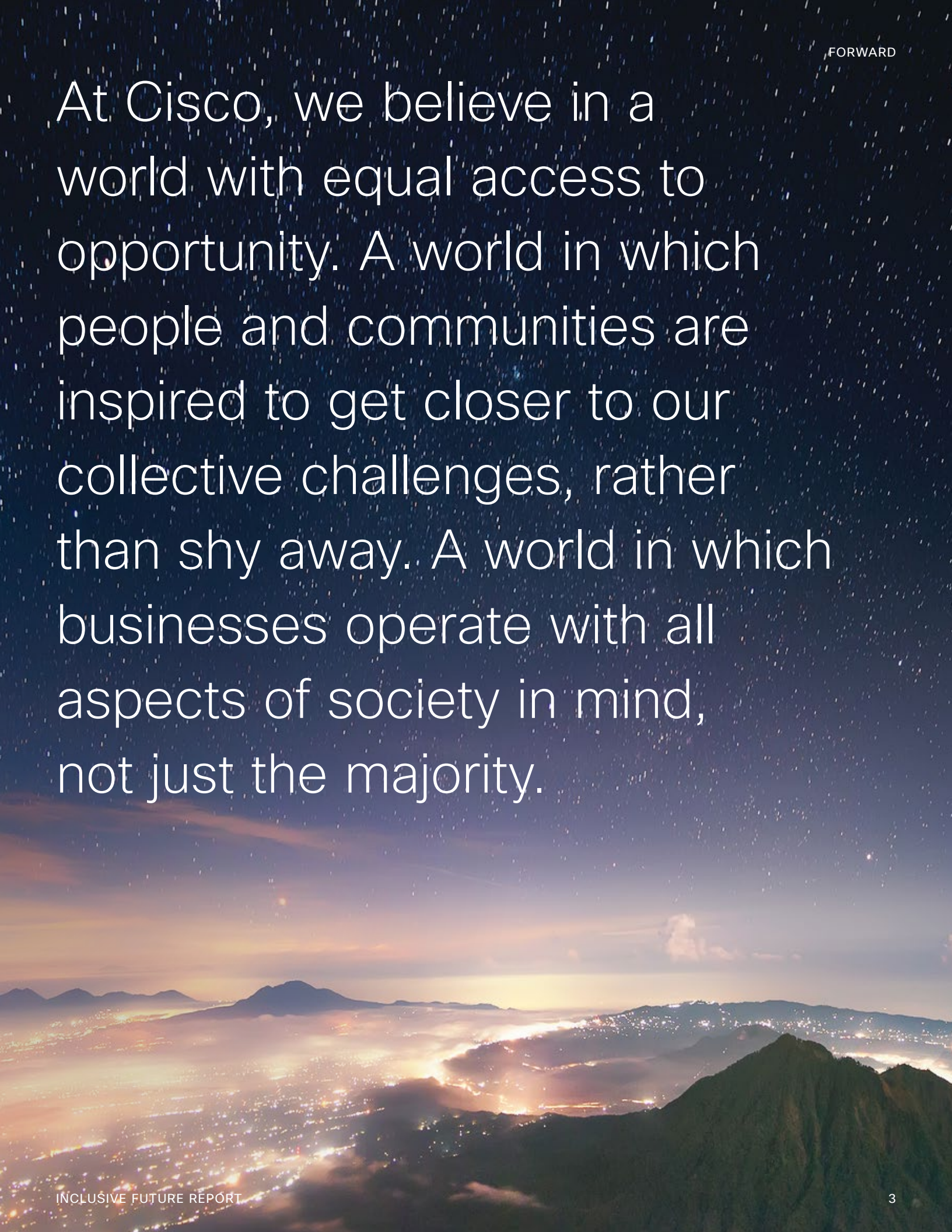
# The role of technology in powering an Inclusive Future

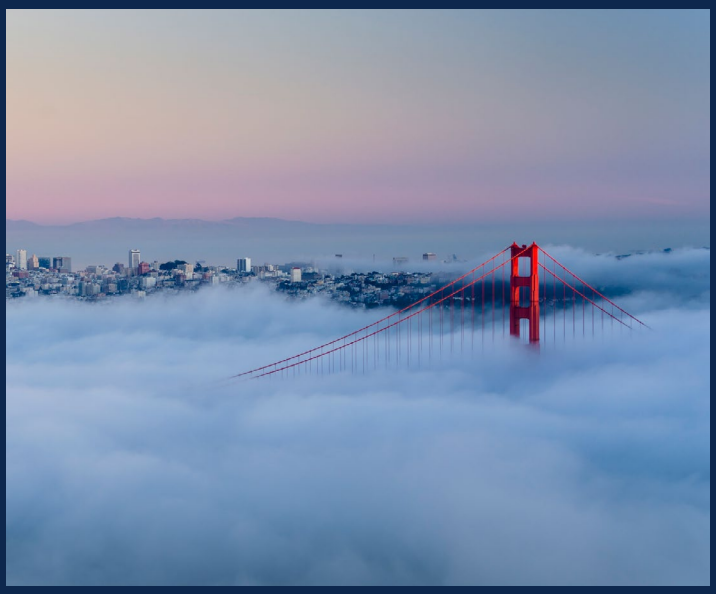
cisco

The bridge to possible

Between one and everyone  there’s a bridge.



At Cisco, we believe in a world with equal access to opportunity. A world in which people and communities are inspired to get closer to our collective challenges, rather than shy away. A world in which businesses operate with all aspects of society in mind, not just the majority.



Cisco is committed to leading the way. To inspire change. To see the world through the eyes of others and step up to the challenges of inequity to create new possibilities for tomorrow. It is Cisco's purpose to power an Inclusive Future.

This is the next step in a world that is already becoming highly digitized. According to the *Cisco Annual Internet Report (2018–2023),* by 2023, machine-to-machine communications will make up 50 percent, or about 14.7 billion, of all networked connections. This mass connectivity, along with other technological advancements such as 5G and artificial intelligence (AI), promise opportunities beyond what we can currently imagine.

But as demonstrated in the *Cisco Global Digital Readiness Index 2019*, a holistic model must be applied when considering a nation's digital readiness. That model should go beyond technology to include basic needs, including human capital development, and the business and startup environment. As the Index shows, digital readiness is not evenly distributed across the globe. This inequity is at the heart of many of the world's biggest challenges, including poverty, access to quality education, healthcare, job opportunities, and more. If not balanced, this divide will lead to even worse challenges for those left behind by the digital revolution.

By 2023, machine-to-machine communications will make up 50 percent, or about 14.7 billion, of all networked connections.

# Contents

This report, *The Role of Technology in Powering an Inclusive Future*, curates additional data sources while building upon the previously mentioned proprietary research reports. Its goal is to better understand how technology impacts inclusiveness—the extent by which everyone is equally able to participate in all the advantages that our societies offer—on a global scale.

# Executive summary

The last four decades have seen a rapid expansion of opportunity for people around the world. Global poverty rates have declined at an unprecedented rate. Economies, measured by GDP, have grown substantially, and the inclusion of women into the paid workforce has grown. Inclusiveness, measured by individual opportunity, quality of life, health, and education levels, has also risen.

Underlying this has been the globalization of the world economy. Millions of people have benefited from the integration of world trade, increasing global capital flows, the automation of industry, and changing demographics. The common enabler throughout these factors has been technology.

While technology drives overall economic expansion, it is more specifically digital connectivity that determines access to economic and social opportunity. Connectivity is critical to create a society and economy in which all citizens can participate and thrive.

In order to create a self-reinforcing cycle that perpetuates social and political inclusion, government and business must support and invest in three key objectives rooted in connectivity and access:

**1**

## Create connection

Access to information and community resources

**2**

## Forge opportunity

Access to take part in the economy through jobs and lifelong education

**3**

## Include everyone

Equal access to public and social services

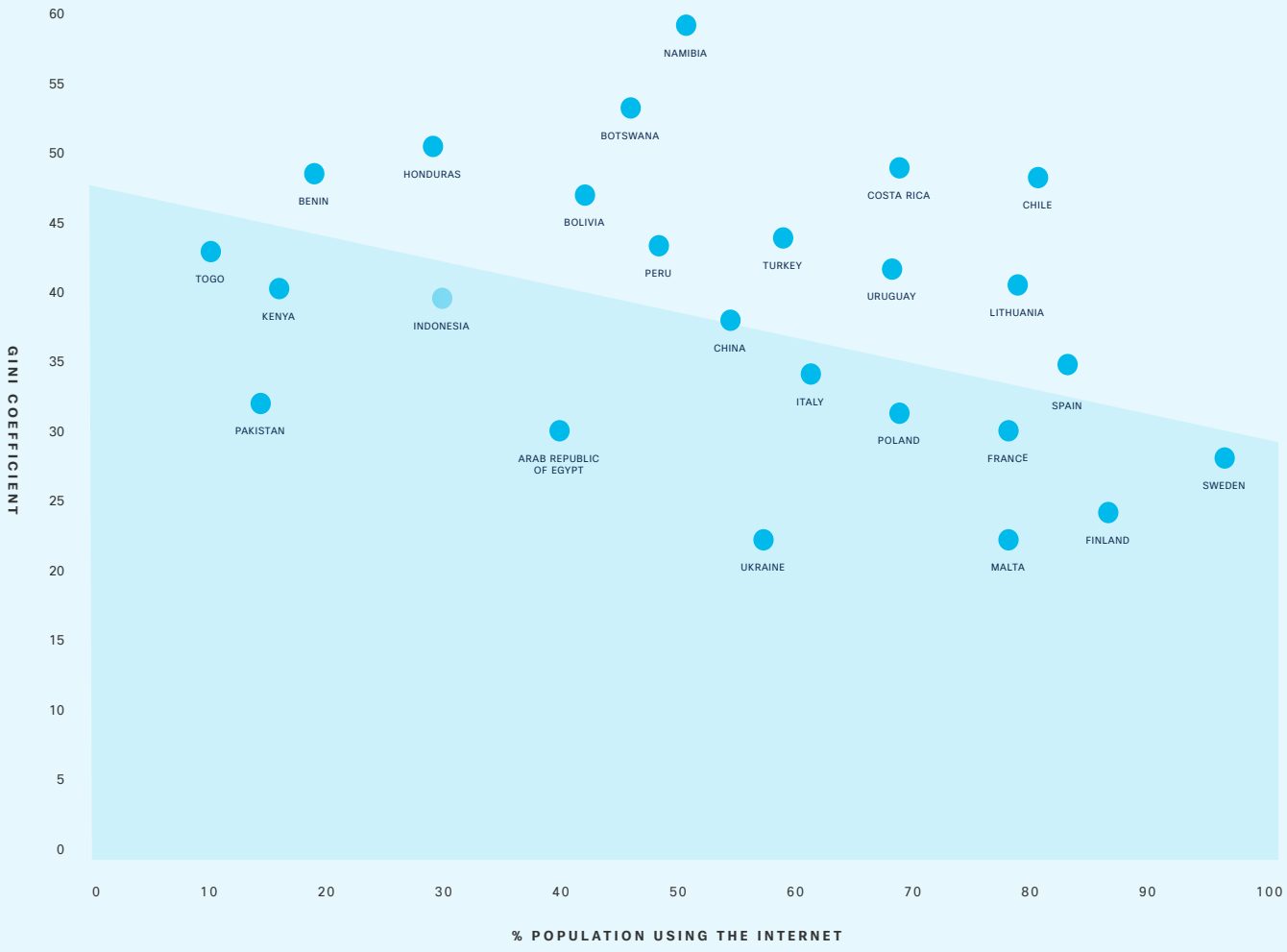
# 1
# Create connection

Digital communications infrastructure is critical to equality, as demonstrated by the fact that Internet usage and lower levels of inequality often have a close correlation.[1]

Access to technology has greatly increased globally in the past decades. In 2000, only 6.7 percent of the world used the Internet, yet by 2017 almost half of the global population did.[2]

# Where Internet usage is higher, inequality tends to be lower.

**Inequality and individuals using the Internet[3]**



Women are 50 percent less likely to be using the Internet than men.

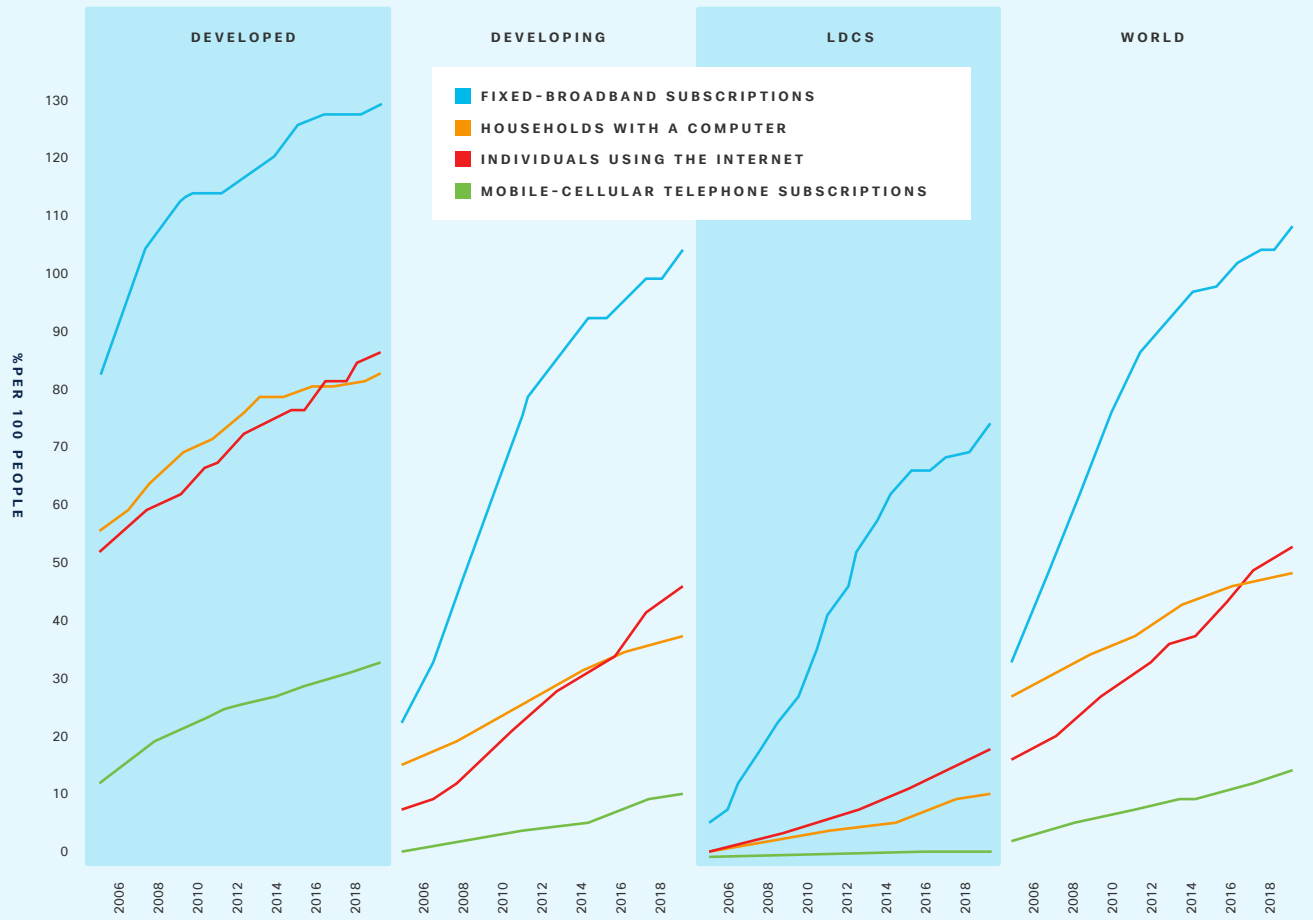
But progress has not been even. According to the World Economic Forum, women are up to 50 percent less likely to be using the Internet than men.[4] Likewise, 87.5 percent of online content is available in just 1 out of 10 languages.[5] For many people, this is not their first language.

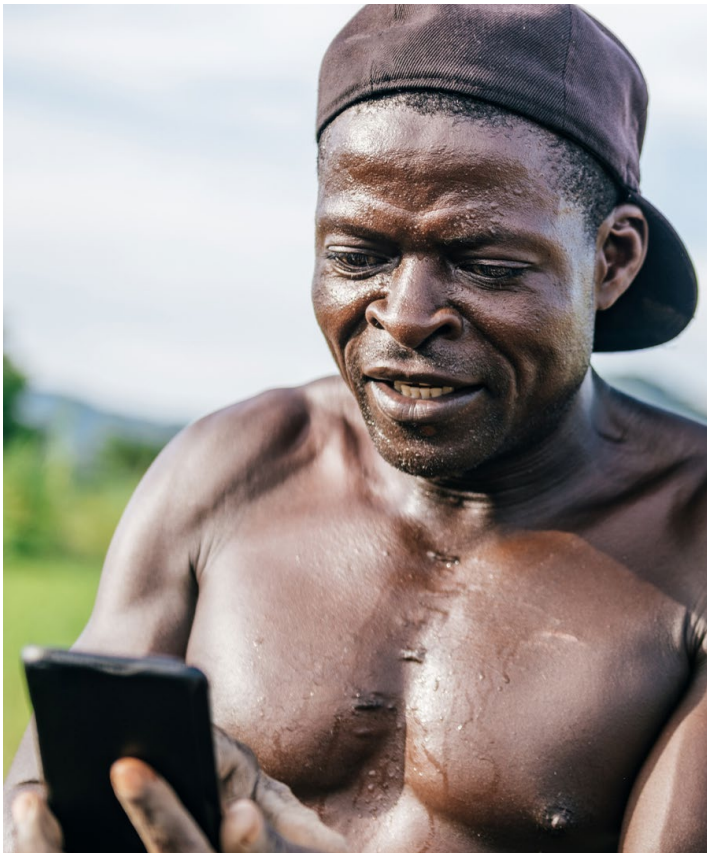
An Internet connection is affordable in only 29 countries. Overall, information and communications technology (ICT) coverage still lags behind in less developed countries.

In many emerging markets, connectivity infrastructure is still at the stage of initial build-out. From roads and railways to electricity and water grids, the digitization of infrastructure better connects remote areas. And networks can be managed in smarter and more resource-effective ways. In many countries, however, the absence of a reliable electricity grid prevents access to IT solutions. These basic challenges must be tackled first.

According to the World Bank, digital divides within more developed countries disproportionately impact rural and impoverished communities. For example, broadband use in the capital cities of India, the Kyrgyz Republic, and Moldova are at the same level as some *Organisation for Economic Co-operation and Development* (OECD) members. But usage in these three countries' rural areas is among the lowest in the world. These gaps halt shared prosperity and limit access to pathways out of poverty.

**ICT indicators across regions, 2005 to 2019[6]**





## Local tech-driven solutions

Innovative tech-driven solutions offer creative ways to design new networks in an intelligent fashion from the outset. In Uganda, for example, 80 percent of the population is not connected to electricity networks,[7] so *Mandulis Energy* transforms the waste from farmers' crops into eco-friendly electricity. This local solution can prepare the ground for connectivity infrastructure.

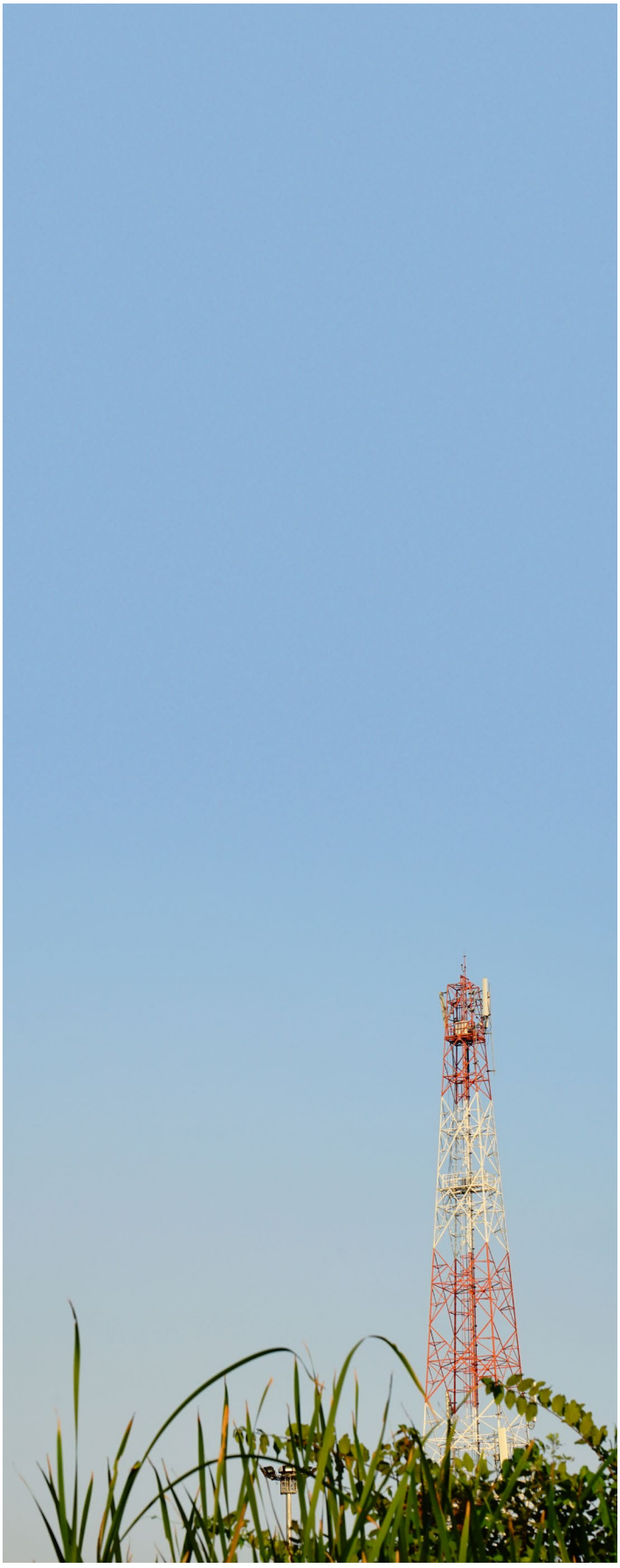
*Akvo*, a smartphone-based data collection tool, brings data analytics to decision making in the development community. A Cisco grant recipient, Akvo is used by hundreds of nonprofit organizations and several governments to monitor water services. Its insights have helped provide safe and sustainable drinking water solutions to an estimated 30.5 million people. In this case, technology informs smart infrastructure build by analyzing where water grid upgrades are most needed.

*Water For People*, a Cisco partner, aims to reach 7 million people over the next decade. Its FLOW app will be crucial for this target, because it provides real-time information on everything from flow rate to water quality. This data is used to make sure Water For People's efforts are effective and directed to the communities most in need of support.

## Leapfrogging to greater benefits

Countries lagging in infrastructure have at times been able to leapfrog older technology as a result of advancements. In many emerging markets, where bank branches and fixed-line telecommunications are scarce, mobile phones are common. For example, many African countries skipped fixed-line infrastructure for mobile technology. This has led to the emergence of mobile money, providing new opportunities for growth.

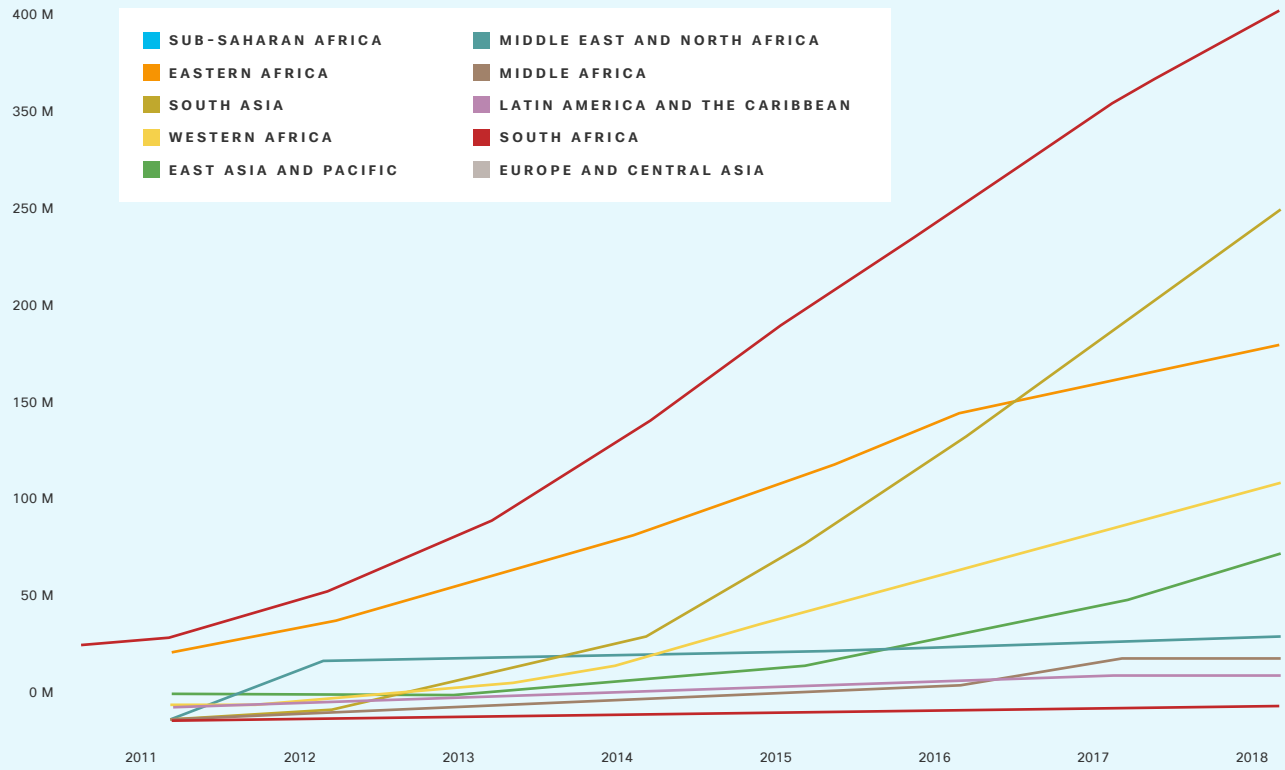
When it comes to mobile money, sub-Saharan Africa has a substantial lead over other regions.



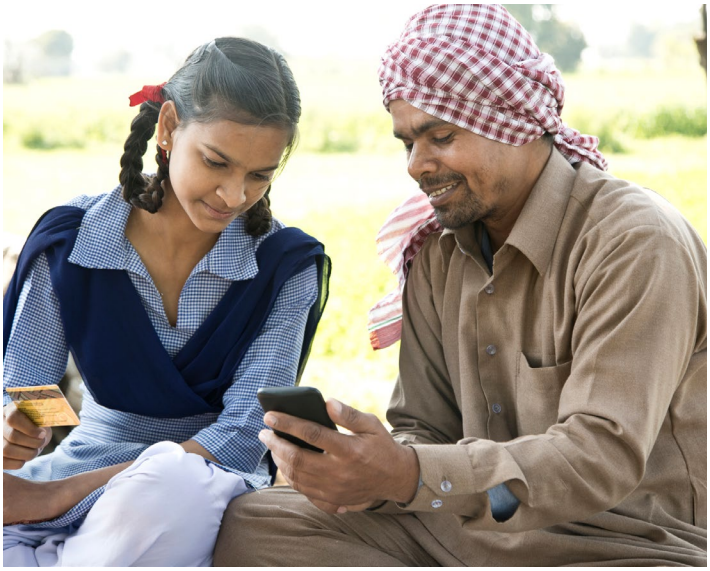
## The value of increased connectivity

In conclusion, the value of investing in digital connectivity infrastructure is massive. According to PricewaterhouseCoopers (PwC), bringing the Internet to those who are offline would add US$6.7 trillion to the global economy.[8] This would lift another 500 million people out of poverty, proving that increasing connectivity is an essential pillar to build greater inclusiveness. This is especially true in less developed countries that lack infrastructure.

### Registered mobile money accounts by region[9,10]



# Case studies



Mobile money and more in sub-Saharan Africa

See more >

Bridging the gap for the unbanked in the Philippines

See more >

# Key takeaways

1

Digital connectivity is the most critical factor for inclusiveness, because it provides pathways out of poverty.

2

Governments and businesses must consider all aspects of inclusiveness, including geography, gender, climate, socioeconomics, culture, and language when approaching connectivity infrastructure build-out.

3

Basic challenges such as access to energy must be addressed first, at the initial phase of build-out.

4

All parties must consider local social and economic priorities through a smart technology lens because new, innovative solutions may arise, allowing for leapfrog opportunities.

# 2
# Forge opportunity

Investing in connectivity infrastructure alone is not enough, because access to the benefits of connectivity will depend on education and skills training. This is especially important today, considering our knowledge-based economy.

Digital skills will continue to increase in importance and determine access to employment and social services. A government's capacity to support its population will be defined by its ability to provide them with the right digital education.

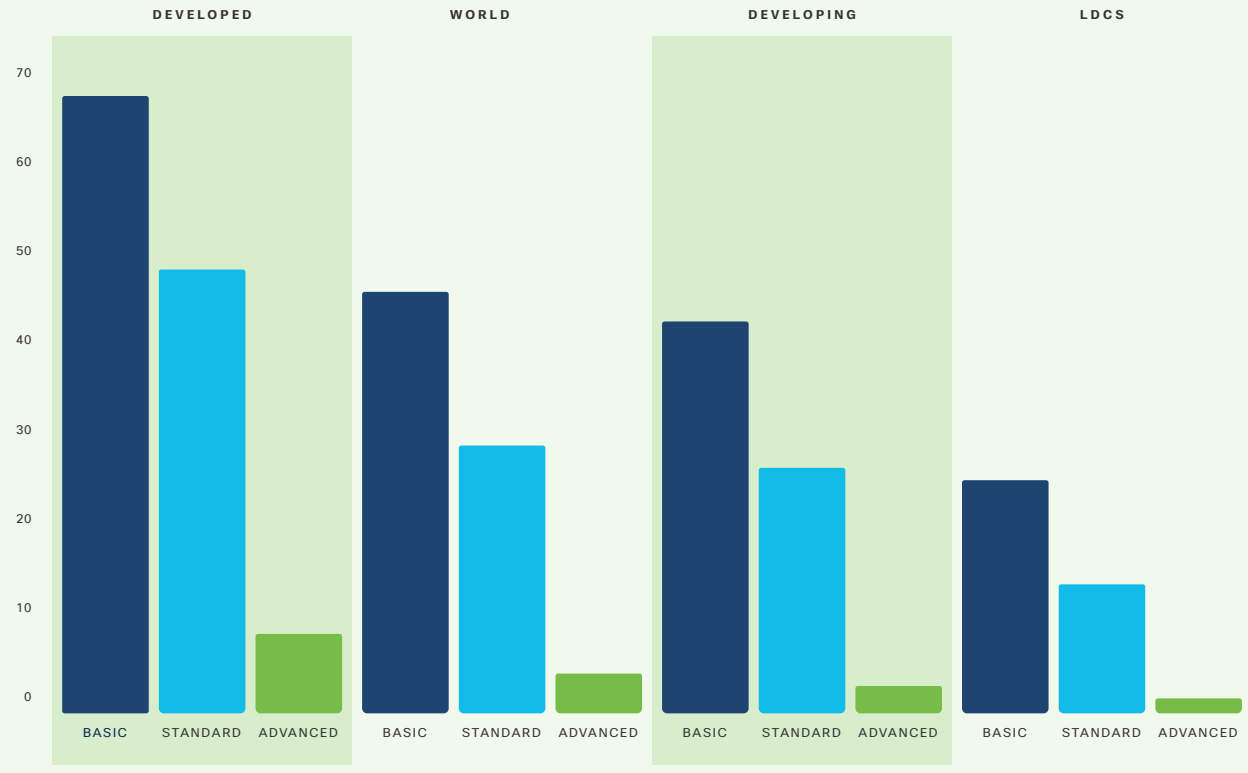
Skills development is, therefore, another essential pillar to enable the cycle of connectivity, economic opportunity, and inclusiveness. According to the World Bank, neglecting to invest in human capital will lead to substantial losses of productivity for the next generation of workers.

Economies that invest the least in health and quality education today will have a workforce that is 33 percent to 50 percent as productive.[11]

Finding new ways to invest in people is vital. Two billion people work in the informal sector. Manufacturing and services rely on ever-more-sophisticated processes. As a result, despite the rise of automation, the demand for human skills is expected to increase. Economic success will, therefore, depend on the knowledge and skills of producers.

Much like connectivity, the distribution of ICT skills is still quite uneven across the world.[12]

## Registered mobile money accounts by region



# In developing economies, four out of five people have never enjoyed significant social services.[13]

They are unprotected by stable wages, social care, or comprehensive education. The resulting challenges will only increase as the world moves deeper into the knowledge economy.

### Technology for learning

Two-hundred sixty-two million children around the world cannot attend school,[14] and 617 million children and adolescents can neither read nor do basic math.[15] Girls in lower-income countries affected by natural disasters are especially vulnerable. This is where solutions like the *Jara Unit* make a difference.

These are wireless, durable, and solar-powered handheld devices. They teach traditional subjects through games and exercises drawn from educational databases. Built following the 2015 Nepal earthquake, they provide learning continuity and support during humanitarian crises. They also educate users on practical skills, like the construction of a basic plumbing system. And they include details of local resources like trauma counseling and microloan financing.


## Technology for skills training

Technology already plays a crucial role in lifelong training and retraining. Technology-driven long-distance learning schemes allow workers to improve their labor market position. Workers can upgrade skills alongside existing jobs. This is crucial in economies without social safety nets to support a displaced worker while they upgrade their skills to new workplace demands.

In emerging countries, initiatives like *Digital Divide Data* support low-income youths. They provide training to succeed in digital jobs. This includes data entry or document conversion. There are also solutions for marginalized groups in developed economies. In Canada, for instance, Cisco supports *Connected North*. The program offers everything from remote healthcare advice to training sessions for people in rural areas.

Like the evolution of mobile banking, these initiatives address multiple drivers of marginalization. By taking a holistic and local approach, technology solutions create even more benefits.

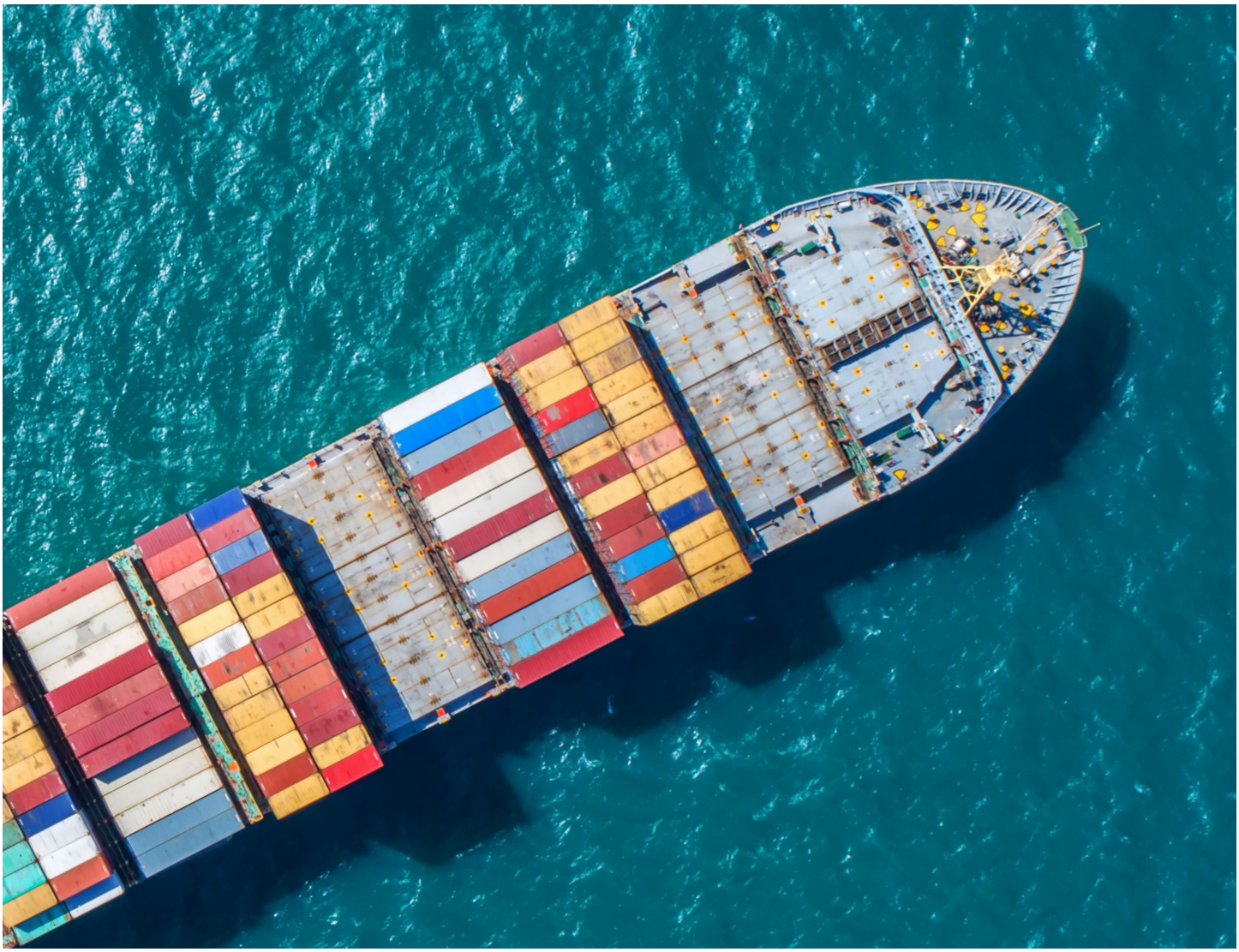
Well-designed technology-based programs can also improve education resources. This matters especially in emerging markets. There, increased government spending has led to impressive progress in school enrollment and degree completion rates. But the outcomes of these investments are limited.

In India, primary school enrollment rates are above 95 percent, but more than 60 percent of children between 6 and 14 cannot read at a second-grade level.[16]

Programs like *mindSpark* make a difference. This computer-assisted learning program provides tailored instruction to students. Its games, videos, and activities draw from a database of over 45,000 questions and real-world challenges. Students are tested and receive explanations and feedback. The software analyzes student data to identify learning levels and deliver new content as the student progresses.

Companies will increasingly compete for the best-skilled employees. They need to retain their well-skilled workforce while increasing productivity and innovation. Upgrading existing worker roles by training employees is crucial.

Technology can help employers maintain the highest skill levels. In an age of global supply chains, this is key in both emerging and developed economies.



### Addressing global workforce gaps

Technology-driven training and education could gradually close the gap on skill differences between countries. This is not just valuable to the employee and the local workforce. If firms invest in training along their global supply chains, over time they can localize production. This could lower transportation and other costs and resources.

The primary assets that will ultimately travel across borders will not be physical goods and resources but intellectual assets and skill sets. This could further lower inequality on a global scale. It could also prevent workers in today's emerging economies from going through the same fate as workers in developed economies in the recent past. Manufacturing jobs at the lower end of the value chain were transferred from developed to emerging markets or replaced by automation. This time, technology can benefit workers while their economies upgrade and move up the value chain.

Already, technology can make a difference. Cisco partner *Good World Solutions* is one example. Its platform Laborlink collects 4 million data points from over 750,000 workers in 16 countries on working conditions and potential training needs. This is an important step in the direction of including rather than exploiting workers.

## Case study

STEM education
in Colombia

See more >

## Key takeaways

1

Access to opportunity is not evenly distributed. Tech-based solutions can be leveraged to ensure access to education and skills training, especially where social service systems are poor and full-time education or retraining is often inaccessible.

2

Governments, corporations, and societies must provide lifelong education in order for workers to keep pace with the knowledge economy.

3

Businesses and governments must provide workforce development, which creates bridges to new roles while improving work conditions and driving innovation.

# 3
# Include everyone

The debate around economic inclusivity must grow to include political and social inclusion.

Technology can increase access to health and social services. This is true for both countries with poor healthcare and social-care infrastructure, and countries with mature health and social systems already under pressure.

Access to healthcare and social care is one of the most promising areas for technology. Innovations like predictive data analysis and drone technology can extend services to remote areas, expanding the benefits of economic growth beyond cities.

### Tech-driven social systems

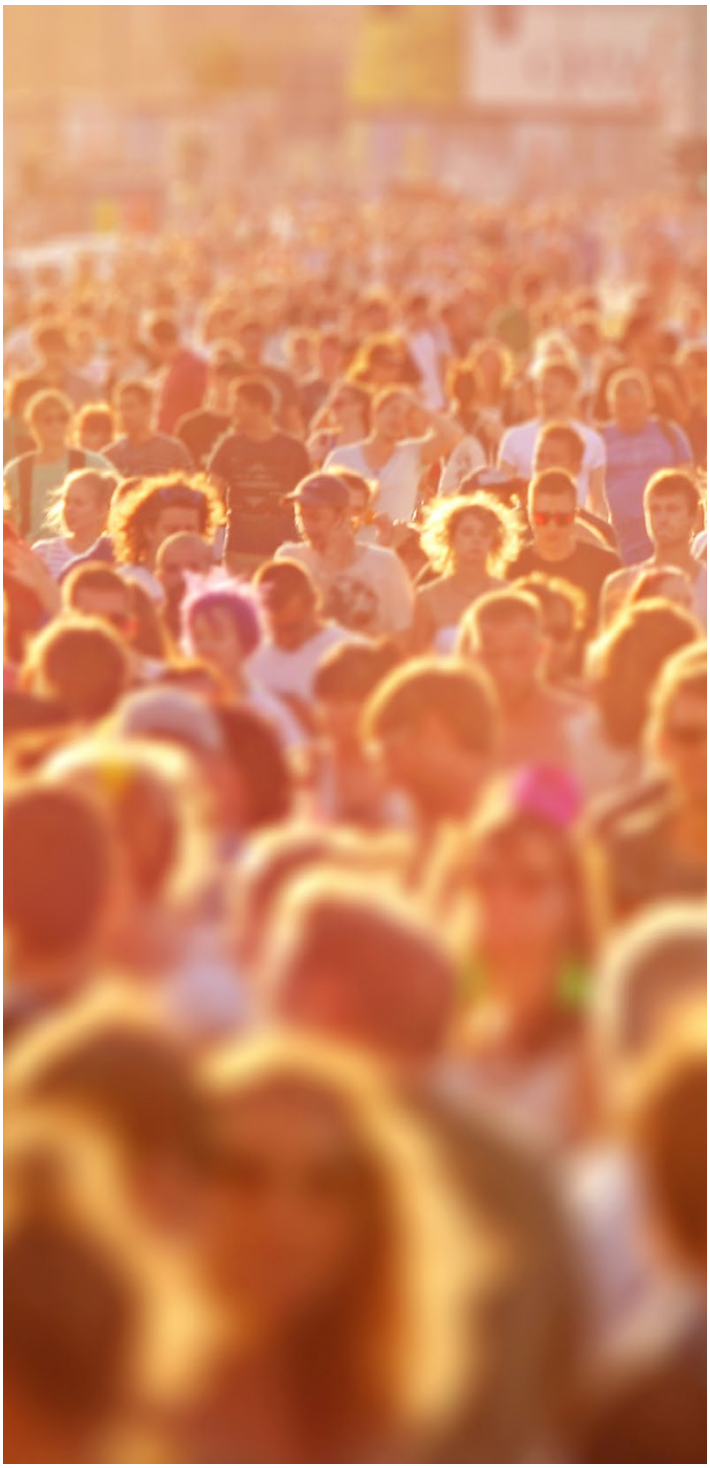
Cost-effectiveness, efficiency, and a recognition of unique local needs will be essential to bringing healthcare to more citizens. This is where companies like *OmniVis* will have an impact. The biotechnology company is developing a handheld device to detect cholera bacteria and other pathogens in water in just 30 minutes. Cholera is rare in developed countries, but it affects an estimated 3 million to 5 million people worldwide who have poor access to clean water and sanitation. Early detection is essential for rapid treatment to avoid deaths and prevent pandemics.

Cholera affects an estimated 3 to 5 million people worldwide.

Pressures on health systems in developed markets remind us that social systems must be sustainable. Smart, versatile, technology-dependent, and cost-effective solutions can help emerging economies build systems that consider the demographic challenges to come.

### Empowering vulnerable groups

While some developed economies are struggling to upgrade healthcare systems, innovations can increase inclusiveness for marginalized groups. For instance, *Handisco*, a startup supported by Cisco, developed Sherpa. This smart walking stick connects with sensor and data systems in urban infrastructure, enabling sight-impaired people to better navigate cities in France. Likewise, *Project Vive's* Voz Box is an affordable speech-generating device that helps those with speech impairments to access education and employment.



Technology tools can empower people who are otherwise dependent on support. They can be more efficient than the complex large-scale solutions traditionally used by government and civil society to support vulnerable communities.

For example, *Poverty Stoplight* is a tool for households. It lets them assess their own situation and connect to local resources. Traditionally, governments hire, train, fund, and field social workers. They establish the level of need for support via surveys, observations, and other methods. Then they design and implement solutions. With Poverty Stoplight, a household analyzes its own level of poverty against 50 indicators. The results are illustrated in a dashboard. The family is then guided through a tailored plan to address these problems, including local community resources. At the same time, public authorities and poverty-relief organizations gain insights. They learn whether local resources are effective or need enhancement or overhaul.

## Case study

Participatory politics in Spain

See more >

## Key takeaways

1

Technology can and should be used to enable both undeveloped and mature healthcare and social-care systems.

2

Whenever possible, government and business should seek opportunities where connectivity can enable communities to leapfrog over the slow, capital-intensive build-out of social support infrastructure.

3

Mature social support systems should leverage tech-driven and cost-effective solutions to improve their sustainability.

4

Technology-driven solutions driving inclusive growth must focus on empowering their recipients to take part.

# In conclusion: A call to action

Global economic integration, while creating new challenges, has also brought massive opportunities to increase inclusiveness around the world. From the beginning, technology has played a key role in facilitating this process. With rapidly developing new technological solutions as outlined in the *Cisco Annual Internet Report (2018–2023)*, technology's role will only grow larger.

Now more than ever, continued progress depends on the right social, economic, and political frameworks. The further build-out of global connectivity can foster increased inclusiveness. But as the *Cisco Digital Readiness Index 2019* also shows, technology alone is not the solution. The right ecosystem must be in place. This will strengthen political and societal support and allow greater participation at all levels.

At a local level, public-private partnerships are necessary. Synergies between public service providers and technology applications are key to developing solutions that meet the unique needs of local populations. Core to this is the inclusion and accessibility of vulnerable communities. This can be achieved through direct engagement with communities, taking their specific needs into account while looking at new and innovative ways to deploy technology, allowing for a leapfrog affect.

Technology will change the jobs of the future. Government, society, and business must collaborate to ensure that communities are prepared to be successful. In the knowledge economy, education is the key to inclusiveness. Every child should gain access to an education that will prepare them for opportunity. Both companies and governments must invest in ongoing workforce development. This ensures that workers are not left behind as a result of technological advancements in the workplace or due to relocation.

It is our responsibility as business leaders to step up to the challenges of inequity. We must create new pathways to economic prosperity that enable people and communities to break through barriers, spark new ideas, and ignite innovation.

1. The Gini coefficient is a measurement intended to represent income or wealth distribution within a country. The coefficient ranges from zero (or zero percent) to one (or 100 percent). Zero represents perfect equality of income distribution, and one represents perfect inequality. A lower Gini coefficient indicates lower economic inequality.
2. "Individuals Using the Internet, 2005–2019" (graph), International Telecommunications Union, https://www.itu.int/en/ITU-D/Statistics/Pages/stat/default.aspx.
3. World Bank, International Telecommunications Union.
4. "4 Billion People Still Don't Have Internet Access. Here's How to Connect Them," World Economic Forum, May 2016, https://www.weforum.org/agenda/2016/05/4-billion-people-still-don-t-have-internet-access-here-s-how-to-connect-them/.
5. "Historical Trends in the Usage of Content Languages for Websites," W3Techs, December 2019, https://w3techs.com/technologies/history_overview/content_language.
6. International Telecommunications Union.
7. "Access to Electicity (% of Population)—Uganda" (graph), The World Bank, https://data.worldbank.org/indicator/EG.ELC.ACCS.ZS?locations=UG&view=chart.
8. "Global Internet Inclusion Could Lift 500M out of Poverty, and Add Over $6TRN to Global GDP," PwC, May 16, 2016, https://www.pwc.com/hu/en/pressroom/2016/global_internet_inclusion.html.
9. GSMA (2017).
10. Global Mobile Money Database, Ritchie and Roser (2019).
11. *World Development Report 2019: The Changing Nature of Work*, The World Bank, 2019, https://www.worldbank.org/en/publication/wdr2019.
12. International Telecommunications Union.
13. *World Development Report 2019: The Changing Nature of Work*, The World Bank, 2019, https://www.worldbank.org/en/publication/wdr2019.
14. "New Education Data for SDG 4 and More," UNESCO Institute for Statistics, September 9, 2018, http://uis.unesco.org/en/news/new-education-data-sdg-4-and-more.
15. *Global Education Monitoring Report* (GEMR), 2017.
16. UNESCO Institute for Statistics via UNICEF data, October 2019.

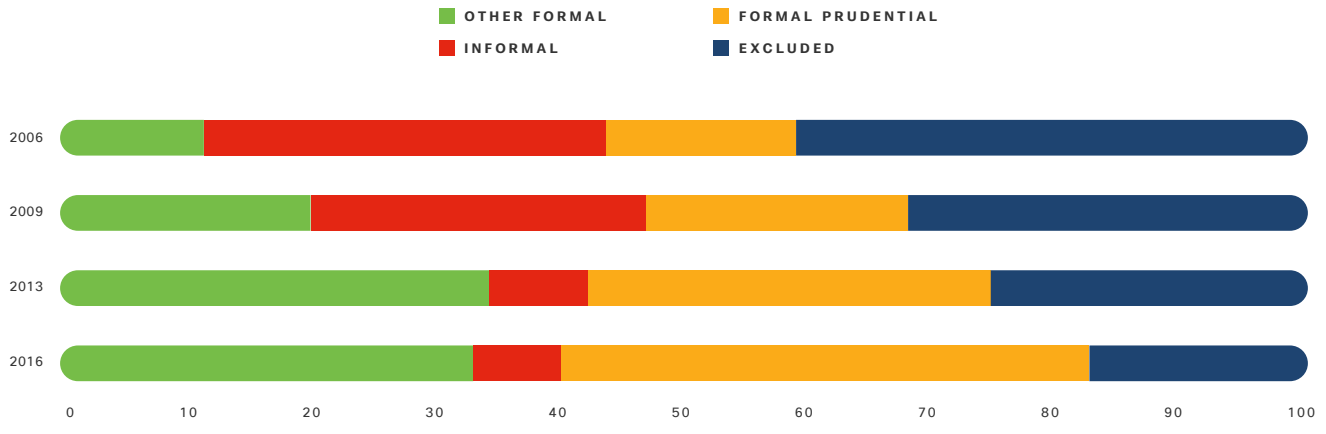
Case study:

# Mobile money and more in sub-Saharan Africa

Across sub-Saharan Africa (SSA), the number of mobile money accounts far outstrips the number of traditional bank accounts. Mobile money has become the principal driver of financial inclusion in the region. It has provided access for unbanked population groups, including those living in poverty, the young, the displaced, and women.

In Kenya, mobile money has fostered financial inclusion. The country's unbanked population declined from 41.3 percent in 2006 to 17.4 percent in 2016. Studies estimate that access to *M-Pesa*—the pioneering mobile money service provider—increased per capita consumption levels and lifted 2 percent of Kenyan households out of poverty.[1]

**Kenya's financial inclusion profile, 2006-2016[2]**



## A regional transformation

In a growing number of SSA countries, more than 60 percent of the adult population has a mobile money account. As of December 2018, there were 395.7 million registered accounts across SSA.[3] With 1.7 billion transactions—valued at US$26.8 billion—SSA accounted for almost 71 percent of the total 2.4 billion global transactions in 2018.[4]

There is also a trend toward regional integration. *Mowali*—a joint venture launched by Orange and MTN in 2018—aims to provide a pan-African payments hub, currently available in 22 of SSA's 46 markets.[5] Mowali is open to any mobile money provider, including banks and other financial services providers across the region. This enables the regional integration of the mobile money market and could drive down service costs.

## The evolution of services and benefits

Just as important as the spread of mobile money is the evolution of "payments as a platform."

*Financial services:* Equitel, a partnership between Equity Bank and Airtel, allows customers to send money to any bank account in Kenya, take out loans, and maintain deposits. It also offers nonbanking services, including airline ticket purchases and information on healthcare and education.

*E-commerce:* Jumia Group was founded in Nigeria in 2012. Jumia Marketplace, JumiaLogistics, and JumiaPay are platforms for everything from e-commerce to holiday bookings, food delivery, and payment services in 11 African countries.

*Health finance:* M-TIBA is a Kenya-based platform that allows subscribers to save, send, and spend funds for medical treatment.

The benefits of mobile-delivered financial services are broad. They increase financial inclusion and can serve as an economic driver. They encourage savings and credit, reduce poverty, formalize transactions, and facilitate tax collection, and they may enhance public service delivery.[6] As benefits expand into other service and consumer areas, policy makers must consider how they might support or undermine this expanding access.

For example, revisiting licensing regulations to welcome new players outside of traditional banks, or balancing taxes on new services so as not to deter consumers.

But the digital divide could mean that rural populations or vulnerable income groups are left behind. As of 2018, just 35.2 percent of SSA's population had access to the Internet,[7] with great gaps between urban and rural areas.

## Opportunities for a growing workforce

Financial inclusion must extend to broader economic inclusion, especially as the population grows. SSA's population is projected to rise from 1 billion to 1.7 billion by 2040, with the labor force expected to grow by 20 million per year.[8] This will have major implications for unemployment, land use, and social services like healthcare and education.

To foster broad economic inclusion, it is not enough for technology applications to grow the consumer market. Technology must also provide high-quality opportunities (in pay and skill) for a growing workforce.[9] And micro, small, and medium-sized enterprises (MSMEs), which provide 78 percent of the region's employment, must not be overlooked.

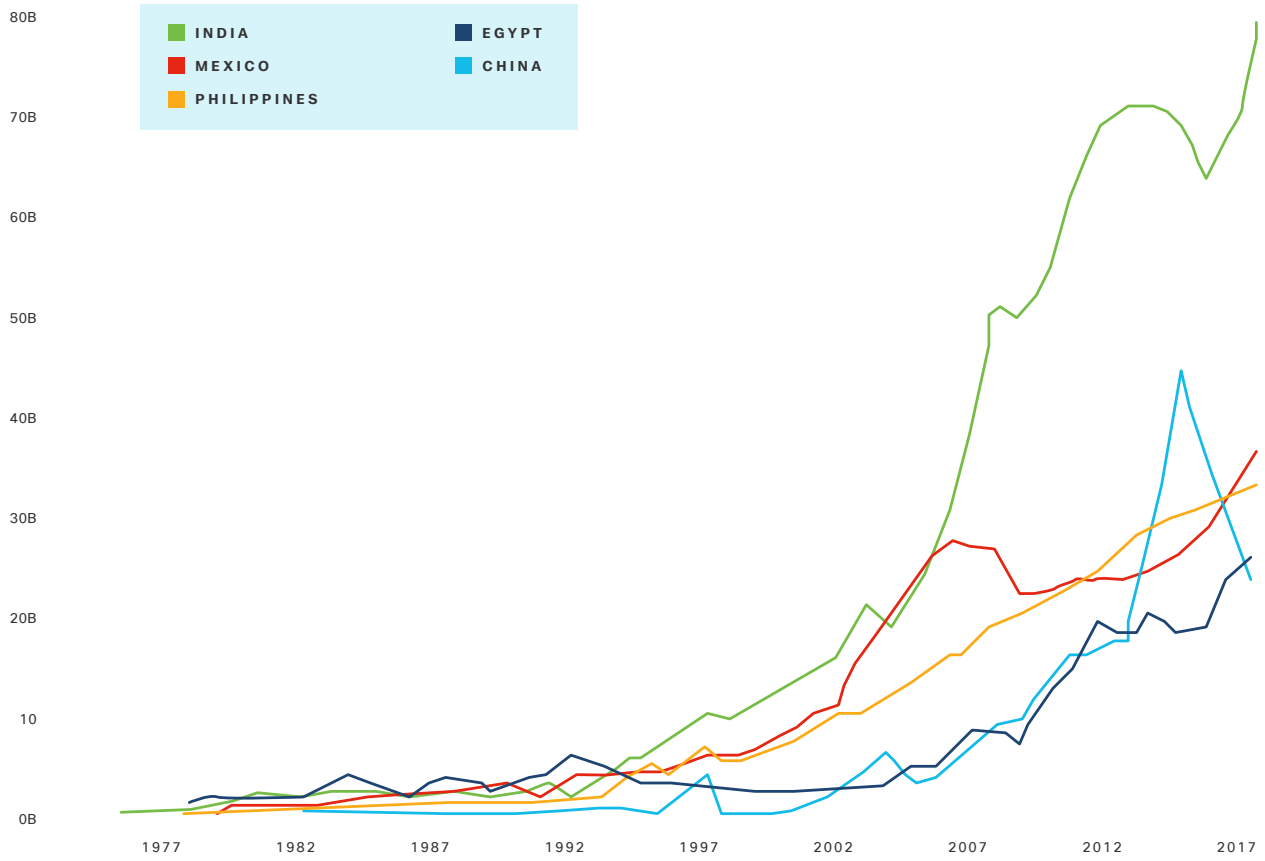
Case study:

# Bridging the gap for the unbanked in the Philippines

Three out of 10 Filipinos have access to a bank account. The poor, rural residents, and women are most often excluded from the financial system. Low incomes are a main driver, but not the only one. Onerous documentation requirements, rigid credit decision-making processes, gender stereotypes, and the slow evolution of household practices are significant factors.

Women manage household finances and are particularly vulnerable. And because low-cost labor is abundant, women reentering the workforce after giving birth find limited opportunities for regular, well-paid jobs. Lower-income jobs, contract jobs, and entrepreneurship are their main avenues, but the latter is limited by access to credit. For most lower-income women without savings or family loans, credit comes from informal lenders who charge high interest rates (around 20 percent per month).

**Personal remittances received (current US$)–top remittance recipients worldwide[10]**




## Reshaping the pawnshop

The Philippines is the fourth largest recipient of remittances in the world, with an estimated 5 percent to 10 percent of its population working abroad and sending money home. With growing urbanization and declining farm jobs, internal remittances are also a major driver of incomes. However, many senders and recipients of remittances are outside the banking system. They are vulnerable to fraud and high fees. This can lead to volatile consumption, saving, and investment decisions.

Over the past two decades, the growth in mobile communications has improved access to financial services.

Remittances were traditionally sent through money transfer companies or banks, which charged fees of up to 6 percent of the amount sent. Money transfer locations were usually in the cities, limiting access for recipients. However, as Internet and mobile phone use spread, the infrastructure and costs to set up local remittance centers dropped. Pawnshops with networks of low-cost offices in high-traffic locations and remote towns began to offer money transfer services.

This competition and lower overhead costs have resulted in fees being cut in half over the past decade. And their ubiquity has improved access for the recipients.

Pawnshops now offer other services, like microsavings accounts, digital wallets, and insurance. This is bringing the unbanked population closer to the formal banking system.

**Future models**

These micro financial institutions could play an important role in the use of technology to improve access to services. Households will then be able to manage their cash flow, opening paths to savings and entrepreneurship.

*Hapinoy* helps small neighborhood stores (often run by women) with financial, managerial, and entrepreneurial skills. The company is developing mobile services ranging from loans to inventory management.

*Cropital* brings farmers and lenders together. Farmers set up a profile of their funding needs, and lenders can pledge capital. Once the farm is funded, Cropital helps disburse funds, manage risks, and distribute returns.

*Cantilan*, a small local bank that mainly serves farmers and fishermen, moved to a cloud-based system with help from the Asian Development Bank. Many smaller banks lack the technical expertise and the capital to invest in traditional hardware. This limits their ability to scale and reach remote customers.

Case Study:

# STEM education in Colombia

Colombia is among the most unequal countries in Latin America. The country has been marked by conflict for decades. In 2015, education spending overtook defense spending for the first time in a generation.

**Inequality in access to education**

Colombia faces several challenges to build inclusiveness and adapt to technological change. These include deep socioeconomic inequalities, such as:

- A pronounced urban-rural divide
- Unequal schooling and educational outcomes
- A skills proficiency deficit—especially in science and technology
- Gender gaps in education
- A large informal labor market

While these issues require multipronged solutions, technology-based education programs offer exciting opportunities to tackle these challenges.

The University of Magdalena in 2018 set up a *Mobile Laboratory for the Development of STEM Skills* (Laboratorio Móvil para el Desarrollo de Habilidades en Ciencia, Tecnología, Ingeniería y Matemáticas). The project trains preschool and primary teachers to help pupils from four to seven years old learn math and ICT skills. Learning modules included basic robotics and simple machines.

*Pequeñas Aventuras* is a multimedia program developed by Sesame Workshop with the support of Dubai Cares and the Inter-American Development Bank (IADB). It promotes math and sciences at the preschool level, with a focus on gender equality. The program includes a web series, computer games, and interactive posters that teach children STEM-related concepts.

The World Bank suggests that investing in early childhood development may be the most cost-effective educational investment and one with the highest social rate of return.[11] Promoting early exposure to STEM subjects can also help overcome gender imbalances.

Distance learning and multimedia teaching in Colombia tends to be driven by government initiatives and universities. *The Institución Universitaria Politécnico Grancolombiano* is the biggest provider of distance learning, with 44,649 students enrolled in 2019. The sector is growing; *Spain's National University of Distance Learning* (UNED) will expand to Colombia this year. The government also has a new partnership with the U.S. online learning platform *Coursera*, which will provide 25,000 student scholarships in 2020.

Forty-eight hundred students are enrolled in the government's program to support victims of the country's recent armed conflict by enabling them to access to higher education. Many students from remote communities are participating virtually. This is a small initiative but an important example of targeted applications to address the needs of those with less access to opportunity because of conflict and geography.

Case study:

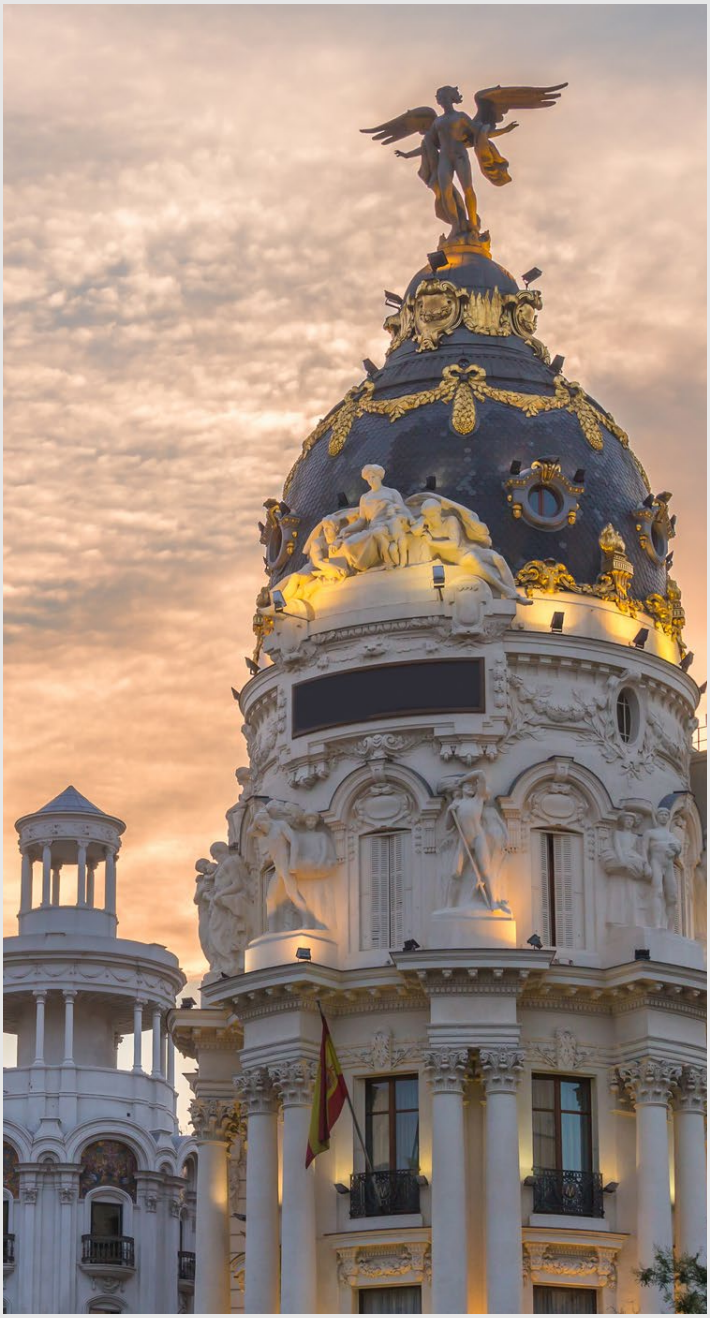
# Participatory politics in Spain

The relationship between technology and democracy is going through troubled times. The Internet was heralded as a tool to inform and improve public debate and increase political engagement. But fake news and polarized online communities have raised doubts about the benefits for democratic participation and political inclusion.

The *Decide Madrid* online platform established by the Madrid council in 2015 is a positive example of technology being used to empower and engage citizens. Based on Consul, an open-sourced software, Decide Madrid was developed to get citizens more involved in the management of their city.

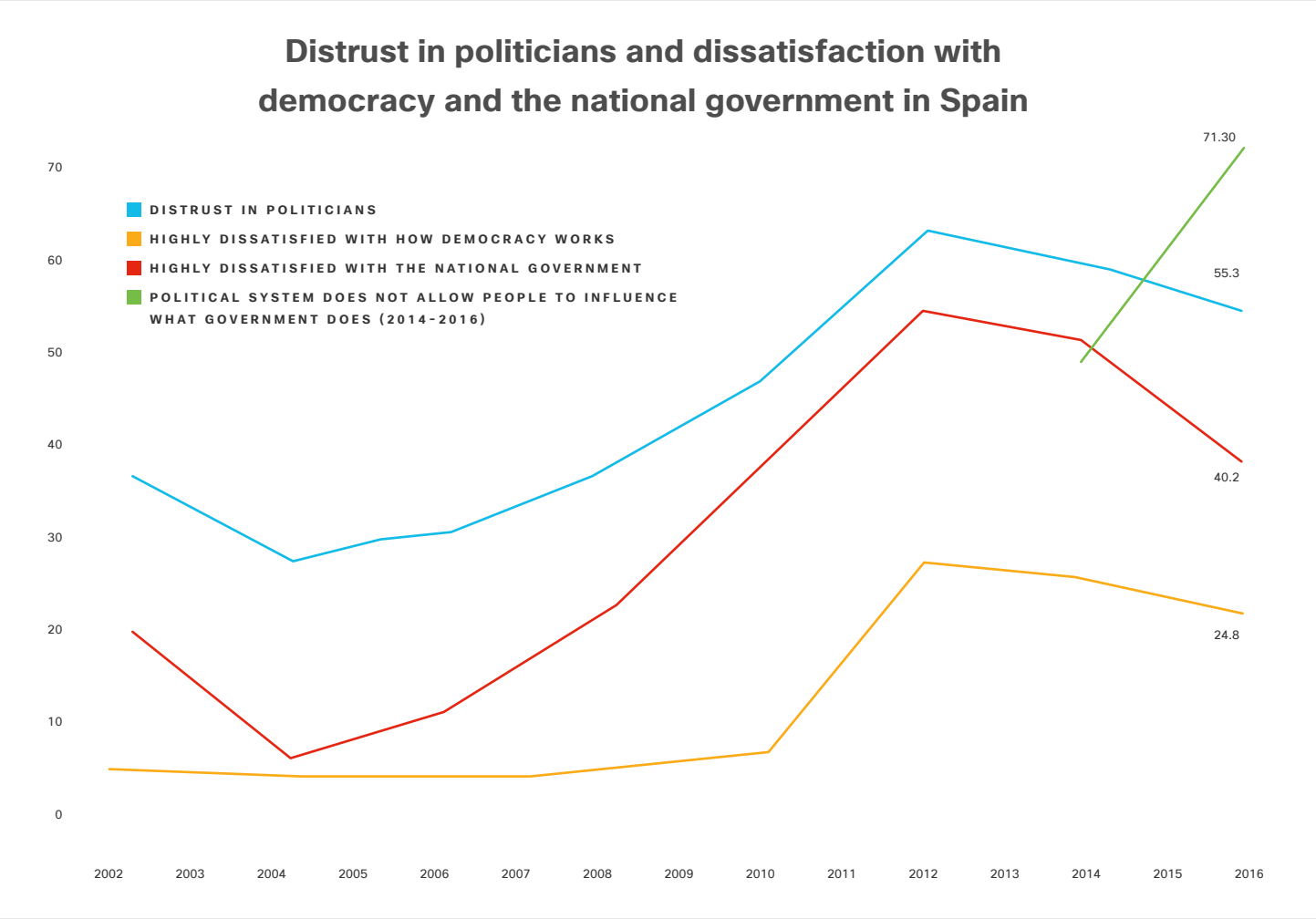
Decide Madrid lets citizens engage with the city in four ways:

- *Participatory budgeting:* Citizens can propose projects to be developed in the city. Following a viability assessment by the city government, citizens can vote on preselected projects online. Provided that they fit in the budget, the most-voted-for initiatives are included in the Draft Bill of Madrid's General Budget and voted on by the city assembly.
- *Consultations:* The platform is a place for citizens to express their opinions on city plans. For instance, on remodeling areas or addressing mobility challenges.
- *Proposals:* Citizens can introduce ideas for local policies. The city will organize a local referendum when a proposal is endorsed online by 1 percent of the city's population (around 28,000 individuals). The result is not binding, but the city assumes it must implement the plan if a majority votes for it.
- *Debate:* The website is a space for citizens to debate issues of concern. This also gives the city council a sense of public opinion.



Since the launch of Decide Madrid, more than 360,000 users have registered with the platform. Five thousand debates have been organized, and more than 21,000 proposals have been made, generating more than 4 million votes. The initiative has been recognized as one of the leading projects in government innovations aimed at broadening and deepening public participation,[12] and it received a United Nations Public Service Award for "making institutions inclusive and ensuring participation in decision making."[13] Around 100 government institutions around the world are now using Consul software.

But there is limited evidence that the platform has improved decision making. Few proposals have made it to the voting phase.[14] And while data show a limited demographic bias in terms of who participates, ensuring inclusive participation might be more challenging in cities with lower rates of access to the Internet.[15]




## Restoring trust in government

Different governments are increasingly testing similar initiatives. The desire to make governance more inclusive speaks to a widespread problem of declining trust in political systems. Spain is among the European countries where trust in political institutions has collapsed the most in the last decade.

Restoring public trust in government is one of the biggest challenges that political leaders face. While much of the distrust is due to perceived corruption, the overall feeling by citizens is that their institutions do not respond to their concerns.[16] Evidence also suggests that “open government” and citizen perceptions of government effectiveness are related.[17] Developing a policy-making process that brings more stakeholders to the table may improve governing quality and increase trust.

1. Njuguna Ndung'u, *Taxing Mobile Phone Transactions in Africa: Lessons from Kenya*, Africa Growth Initiative, August 2019, https://www.brookings.edu/wp-content/uploads/2019/08/Taxing_mobile_transactions_20190806.pdf.
2. FinAccess surveys, 2006, 2009, 2013, and 2016.
3. *State of the Industry Report on Mobile Money*, GSMA, 2018, https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2019/02/2018-State-of-the-Industry-Report-on-Mobile-Money.pdf.
4. GSMA (2018).
5. GSMA (2018).
6. Ndung'u (2019).
7. Haytham Karar, *Algorithmic Capitalism and the Digital Divide in Sub-Saharan Africa*, Journal of Developing Societies, December 16, 2019.
8. *Bridging the Mobile Digital Divide in Sub-Saharan Africa*, International Monetary Fund, November 15, 2019.
9. Ndung'u (2019).
10. The World Bank.
11. "Colombia's 'Ser Pilo Paga' Program: A Smart Investment?" (blog), World Bank Blogs, February 8, 2019, https://blogs.worldbank.org/education/colombia-s-ser-pilo-paga-program-smart-investment.
12. "Digital Democracy: The Tools Transforming Political Engagement," Nesta, February 2017, https://media.nesta.org.uk/documents/digital_democracy.pdf.
13. UN Public Service Awards 2018, United Nations.
14. Sam Dejohn, "Beyond Protest: Examining the Decide Madrid Platform for Public Engagement," GovLab (blog), NYU Tandon School of Engineering, November 13, 2017, http://thegovlab.org/beyond-protest-examining-the-decide-madrid-platform-for-public-engagement/.
15. Vicente Pina, Lourdes Torres, Sonia Royo, Jaime Garcia-Rayado, "Decide Madrid: A Case Study on E-Participation," TROPICO, June 20, 2019, http://tropico-project.eu/cases/administration-costs-for-bureaucracy/decide-madrid-a-case-study-on-e-participation/.
16. Mariano Torcal, "The Decline of Political Trust in Spain and Portugal: Economic Performance or Political Responsiveness," *American Behavioral Scientist*, October 2014.
17. *Trust and Public Policy: How Better Governance Can Help Rebuild Public Trust*, OECD Publishing, March 27, 2017, https://www.oecd.org/governance/trust-and-public-policy-9789264268920-en.htm.