per 100 inhabitants is relatively close to the world average of 111. The gap in mobile broadband is much wider: 53 subscriptions per 100 inhabitants in LLDCs compared with 87 for the world. This is partly because of the lack of infrastructure to access a mobile broadband network, but these results also suggest that voice and text remain an important means to communicate in LLDCs.

The gender gap for mobile phone ownership remains wide. In 2023, 67 per cent of the male population (aged ten and above) in LLDCs owned a mobile phone compared with 58 per cent among the female population. This translates into a gender parity score of 0.80, much lower than the global gender parity score of 0.92, and only a negligible improvement in the last four years.

Mobile cellular subscriptions per 100 inhabitants

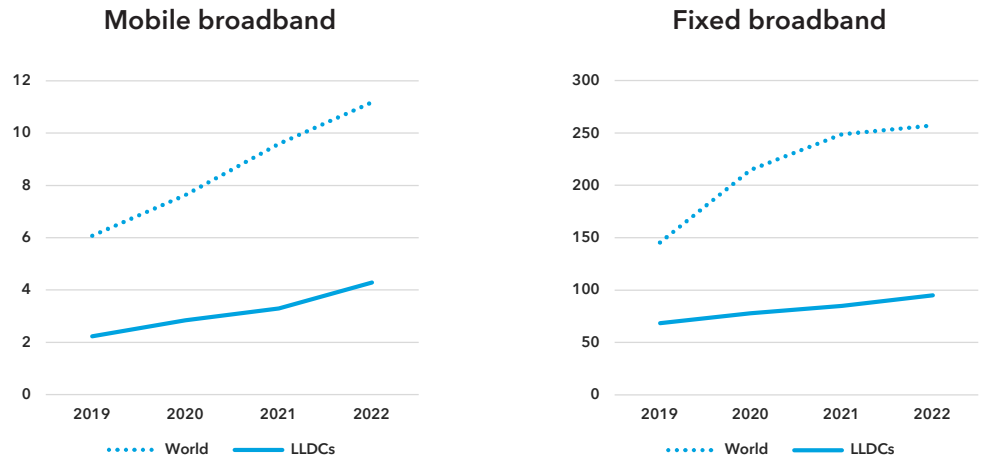


Note: In any given year, *LLDC min* and *LLDC max* represent the LLDC with the lowest and highest value.
Source: ITU

Internet traffic and international bandwidth

Despite less availability, fixed broadband is important for heavy Internet usage

Broadband traffic per subscription per month (GB)



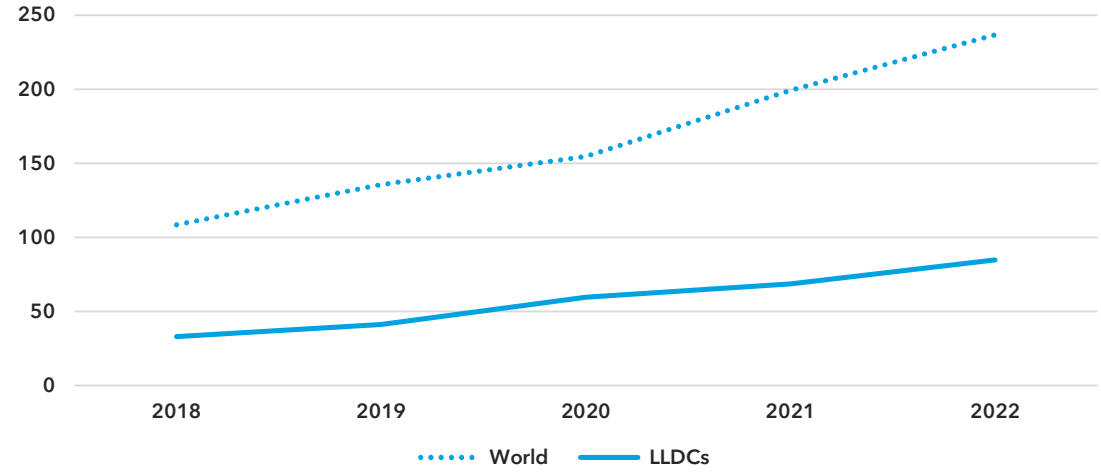
Source: ITU

Globally, fixed broadband accounted for almost five times the Internet traffic of mobile-broadband. In LLDCs, the ratio of fixed-broadband to mobile-broadband traffic stood at 1.7, reflecting much less availability and use of fixed broadband.

Nevertheless, when available, fixed broadband is the network of choice for heavy data usage, even in LLDCs. While the average monthly consumption of mobile data stood at 4.3 GB per mobile subscription in LLDCs in 2022, fixed broadband subscriptions averaged 95 GB. Mobile broadband Internet traffic per subscription in LLDCs increased at a rate slightly above that observed globally. However, the gap between LLDCs and the rest of the world widened by 10 percentage points between 2019 and 2022 for fixed broadband data usage.

Insufficient international connectivity infrastructure is one of the key connectivity barriers in LLDCs. At 85 kbit/s on average, an Internet user in an LLDC can use about a third of the international bandwidth compared to the world average. Over the 2019 to 2022 period, this gap increased by four percentage points.

International bandwidth per Internet user (kbit/s)



Source: ITU

Disparity between LLDCs

Averages conceal vast disparities in connectivity performance among LLDCs

Landlocked developing countries are often analysed as a single group but there are significant variations. For example, in terms of income levels, GNI per capita in 2022 ranged from less than USD 500 in some LLDCs to over USD 10 000 in Kazakhstan. And while all countries in this group are landlocked – by definition –, their terrain varies from mountainous to desert to tropical grasslands.

Given these differences, it can be useful to group LLDCs based on elements of connectivity performance. Specifically, countries can be grouped according to indicators of Internet use, mobile phone ownership, mobile and fixed subscription levels, affordability of entry-level mobile and fixed broadband, and gender equality. This 'cluster analysis' yields four distinct groups of LLDCs, whose respective members share similar ICT profiles.

The first group, made up of Armenia, Azerbaijan, Bhutan, Bolivia (Plurinational State of), Botswana, Eswatini, Kazakhstan, Kyrgyzstan, Lao P.D.R., Moldova, Mongolia, North Macedonia, Paraguay, Turkmenistan, and Uzbekistan is characterized by levels of ICT usage and ownership near or above the world average. Affordability is also in line with world averages with the average price of a data-only mobile broadband basket below the Broadband Commission target of 2 per cent of monthly GNI per capita or lower. It is also the only group among LLDCs with notable fixed broadband penetration (12 subscriptions per 100 inhabitants), whereas the average penetration rate in the other three groups is almost zero. In addition, the relative gender gap for Internet use is relatively narrow – closer to gender parity than global averages. While the relative level of connectivity of these countries is higher than of other LLDCs, the general level of development of some remains low. Bhutan and Lao P.D.R. are also classified as Least Developed Countries (LDCs) making their classification in this more advanced group notable.

By contrast, the second group of LLDCs – consisting only of Lesotho and Zimbabwe – has much lower levels of mobile and fixed subscriptions, Internet use, and mobile phone ownership compared to the first group. The group also has much higher prices relative to GNI per capita. However, the digital gender gap has been closed in these two countries – a notable achievement particularly in Lesotho, another country classified as an LDC.

The third group, consisting of Afghanistan, Burkina Faso, Ethiopia, Malawi, Mali, Nepal, Niger, Rwanda, Tajikistan, Uganda, and Zambia, is like the second group with slightly lower average shares of Internet use, mobile phone ownership and broadband subscriptions. Data-only mobile broadband prices are lower than for the second group. The major distinction between this group and the second group is in gender equality – the relative gender gap in Internet use is extremely wide. Among these countries, all but Tajikistan are LDCs.

The fourth and final group is characterized by the lowest levels of ICT use and ownership, lowest subscription levels and poorest affordability measures of these groups. This demonstrates the development challenges present in these countries – Burundi, Central African Republic, Chad, and South Sudan. In this group, the average for Internet use remains below 20 per cent. In addition, these countries are characterized by especially challenging affordability issues with the median country's data-only mobile broadband plan priced at over 20 per cent of monthly GNI per capita. Each country in this group is also an LDC.

The diversity of these groups of countries underlines the need for flexibility in approaching the varied challenges of bringing universal and meaningful connectivity to people living in LLDCs. The underlying conditions in each country must be fully understood to develop truly impactful policies.

Average of key ICT indicators by group of similar LLDCs, 2022

	Group				
Indicator (units)	**1 (15 LLDCs)**	**2 (2 LLDCs)**	**3 (11 LLDCs)**	**4 (4 LLDCs)**	**World average**
Share of individuals using the Internet (%)	77	40	28	12	**64**
Gender equality – Internet use (relative gap)	0.94	1.12	0.72	0.80	**0.88**
Share of individuals owning mobile phones (%)	88	60	55	31	**76**
Mobile broadband subscriptions (per 100 inhabitants)	95	63	53	6	**85**
Fixed broadband subscriptions (per 100 inhabitants)	12.2	0.8	0.7	0.0	**18**
Data-only mobile broadband prices (as a % of GNI per capita)	1.2	11.7	5.4	22.5	**1.5**
Fixed broadband prices (as a % of GNI per capita)	4.0	7.8	24.1	*	**3.2**

* Missing data
Note: Countries were assigned to groups using hierarchical clustering (detailed explanation available at https://uc-r.github.io/hc_clustering). Missing data were imputed based on overall ranked performance of countries for available indicators. Averages shown are not population-weighted as clustering was performed under the assumption of equal weight per country. *Relative gap* is calculated as the geometric mean of the gender gap for individuals using the Internet and those not using the Internet. *Data-only mobile broadband* refers to a basket of services including 2 GB monthly data allowance at 3G or higher technology. *Fixed broadband* includes 5 GB monthly allowance at 256 kbit/s or higher speeds. Affordability data (*Data-only mobile broadband* and *Fixed broadband*) are group medians to account for outliers and data are from 2022.
Source: ITU

Annex 1: Regional composition

For the purpose of this publication, the 32 LLDCs were grouped according to the following classification:

Africa (16 countries): Botswana, Burkina Faso, Burundi, Central African Republic, Chad, Eswatini, Ethiopia, Lesotho, Malawi, Mali, Niger, Rwanda, South Sudan, Uganda, Zambia, and Zimbabwe.

Asia (12 countries): Afghanistan, Armenia, Azerbaijan, Bhutan, Kazakhstan, Kyrgyzstan, Lao P.D.R., Mongolia, Nepal, Tajikistan, Turkmenistan, and Uzbekistan.

The other four countries (Bolivia (Plurinational State of), Moldova, North Macedonia, and Paraguay) have not been assigned to a group, because the group sizes would be too small. Refer to Tables A.2.2 and A.2.3 of Annex 2 for country values.

Annex 2: Group aggregates and country values for selected connectivity indicators

This annex reports aggregates for the world, LLDCs and LLDCs by subregion in Table A2.1 (LLDCs-Africa and LLDCs-Asia). Values for individual LLDCs are given in Tables A2.2 and A2.3 for selected connectivity indicators. More data is available on the ITU DataHub.

Table A2.1: World aggregates and LLDC aggregates

	2015	2016	2017	2018	2019	2020	2021	2022	2023
Mobile-cellular telephone subscriptions per 100 inhabitants									
World	96.1	99.3	101.4	103.1	105.9	105.5	107.4	108.1	110.6
LLDCs	69.7	72.1	72.9	71	74.5	75.1	80.2	81.4	85.1
LLDCs Africa	56.0	57.8	56.5	55.5	58.2	61.1	69.0	71.3	74.1
LLDCs Asia	91.7	95.9	101.1	97.5	103.5	99.8	99.8	98.4	104.3
Fixed-telephone subscriptions per 100 inhabitants									
World	14.1	13.4	13	12.4	11.9	11.5	11.3	11	10.7
LLDCs	3.8	3.9	3.7	3.5	3.8	3.6	3.5	3.3	3.2
LLDCs Africa	0.8	0.9	0.8	0.7	0.7	0.6	0.5	0.5	0.5
LLDCs Asia	8.5	8.7	8.3	8.2	9.2	8.8	8.8	8.5	8.2
Active mobile-broadband subscriptions per 100 inhabitants									
World	44.6	51.8	62.5	68.6	74.2	78.1	82.3	85.4	87.4
LLDCs	19.5	24.1	31.1	30.1	37.6	42.1	46.5	50.2	52.8
LLDCs Africa	11.5	14.2	20.6	18.2	25.3	29.8	32.6	36.8	39.5
LLDCs Asia	31.8	39.2	47.0	48.3	57.5	62.7	70.9	74.0	76.4
Fixed-broadband subscriptions per 100 inhabitants									
World	11.3	12.2	13.5	14	14.7	15.7	16.8	17.8	18.6
LLDCs	1.9	2.1	2.3	2.5	2.5	3	3.5	3.9	4.2
LLDCs Africa	0.3	0.3	0.2	0.2	0.2	0.3	0.3	0.4	0.4
LLDCs Asia	4.6	5.1	5.8	6.4	6.2	7.5	8.9	10.0	10.7
Population covered by a mobile-cellular network (%)									
World	94.9	95.5	96.2	96.5	96.9	97.1	97.3	97.5	97.9
LLDCs	88.7	92.0	91.8	93.4	93.9	93.7	94.2	95.2	95.2
LLDCs Africa	86.8	90.5	89.8	92.2	92.9	92.5	93.4	94.2	94.2
LLDCs Asia	90.9	94.6	94.7	94.7	95.1	95.2	95.2	96.6	96.6

(continued)

	2015	2016	2017	2018	2019	2020	2021	2022	2023
Population covered by at least a 3G mobile network (%)									
World	78.0	84.2	87.7	90.6	92.6	93.0	93.8	94.5	95.0
LLDCs	49.6	58.0	64.6	68.9	71.7	74.1	75.8	79.6	81.6
LLDCs Africa	46.9	56.1	60.3	65.7	68.9	71.5	73.7	77.6	80.1
LLDCs Asia	54.1	57.6	69.5	72.2	74.1	76.4	77.9	81.4	96.6
Population covered by at least an LTE/WiMAX mobile network (%)									
World	43.5	63.8	74.5	79.3	82.9	85.3	86.7	88.5	90.1
LLDCs	12.1	18.6	24.6	27.8	36.2	39.6	43.2	48.0	54.0
LLDCs Africa	7.9	11.7	15.7	18.3	26.1	27.5	32.0	36.9	43.6
LLDCs Asia	17.7	25.8	35.0	39.4	49.7	58.0	60.6	66.0	71.5
Population covered by at least a 5G mobile network									
World	N/A	N/A	N/A	N/A	N/A	N/A	17.8	30.6	38.4
LLDCs	N/A	N/A	N/A	N/A	N/A	N/A	0.7	1.2	5.2
LLDCs Africa	N/A	N/A	N/A	N/A	N/A	N/A	-	-	2.4
LLDCs Asia	N/A	N/A	N/A	N/A	N/A	N/A	2.3	3.7	10.5
International bandwidth usage per Internet user (kbit/s)									
World	52.2	66.7	85	108.5	135.6	154.6	199.2	236.7	N/A
LLDCs	24	27.2	25.3	33	41.2	59.5	68.6	84.7	N/A
Mobile-broadband traffic per subscription (GB)									
World	N/A	N/A	N/A	N/A	72.9	91.6	115	134.1	N/A
LLDCs	N/A	N/A	N/A	N/A	26.8	34.1	39.6	51.4	N/A
Fixed-broadband traffic per subscription (GB)									
World	N/A	N/A	N/A	N/A	1 745.1	2 577.2	2 984.8	3 086.2	N/A
LLDCs	N/A	N/A	N/A	N/A	820.4	936.6	1 019.7	1 141.2	N/A
Individuals using the Internet (%)									
World	39.9	42.9	45.4	48.6	53.2	59.3	62.2	64.4	67.4
LLDCs	18.7	20.6	22.5	24.9	27.6	29.9	32.6	35.8	39.2
LLDCs Africa	9.9	11.2	12.7	13.8	15.6	17.9	20	22.6	25.9
LLDCs Asia	32.1	35.4	37.9	43.2	47.8	49.7	53.7	58.3	62.5

(continued)

	2015	2016	2017	2018	2019	2020	2021	2022	2023
Individuals owning a mobile phone* (%)									
World	N/A	N/A	N/A	N/A	69.8	72.9	75.0	76.4	78.1
LLDCs	N/A	N/A	N/A	N/A	51.9	53.8	56.0	58.0	60.0
LLDCs Africa	N/A	N/A	N/A	N/A	42.7	45.0	47.3	48.9	N/A
LLDCs Asia	N/A	N/A	N/A	N/A	65.8	66.5	68.5	71.3	N/A
Data-only mobile broadband basket price as a % of GNI per capita**									
World	N/A	N/A	N/A	1.9	1.9	1.7	1.9	1.4	1.2
LLDCs	N/A	N/A	N/A	5.2	4.4	3.6	4.6	2.4	2.1
LLDCs Africa	N/A	N/A	N/A	2.9	2.8	2.3	2.2	1.3	1.1
LLDCs Asia	N/A	N/A	N/A	11.8	11.8	9.0	9.1	6.3	5.8
Fixed broadband basket price as a % of GNI per capita**									
World	N/A	N/A	N/A	3.0	3.1	2.9	3.3	3.0	2.7
LLDCs	N/A	N/A	N/A	7.6	7.6	7.5	7.0	6.2	5.6
LLDCs Africa	N/A	N/A	N/A	11.8	11.8	9.0	9.1	6.3	5.8
LLDCs Asia	N/A	N/A	N/A	2.9	2.9	3.1	3.2	4.4	4.5

Note: * Individuals aged 10 or older. ** To eliminate the effect of annual changes in data availability on price trends, median values shown here were calculated based on a comparable set of countries for which data is available for each year from 2018 to 2023 (30 LLDCs for the mobile-broadband and 25 for the fixed-broadband basket). All data are ITU estimates. N/A: Not available. For the composition of the regional classification of LLDCs, see Annex 1.
Source: ITU.

Table A2.2: Selected connectivity indicators for LLDCs (Part 1)

Values are for 2022 unless otherwise specified.

	% indiv. using the Internet	Mob.-cell. subs. per 100 inhab.	Fixed-telephone subs. per 100 inhab.	Mobile-broadband subs. per 100 inhab.	Fixed-broadband subs. per 100 inhab.
World (2023)	**67.4**	**110.6**	**10.7**	**87.4**	**18.6**
LLDCs (2023)	**39.2**	**85.1**	**3.2**	**52.8**	**4.2**
Afghanistan	N/A	55.5	0.4	55.5	0.1
Armenia	77.0	135.3	13.2	102.0	18.4
Azerbaijan	*88.2*	106.9	15.8	77.1	20.2
Bhutan	*86.8*	94.9	2.5	98.0	0.4
Bolivia (Plurinational State of)	*73.3*	100.4	3.9	88.8	10.9
Botswana	*77.3*	165.3	3.5	108.2	4.2

(continued)

	% indiv. using the Internet	Mob.-cell. subs. per 100 inhab.	Fixed-tele-phone subs. per 100 inhab.	Mobile-broad-band subs. per 100 inhab.	Fixed-broad-band subs. per 100 inhab.
Burkina Faso	*19.9*	118.6	0.3	71.8	0.1
Burundi	*11.3*	58.1	0.1	8.3	0.0
Central African Republic	N/A	35.5	0.0	5.0	0.0
Chad	*12.2*	68.1	0.0	3.4	0
Eswatini	*58.3*	122.2	3.1	113.5	1.1
Ethiopia	*19.4*	57.9	0.7	26.9	0.5
Kazakhstan	92.3	129.8	14.6	96.2	14.9
Kyrgyzstan	*79.8*	112.2	3.3	175.3	5.9
Lao P.D.R.	*66.2*	63.6	17.6	60.6	2.4
Lesotho	*47.0*	67.5	0.3	67.1	0.4
Malawi	*27.7*	60.1	0.0	38.3	0.1
Mali	*33.1*	114.5	1.4	58.5	0.8
Moldova	*63.5*	127.4	29.1	86.5	24.4
Mongolia	*83.9*	142.3	14.0	117.6	12.9
Nepal (Republic of)	*49.6*	129.6	2.4	89.1	4.7
Niger	*16.9*	61.8	0.2	28.0	0.1
North Macedonia	*84.2*	97.8	20.9	69.7	24.6
Paraguay	76.3	127.7	2.5	70.9	10.9
Rwanda	*34.4*	79.9	0.1	60.1	0.3
South Sudan	*12.1*	49.0	0	7.0	0.0
Tajikistan	*36.1*	129.1	5.2	40.0	0.1
Turkmenistan	N/A	98.6[-1]	11.4	50.0	5.9
Uganda	10[-1]	70.0	0.2	54.4	0.1
Uzbekistan	83.9	106.4	16.4	106.7	26.0
Zambia	*31.2*	99.1	0.5	55.3	0.4
Zimbabwe	*32.6*	87.6	1.8	59.6	1.3

-1: 2021.
Note: Estimates appear in italics.
Source: ITU.

Table A2.3: Selected connectivity indicators for LLDCs (Part 2)

Values are for 2022 unless otherwise specified.

	% pop. covered by a mobile-cellular network	% pop. covered by at least a 3G mobile network	% pop. covered by at least a 4G mobile network	% pop. covered by at least a 5G mobile network	Mobile broadb. basket as a % of GNI p.c. (2023)	Fixed broadb. basket as a % of GNI p.c. (2023)	Mobile broadb. traffic per subs. (GB)	Fixed-broadb. traffic per subs. (GB)	Intern. bandw. per Inter-net user (kbit/s)
World (2023)	**97.9**	**95**	**90.1**	**38.4**	**1.3**	**2.9**	**134.1***	**3,086***	**237***
LLDCs (2023)	**95.2**	**81.6**	**54**	**5.2**	**2.1**	**6.1**	**51.4***	**1,141***	**85***
Afghanistan	92	58[-1]	26[-1]	0[-1]	8.5	19.4	9.8	N/A	35 362
Armenia	100	100	100	0	0.8	3.3	91.6	5 208	201 963
Azerbaijan	100	99.8	94	0	0.6	1.3	35.1	315	119 290
Bhutan	98	97	97	37	0.8	2.6	170.9	246	50 730
Bolivia (Plurinational State of)	100[-1]	87.8[-1]	*74.5*[-1]	*0*[-1]	1.5	8.6	N/A	N/A	67 717[-1]
Botswana	98	98	91	23	0.9	6.1	21.8	768	313 978
Burkina Faso	92.6[-1]	53.2[-1]	36.6[-1]	*0*[-1]	9.8	30.7	1.3[-1]	N/A	N/A
Burundi	96.8	50.6	32.2	0	12.6	N/A	85.7	1 396[-1]	6 613
Central African Republic	*56*[-1]	*47.6*[-1]	*0.3*[-1]	*0*[-1]	27.2	N/A	N/A	N/A	N/A
Chad	86.8	68	36	0	32.7	N/A	34.5[-1]	N/A	20 646
Eswatini	99.1	99.1	81	0	3.6	1.9	6.9	N/A	N/A
Ethiopia	99.1	98.5	33	0	2.4	12.1	19.8	1 401	21 632
Kazakhstan	99	97.7	87.3	5	0.8	1.1	229.2	1 983	125 114
Kyrgyzstan	98.8	98	96.9	0	0.9	4.8	37.6	377	80 660
Lao P.D.R.	95[-1]	85[-1]	52[-1]	*8.1*[-1]	1.7	6.1	42.0[-1]	533[-1]	26 368[-1]
Lesotho	95.8	95.8	85.1	0	4.5	5.6	5.6	440	8 719
Malawi	87.9	85.9	70.2	0	8.8	46.9	16.7	117.3	13 484
Mali	100	70	53	0	9.6	23.8	N/A	N/A	23 608[-1]
Moldova	99.99	99.9	99.2	0[-1]	0.7	1.4	91.8	N/A	516 899
Mongolia	100	100	99	0[-1]	1.2	3.1	120.2	1 678	135 707
Nepal (Republic of)	*93*[-1]	*54.1*[-1]	*45*[-1]	*0*[-1]	2.1	7.8	N/A	N/A	N/A
Niger	*92*[-1]	*24*[-1]	*15*[-1]	*0*[-1]	7.2	N/A	N/A	N/A	N/A
North Macedonia	99.88	99.85	99.6	N/A	0.8	2.9	91.0	2 568	25 518
Paraguay	99.58	98.44	97.6	*0*[-1]	2.0	3.7	N/A	N/A	N/A
Rwanda	98.76	98.76	98.8	0	2.5	30.8	15.5	5 430	19 918

(continued)

	% pop. covered by a mobile-cellular network	% pop. covered by at least a 3G mobile network	% pop. covered by at least a 4G mobile network	% pop. covered by at least a 5G mobile network	Mobile broadb. basket as a % of GNI p.c. (2023)	Fixed broadb. basket as a % of GNI p.c. (2023)	Mobile broadb. traffic per subs. (GB)	Fixed-broadb. traffic per subs. (GB)	Intern. bandw. per Inter-net user (kbit/s)
South Sudan	48	15	15	0[-1]	32.6	N/A	N/A	N/A	604
Tajikistan	*90*[-1]	*90*[-1]	*80*[-1]	N/A	4.4	5.3	N/A	N/A	N/A
Turkmenistan	98	*75.8*[-1]	*67*[-1]	*0*[-1]	2.1	6.4	N/A	N/A	27 218[-1]
Uganda	98	85	31	0[-1]	3.6	46.1	15.3	697	193 642
Uzbekistan	99.5	96	85	12	0.7	4.2	50.9	439	79 409
Zambia	97.1	95.5	91.2	0[-1]	2.0	12.6	N/A	690	34 179
Zimbabwe	94.2	84.3	40.1	2.7	4.8	12.8	11.7	1 117	51 248

*: 2022. -1: 2021.
Notes: Estimates appear in italics; world and LLDC median values are based on a pool of economies with data available for both 2022 and 2023.
Source: ITU.

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ISBN: 978-92-61-38911-6

Published in Switzerland
Geneva, 2024

Photo credit: stock.adobe.com