



# Key findings

Measuring  
the Information  
Society Report  
2016





## Chapter 1. The ICT Development Index (IDI) – Global Analysis

## Key findings

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The ITU ICT Development Index (IDI) is a unique benchmark of the level of ICT development in countries across the world. The IDI combines eleven indicators on ICT access, use and skills, capturing key aspects of ICT development in one measure that allows for comparisons across countries and over time. The IDI 2016, which covers 175 economies worldwide and makes comparisons to IDI 2015, highlights both progress and persistent divides in the global information society.

**Nearly all countries improved their IDI values over the last year, but great disparities continue to exist between more and less connected countries.** The average IDI value rose by 0.20 points to 4.94 points (out of 10), with smaller increases at the top and at the bottom of the list. The gap between the highest and lowest performing countries – one measure of the digital divide – remained almost unchanged, at 7.76 points in IDI 2016.

**The Republic of Korea tops the IDI rankings in 2016 for the second consecutive year.** The top 10 countries also include two other economies in the Asia-Pacific region, and seven European countries. This reflects the high level of ICT investment and innovation occurring in developed and high-income developing economies. The majority of high-performing countries have liberalized and competitive ICT markets that encourage innovation. They also have populations with relatively high incomes and the skills needed to make effective use of ICTs.

**There is a strong association between economic and ICT development, with least developed countries at a particular disadvantage.** The average IDI value for developed countries (7.40) is 3.33 points higher than that for developing countries (4.07), although developing countries improved their IDI value more than developed countries. There is also a strong association between least connected countries, countries that are in the bottom quartile of the IDI 2016 distribution, and least developed countries. Indeed, the bottom 27 countries are all least developed countries, and the gap in IDI values between these countries and higher-performing developing countries continues to widen.

**There has been greater improvement in ICT use than access.** The use sub-index rose by an average 0.37 points, compared with an increase of 0.13 points in the access sub-index, making ICT use a greater factor of change in IDI outcomes between 2015 and 2016. The increase in the IDI use sub-index was mainly a result of strong growth in mobile-broadband subscriptions across the world. In most regions, the increase in ICT access mainly related to progress made in connecting more households to the Internet, while in Africa improvements in mobile-cellular penetration had a greater impact on the value of the IDI access sub-index.

**Countries from around the world showed strong improvements in performance.** The greatest improvement was achieved by St. Kitts and Nevis, which rose from 54th place in 2015 to 34th place in 2016. Other countries showing substantial ICT progress include Myanmar, Algeria and Bhutan. The experiences in investment, policy and regulation of top-ranking and dynamic economies – discussed in further detail in this chapter – are a source of valuable insights for governments and businesses worldwide.



## Chapter 2. The ICT Development Index (IDI) – regional and country analysis

## Key findings

There is a strong association between national and regional levels of ICT development, as captured by the ICT Development Index (IDI), and the level of social and economic development. While the overall regional IDI values did not shift dramatically compared to 2015, some countries made significant progress as a result of infrastructure investment and changes in policy and regulation.

**Europe continues to lead the way in ICT development.** It had the highest average IDI value among world regions (7.35 points). Albania is the only country in Europe falling – slightly – below the global average. This reflects the region's high levels of economic development and ICT investment. Countries in Europe generally have liberalized communication markets with high levels of ICT access, use and skills.

**A number of countries in the Americas significantly improved their performance in the IDI.** Three island countries in the Caribbean – St. Kitts and Nevis, Dominica and Grenada – featured among the most dynamic countries, with strong improvements in their IDI value and rank. Several countries in Latin America, notably Bolivia and Mexico, also made noticeable progress in their IDI performance. Similar to other regions, the growth of mobile-broadband subscriptions played a particularly strong part in these outcomes.

**The Commonwealth of Independent States (CIS) is the most homogeneous region in terms of ICT development.** Nearly all countries in the CIS have IDI values above the global average, and all countries in the region improved their IDI values as a result of increases in mobile-cellular and mobile-broadband penetration.

**The Asia and the Pacific region is, by contrast, the most heterogeneous.** The region's top seven economies have IDI values above 7.50 points and rank within the highest quartile of IDI 2016. The region also includes a number of countries that significantly increased their IDI value and rank over the year, including Bhutan, Myanmar and Malaysia. However, nine out of 34 countries in the region, including several with large populations, are least connected countries (LCCs).

**There is great diversity in ICT development across the Arab States.** The five highest performing countries in the Arab States region are oil-rich high-income economies, but the region also includes a number of low-income countries, three of which are LCCs. This illustrates that the digital divide between the LCCs and the more prosperous countries in the region may be growing.

**Africa is the region with the lowest IDI performance.** The average IDI 2016 value for the Africa region was 2.48 points, just over half the global average of 4.94. The majority of the 39 African countries in IDI 2016 are LCCs. This reflects the lower level of economic development in the region, which inhibits ICT development. The highest growth achieved was in the number of mobile-cellular subscriptions, in contrast to other regions, in which the number of mobile-broadband subscriptions experienced the highest growth.

**Investment, policy and regulation influence the performance of individual countries.** A number of countries rank higher than expected on the IDI relative to their level of economic development. In most regions, a number of countries also significantly increased their IDI rankings in only one year. The experiences of these dynamic countries, several of which are illustrated in this chapter, are a source of insights for other governments and businesses within their regions.



## Chapter 3. The role of ICTs in monitoring the SDGs

## Key findings

In 2015, the United Nations identified 17 Sustainable Development Goals (SDGs) and associated targets, which will guide international development between 2015 and 2030. To measure progress towards achievement of the SDGs, the United Nations Statistical Commission adopted a global framework of indicators. Several SDGs refer to ICTs and technology, and several **ICT indicators were identified to help track SDGs 4, 5, 9 and 17.**

**Monitoring access to computers and the Internet in schools.** SDG 4 is concerned with inclusive and equitable educational opportunities for all. One of its targets is to ensure provision of appropriate and inclusive educational facilities. Available data on schools with access to computers and the Internet suggest that, **while a number of developing countries have achieved 100 per cent access to computers in both primary and secondary schools, many other countries lag behind.**

**Monitoring ICT skills among youth and adults.** Another SDG 4 target is to enhance the skills needed for employment, decent jobs and entrepreneurship. This will be measured by the proportion of young people and adults with a range of ICT skills. Data show that **the share of the population with specific ICT skills is considerably higher in developed countries than it is in developing countries.**

**Monitoring the role of ICTs in women's empowerment.** SDG 5 is concerned with women's empowerment. One of its targets is to enhance the use of ICTs to promote empowerment. Data on the percentage of women and men who own a mobile phone show that **the gender gap in mobile phone ownership and use is higher in lower-income and less connected countries.**

**Monitoring the growth of access to ICTs and the Internet.** SDG 9 calls for increased access to ICTs, working towards "universal and affordable access to the Internet in least developed countries by 2020". One of its targets focuses on the need to increase access to ICTs and the Internet, as measured by the percentage of the population covered by different mobile technologies. **The proportion of the population covered by a mobile-broadband network will reach 84 per cent in 2016 globally, but only 67 per cent in rural areas.** Just over half of the global population is covered by LTE or higher networks and few of those living in rural areas.

**Monitoring the contribution of ICTs to science, technology and innovation.** SDG 17 is concerned with revitalizing the global partnership for sustainable development. One of its targets is to improve cooperation in science, technology and innovation. This will be measured, in part, by monitoring the number and speed of fixed-broadband subscriptions. Data show that **there are substantial differences between developed and developing countries, and within regions, in terms of both the proportion of the population with fixed-broadband subscriptions and the speeds delivered by these subscriptions.** While some countries, such as the Republic of Korea, Denmark and France, have fixed-broadband penetration rates of around 40 per cent and almost exclusively high-speed connections of above 10 Mbps, many low-income economies have less than 2 per cent fixed-broadband penetration rates and exclusively lower-speed connections of below 2 Mbps.

**Monitoring the use of ICTs as an enabling technology.** Another target under SDG 17 is to enhance society's use of technology, including ICTs. This is measured by the proportion of individuals using the Internet. **In 2016, Internet usage rates are about twice as high in developed countries as in developing countries, and more than twice as high in developing countries, as a whole, than as in least developed countries.**



## Chapter 4. ICT prices



## Key findings

Many people continue to be excluded from the global information society, and the relatively high cost of ICT services remains one of the main barriers to ICT uptake. Monitoring prices is critical for developing policies that aim to make ICT services affordable for all citizens.

**Mobile-cellular prices continued to fall in 2015, and more steeply than in previous years.**

For the first time, the average cost of the mobile-cellular basket (which includes 100 SMS and 30 mobile calls per month) in developing countries accounted for less than 5 per cent of GNI per capita. Least developed countries (LDCs) saw a 20 per cent drop in mobile-cellular prices, the strongest decrease in five years. The price drop is linked to the growing availability of prepaid packages that bundle SMS and local calls. Innovative pricing schemes, such as dynamic discounting, are also helping to make the service more affordable for low-income groups.

**The Asia and the Pacific region has the lowest average PPP\$ price for mobile-cellular services of all regions.** It is home to the countries with the lowest mobile-cellular price baskets worldwide: Sri Lanka and Bangladesh, where prices stand out at PPP\$ 2.45 and PPP\$ 4.14 per month.

**Fixed-broadband prices continued to drop significantly in 2015 but remained highest – and clearly unaffordable – in a number of LDCs.** Globally, the price of a basic fixed-broadband connection fell from around USD 80 per month in 2008 to USD 25 in 2015, corresponding to a drop in the ratio of price to average GNI per capita from over 90 per cent to 14 per cent. In LDCs, a fixed-broadband plan with a minimum of 1GB of data per month still corresponds to over 60 per cent of GNI per capita. The service is sold at over USD 300 a month in Uganda, Chad and the Central African Republic, and remains very expensive and clearly unaffordable in some of the small island developing States.

**People in most low-income countries get lower speeds and quality for their money.** In developed countries, the minimum speeds of entry-level fixed-broadband packages have increased considerably in recent years. Developing countries, on the other hand, are only gradually upgrading broadband infrastructure to offer higher speeds. In 2015, not a single developed country offered an entry-level broadband connection with speeds below 1 Mbit/s, but a large majority of LDCs did. These differences in available speeds have an impact on the types of services and applications that users can access and benefit from.

**Mobile-broadband is cheaper and more widely available than fixed-broadband, but is still not deployed in the majority of LDCs.** Globally, handset-based mobile-broadband prices fell from an average of PPP\$ 29 per month in 2013 to PPP\$ 18 in 2015. Mobile-broadband services are offered in only 38 per cent of the LDCs; however, in those countries where the service is offered, handset-based prices more than halved in PPP terms between 2012 and 2015 and currently account for 11 per cent of GNI per capita. Still, mobile-broadband cannot always replace fixed-broadband Internet access, especially in the business sector, and a growing number of applications require higher speeds and better connection quality.

**The decrease in mobile-broadband prices goes hand in hand with an increase in the intensity of use.** Figures on mobile Internet traffic show that the amount of data consumed by each subscription is increasing in most countries for which data are available. This suggests that the reduction in mobile-broadband prices contributes not only to connecting more people but also to fostering more intense Internet usage among those who are already online.



## Chapter 5. Measuring mobile uptake

## Key findings

Mobile phone adoption has largely been monitored based on mobile-cellular subscription data since these are widely available and regularly collected and disseminated by regulators and operators. At the end of 2016, there are almost as many mobile-cellular subscriptions as people on earth and 95 per cent of the global population lives in an area that is covered by a mobile-cellular signal. However, since many people have multiple subscriptions or devices, other metrics need to be produced to accurately assess mobile uptake, such as the number of mobile phone users or mobile phone owners.

**Many people still do not own or use a mobile phone.** Household data from developing countries show that a significant part of the population does not use mobile-cellular services at all. In developing economies where recent household data is available, close to 20 per cent of the population, on average, are still not using a mobile phone. The proportion of mobile-phone ownership is even lower, especially in large developing economies such as Bangladesh, India, Indonesia and Pakistan, where more than 40 per cent of the population do not own a mobile phone.

**Most people who do not own or use a mobile phone are among the youngest (5-14 years old) and the oldest (>74 years old) segments of the population.** Usage and ownership penetration rates amongst these age groups are much lower than amongst the rest of the population. Among the 15-74 age group, 85 per cent or more of the population owns or uses a mobile phone in the countries where data are available.

**Significant gender gaps exist in mobile-phone adoption and the gap is larger for mobile-phone ownership than for mobile-phone use.** Many women in developing countries rely on someone else's mobile phone or SIM card to access mobile-cellular services. The gender divides are associated with differences in income and educational attainment, and reflect other types of social divides. Most people not owning or using a mobile phone have lower incomes and are less educated.

**People living in rural areas are less likely to own or use a mobile phone than people in urban areas.** In several developing countries, sizeable segments of both the urban and the rural population do not yet own or use a mobile phone. Although basic mobile infrastructure is available for most of the global population living in rural areas, rural populations tend to have lower incomes and lower education levels, which are in turn linked to lower mobile-phone ownership and usage.

**Affordability is the main barrier to mobile-phone ownership.** It is the cost of the handset, rather than the cost of the service itself, which is often reported as the main barrier to owning a mobile phone. Another important barrier is the lack of perceived benefits. In communities where overall mobile uptake is low, mobile phone use is perceived to have fewer benefits since fewer community members are also using this mode of communication. Other barriers include poor network quality and lack of ICT skills necessary for accessing the Internet through a mobile phone.

**Universal use of mobile-cellular services has not been achieved yet.** Policy-makers and the telecommunication industry in developing countries should focus on targeted policies for promoting mobile adoption. As the 2030 Agenda for Sustainable Development has pledged, ICTs can be a strong empowerment tool, and no one should be deprived of their benefits because of economic, educational, social or technical barriers.



## Chapter 6. Internet user and activity trends

## Key findings

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In 2016, people no longer *go* online, they *are* online. An increasingly ubiquitous, open, fast and content-rich Internet has changed the way many people live, communicate and do business, delivering great benefits for individuals, governments, organizations and the private sector. Yet many people are still not using the Internet, and many users do not fully benefit from its potential. A better understanding is needed of who is online and who is not, and how people are using the Internet, in order to create a more inclusive information society.

**The benefits of the Internet are still unavailable to over half the world's population.** The offline population – 3.9 billion people globally – is disproportionately female, elderly, less educated, lower income and rural. To bring more people online, it is important to focus on reducing overall socio-economic inequalities. Education and income levels are strong determinants of whether or not people use the Internet.

**Most people have access to Internet services but many do not actually use them.** The spread of 3G and 4G networks across the world had brought the Internet to more and more people. In 2016, mobile-broadband networks covered 84 per cent of the world's population, yet with 47.1 per cent Internet user penetration, the number of Internet users remains well below the number of people with network access. While infrastructure deployment is crucial, high prices, poor quality of service and other barriers are serious obstacles to getting more people to enter the digital world.

**The full potential of the Internet remains untapped, especially for low-income and less educated users.** Internet users with higher levels of education make greater use of more advanced services, such as e-commerce and online financial and government services, than Internet users with lower levels of education and income, who use the Internet predominantly for communication and entertainment purposes. This suggests that many people do not benefit fully from the opportunities of the Internet. **Indeed, the Internet is liable to reinforce existing inequalities, instead of addressing them.**

**Access to the Internet is not enough; policy-makers must address broader socio-economic inequalities and help people acquire the skills they need to take full advantage of the Internet.** This is in line with a more integrated development approach, like that adopted in the 2030 Agenda for Sustainable Development, which highlights that development challenges are linked and cannot be met in isolation.

**A data revolution is needed to better understand who uses the Internet, where and how.** Reliable and valid data on Internet use are currently not available for many developing countries, and almost non-existent for least developed countries. This lack of data is a serious challenge for ICT policy-makers, investors and content producers. The United Nations has called for the use of new data sources, including big data, to supplement official statistics. ITU is responding to this call and has recently launched a new project, “Big Data for Measuring the Information Society”, which explores how big data from the ICT industry can help enhance data collections, benchmarks and methodologies for measuring the information society.