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DIGITAL ECOSYSTEM COUNTRY ASSESSMENT (DECA)

Colombia

JULY 2020



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The report authors accept responsibility for any errors or inaccuracies in this report.

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ACRONYMS

ACH	Automated Clearing House
CDCS	USAID Country Development Cooperation Strategy
CDD	Center for Digital Development
CPE	<i>Computadores para Educar</i> (Computers to Educate)
CRC	<i>Comisión de Regulación de Comunicaciones Colombia</i> (Colombian Communications Regulation Commission)
DCCP	Digital Connectivity and Cybersecurity Partnership
DECA	Digital Ecosystem Country Assessment
DFS	Digital Financial Services
DO	Development Objective
FMCG	Fast-moving consumer goods
GH/CII	USAID Bureau for Global Health, Center for Innovation and Impact
GIF	Greater Internet Freedom
HRA	Human Rights Activity
IDB	Inter-American Development Bank
IFC	International Finance Corporation
ISP	Internet Service Provider
MFI	Microfinance Institution
MinTIC	<i>Comisión de Regulación de Comunicaciones de Colombia</i> (Ministry of Information and Communications Technology)
MNO	Mobile Network Operator
NGO	Non-Governmental Organization
POC	Point of Contact
PDET	<i>Planes de Desarrollo con Enfoque Territorial</i> (Territorially Focused Development Plans)
RFI	Rural Finance Initiative
RNEC	<i>Registraduría Nacional del Estado Civil</i> (National Civic Registry)
SEDPE	<i>Sociedades Especializadas en Depósitos y Pago Electrónicos</i> (Specialized Electronic Payment Processing Companies)
SFC	<i>Superintendencia Financiera de Colombia</i> (Financial Superintendence of Colombia)
STEM	Science, Technology, Engineering, and Mathematics
TVWS	TV White Space
TDY	Temporary Duty
USF	Universal Service Fund

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Executive Summary

Colombia is, in some ways, a microcosm of the digital world in 2020—highly connected urban centers with a growing technology industry, and vast, underserved rural areas with an immense need for investment and potential for innovation. In the coming years, a key challenge will be to extend the reach and quality of Colombia’s digital ecosystem without compromising inclusiveness, security, or democratic values. Against this backdrop, USAID’s Digital Strategy was launched in April 2020.¹ It aims to achieve and sustain open, secure, and inclusive digital ecosystems that contribute to measurable development and humanitarian-assistance outcomes and increase self-reliance in USAID’s partner countries.

A critical product of the Digital Strategy is the Digital Ecosystem Country Assessment (DECA). The DECA is a decision-making tool to help USAID Missions, their partners, and other relevant stakeholders identify the opportunities, maximize the benefits, and manage the risks associated with digital technology. The goal is to help USAID’s partner countries along their journey to self-reliance through a better understanding of each country’s digital ecosystem. The DECA pilot phase began September 2019 through August 2020 and USAID/Colombia was the flagship pilot. Though some USAID/Colombia projects were consulted, the goal of the DECA is to examine how Colombia’s digital ecosystem can be leveraged or strengthened, and not to evaluate the efficacy of existing program portfolios.

This report presents the findings and recommendations of the Colombia DECA pilot, which was conducted between November 2019 and February 2020. The pilot DECA included desk research, consultations with USAID/Colombia, and two weeks of in-country research. A total of 60 key informant interviews and three site visits were conducted with stakeholders from civil society, academia, the private and public sectors, and USAID/Colombia technical offices.

The DECA pilot was guided by four key USAID/Colombia priorities: implementing the peace agreement, promoting licit economies, integrating Venezuelan migrants and Colombian returnees, and strengthening citizen security. These priorities informed stakeholder and site visit selection, interview question design, and recommendation framing. The DECA is intended to highlight elements of Colombia’s digital ecosystem that link directly back to these priorities.

1 “USAID’s Digital Strategy,” USAID, April 16, 2020, <https://www.usaid.gov/usaid-digital-strategy>.

KEY FINDINGS

Recent policy, innovative partnership models, and novel solutions show promise for closing Colombia's urban-rural digital divide. Insufficient Internet connectivity is one of the greatest barriers to expanding digital access for remote and marginalized populations. Colombia's history of conflict combined with its diverse geography make digital infrastructure investments risky and costly for mobile network operators (MNOs). Extending connectivity to all Colombians will require new infrastructure solutions. The current administration has an ambitious connectivity agenda that prioritizes rural inclusion and social impact. These plans will require a sound national policy framework, a demonstrated commitment to reform, and careful implementation, especially at the municipal level. There is an urgent need for coordination, innovation, and partnerships to bring together and harness the respective strengths of the government, private sector, and civil society.

Improved cyber hygiene can strengthen citizen security and deter digital surveillance. Colombia's digital environment is considered mostly free, open, and democratic, but threats to civil society persist. There are anecdotal links between digital security breaches and physical violence, and cyber hygiene capacity building can be an important component of broader security efforts. There is also an urgent need for concrete evidence on the scope and severity of cyber-related threats to civil society.

Financial regulation and policy promote innovation and inclusion, but many barriers to widespread adoption of digital financial services remain. Colombia's financial regulator aims to lead in innovative, technology-driven financial inclusion and launched a number of initiatives that enable market entry for Fintechs. These changes are recent and their impact is still unclear. There is potential for digital financial solutions to bolster financial inclusion and accelerate economic reintegration of conflict-affected populations. Meaningful financial inclusion faces complex challenges around transaction costs, banking and connectivity infrastructure, consumer trust, and interoperability.

The international development community should seize emerging opportunities in Colombia's digital ecosystem to improve their shared development outcomes. There is a need to convene diverse actors to explore novel digital connectivity solutions. Colombia's enabling policy environment can also be leveraged to work with government partners on universal service fund projects, innovative Fintech regulation, and interoperable information systems. Resources and expertise can be used for capacity building to ensure the strategic rollout and integration of digital literacy programming as well as improved digital security for the protection of social leaders and vulnerable communities. The social entrepreneurship ecosystem can be supported through efforts that improve access to finance and digital skills.

ROADMAP FOR THE REPORT

Section 1 provides background on the DECA framework and goals. It includes a summary of USAID/Colombia's priorities, connecting them with digital solutions.

Section 2 presents the key findings about Colombia's digital ecosystem. This section is organized into three sub-sections: digital infrastructure, access, and use; digital society and governance; and digital economy.

Section 3 provides recommendations on how to leverage and support the digital ecosystem to achieve improved development outcomes.

About this Assessment

HOW CAN I USE THIS REPORT TO SUPPORT MY WORK?

USAID's Digital Strategy has two objectives: 1) improve measurable development and humanitarian assistance outcomes through the responsible use of digital technology in USAID's programming and 2) strengthen the openness, inclusiveness, and security of country-level digital ecosystems. The Digital Ecosystem Country Assessment (DECA) is intended to be a semi-standardized tool that will support the implementation of the USAID Digital Strategy.

The DECA aims to help USAID, its partners, and other relevant stakeholders identify opportunities, maximize benefits, and manage risks associated with digital technologies. The DECA is intended to assist these stakeholders in better understanding a country's digital ecosystem and how it can be leveraged and/or strengthened to enable accelerated development impact.

The DECA examines three broad areas to understand the opportunities and challenges in a country's digital ecosystem:

1. Digital Infrastructure, Access, and Use
2. Digital Society and Governance
3. Digital Economy

The DECA is in a pilot phase from September 2019 through August 2020. USAID/Colombia was the first pilot and took place between November 2019 and February 2020. The pilot was carried out by USAID's Center for Digital Development (CDD) with support from DAI's Digital Frontiers project, in partnership with USAID/Colombia. It comprised targeted desk research, consultations with USAID/Colombia, and two weeks of in-country research. It will also include follow-on data polling to fill gaps in the research.² The in-country research included three site visits to Medellín, Cúcuta, and Ulloa and 60 interviews with stakeholders from civil society, academia, the private and public sectors, and USAID/Colombia technical offices.

Rather than act as an authoritative source on the country's digital ecosystem, the DECA is intended to be a rapid assessment of opportunities and challenges tailored to USAID's programmatic priorities.

What is a digital ecosystem?

A digital ecosystem is comprised of stakeholders, systems, and an enabling environment that together empower people and communities to use digital technology to access services, engage with each other, and pursue economic opportunities.



² See [Appendix A](#) for a detailed description of the DECA methodology and its possible limitations.

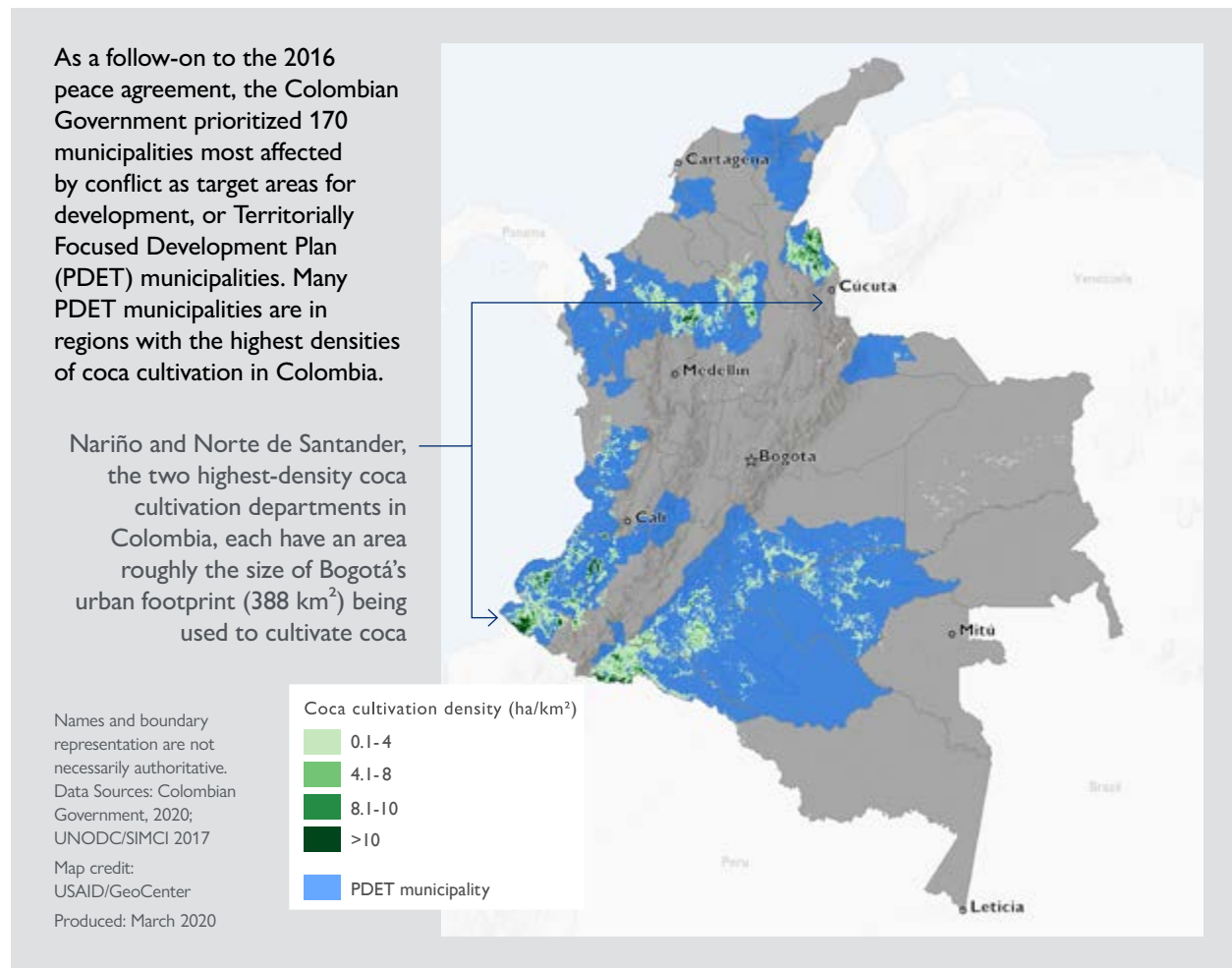
USAID/COLOMBIA PRIORITIES AND HOW DIGITAL CAN HELP ACHIEVE THEM

USAID/Colombia priorities are critical DECA inputs. They informed stakeholder and site visit selection, interview question design, and recommendation framing. Colleagues at USAID/Colombia identified four priority areas for their current and future programming. All of these are discussed in more detail in USAID/Colombia's forthcoming 2020-2025 CDCS.³ While this is not a comprehensive list of the development challenges facing Colombia today, these issues are the highest priorities for USAID/Colombia. In the forthcoming strategy, USAID/Colombia's geographic focus will be on selected Territorially Focused Development Plan (PDET) municipalities, conflict-affected rural areas still experiencing violence and poverty.⁴ See [FIGURE 1](#) on the following page, which maps the PDET municipalities with coca cultivation. These four priorities each have a digital element, which is explored in more detail below.

USAID/Colombia Priority	Digital Linkage
<p>Implementing the peace agreement: The 2016 agreement between the Colombian Government and the FARC brought an end to more than 50 years of internal armed conflict. Today, peace remains fragile in some areas and many challenging issues must still be settled. Preventing a return to civil war is a top priority for the United States.</p>	<p>Improving livelihoods and expanding government presence in conflict-affected areas through connectivity and the products and services it can enable.</p>
<p>Strengthening citizen security: In rural Colombia, the large-scale violence of the past is being replaced by a new and troubling trend – targeted assassinations of social, indigenous, and environmental leaders by criminal and paramilitary groups. Widespread anger at these killings undermines public confidence in the national government and could threaten the peace process.</p>	<p>Improving digital security and digital hygiene and using technology to improve physical security.</p>
<p>Promoting licit economies: During the civil war, a variety of rebel groups, paramilitaries, and drug cartels financed their activities through coca production and illegal mining. Since 2016, much of this illicit activity has been taken over by organized crime groups. Helping residents in conflict-affected areas to earn a living without becoming dependent on crime networks will be key to lasting peace and economic reintegration.</p>	<p>Using connectivity to promote digital literacy, create new employment opportunities, and expand licit value chains.</p>
<p>Integrating Venezuelan migrants and Colombian returnees: Since 2014, the deepening political and economic crisis in Venezuela has led to accelerating emigration, with Colombia accepting the largest number of migrants. The huge number of new arrivals puts a strain on Colombia's social support systems, and the latest wave of migrants is (on average) poorer and more vulnerable than their predecessors.</p>	<p>Addressing migrant connectivity needs, strengthening resilience of receptor communities, and enabling organizations to effectively respond and coordinate.</p>

3 Country Development Cooperation Strategy: Colombia," USAID, May 1, 2019, <http://www.usaid.gov/colombia/cdcs>.

4 Especial Programas de Desarrollo con Enfoque Territorial – PDET", Especial PDET (Agencia de Renovación del Territorio), accessed March 2020, http://www.renovacionterritorio.gov.co/especiales/especial_PDET/

FIGURE 1. Colombia Priority Development Regions and Coca Cultivation

DIGITAL ECOSYSTEMS AND THE COVID-19 RESPONSE

Though the Colombia DECA was conducted prior to the COVID-19 outbreak, the global pandemic has highlighted the critical role of digital technology in Colombia and around the world.

The COVID-19 crisis will affect the development landscape in many ways including actor type and volume, funding allocation and quantity, and project design and implementation. No matter the implications, digital technologies will be critical. Responders and decision makers all over the world need detailed and timely data about the disease's spread and health workers and communities need accurate information to protect themselves. Additionally, work, education, and government service delivery must adapt to meet individual and organizational needs, especially those of marginalized and vulnerable populations. Many relevant solutions depend on mobile or Internet connectivity. There are many ways in which technology can increase readiness to prevent, detect, and respond to COVID-19 and its effects. At the same time, well-intended but poorly-executed digital systems can hamper pandemic response by creating duplicative systems and siloing vital information.

Since the 2014 Ebola outbreak in West Africa, the development community has learned a lot about how best to deploy technology in a public health crisis. Key lessons include: ensuring country governments are leading from the outset, advancing a locally-led and whole-of-government approach, and coordinating all related initiatives. Establishing data protocols, reusing existing digital tools, and working with the private sector are essential. Though the COVID-19 pandemic differs in many ways, it is valuable to evaluate the present situation with these lessons in mind.

Kickstarting some of the DECA recommendations may be a way to lay the foundation for better leveraging and strengthening Colombia's digital ecosystem in the context of the COVID-19 crisis. Some recommendations that may rise to the top are:

- [Support policy and regulation for digital connectivity](#): as schools, offices, health organizations, and individuals become more reliant on the Internet during the outbreak, those who are unconnected are at a significant disadvantage. Regulatory actions that can be taken quickly to support the COVID-19 response include granting access to additional spectrum (e.g. through temporary licenses) and facilitating faster installation of network equipment on government-controlled locations.⁵ Partnering with the Communications Regulation Commission of Colombia (CRC) may advance such efforts.
- [Promote digital security for civil society](#): as people spend increasing amounts of time online and using new communication and video technologies, NGOs have already seen an increase in cyberattacks.⁶ Now is the time to assess cybersecurity vulnerabilities and make plans to boost the cyber hygiene of relevant actors accordingly.

5 See the ITU's REG4COVID resource page for more information. "REG4COVID Platform" ITU, accessed April 20, 2020, <https://www.itu.int/en/ITU-D/Regulatory-Market/Pages/REG4COVID-NRAs.aspx>.

6 Root, Rebecca, "COVID-19 brings wave of cyberattacks against NGOs," Devex, April 13, 2020, <https://www.devex.com/news/covid-19-brings-wave-of-cyberattacks-against-ngos-96934>.

- [Facilitate market entry for last-mile solutions](#): digital financial services may need to play an important role during the COVID-19 response and recovery efforts. During the Ebola crisis in Liberia, mobile money payments to frontline health workers helped avert strikes by unpaid response workers. There may be a similar opportunity to support response workers in rural Colombia with digital financial tools.
- [Support interoperable government systems](#): during the crisis the Colombian Government will play a critical role in providing trustworthy information and necessary social support. Supporting MinTIC's efforts to roll out interoperable information systems will not only help to ensure streamlined government-to-citizen communication but also simplify the end-user experience.
- [Support innovative financial regulation](#): the economic and social pressures of COVID-19 paired with inhibited in-person transactions and interactions may actually inspire more Fintech innovations. Now is the time to support Colombia's financial regulator to enable those innovations, particularly those that support increased financial inclusion.

It is important now more than ever to understand Colombia's digital ecosystem and how it can be strengthened and leveraged to support and build responsive systems, adjusting to the needs of more vulnerable and marginalized populations such as Venezuelan migrants and Colombian returnees and rural communities.

For more information on technology in global health crises, see:

- [USAID COVID-19 summary information page](#)
- [Considerations for USAID Mission Staff for Programmatic COVID-19 Preparedness and Response: Digital Technologies and Data Systems](#)
- [Fighting Ebola with Information: Learning from the Use of Data, Information, and Digital Technologies in the West Africa Ebola Outbreak Response](#)
- [WHO Digital Health Atlas](#)

SECTION TWO

DECA Findings

Colombia poses a unique opportunity in terms of digital development. A favorable policy environment is paired with relatively high levels of Internet affordability and use (where Internet is available), compared to other Latin American countries.⁷ The challenge, however, is accessing and adopting an Internet connection in rural areas where both connectivity and digital literacy lag. The current administration is committed to expanding inclusion of marginalized populations by improving digital connectivity and fostering innovation. Medellín was recently established as the first Spanish-speaking affiliate for the World Economic Forum Center for the Fourth Industrial Revolution, which elevates the impact of emerging technologies through public-private partnerships.⁸ However, 50 years of internal conflict in Colombia presents challenges to establishing digital infrastructure, security, and trust. Such challenges impede country-wide adoption of digital tools and programs, but opportunities exist to leverage the country's innovation ecosystem for inclusion-oriented programming.

TABLE 1. Mobile Broadband Pricing - Cost of 1GB Data, as percent of Average Income (2018)¹⁰

Country	Price (USD) as a percent of Average Income (GNI per capita)
Argentina	0.66
Costa Rica	0.70
Mexico	1.10
Brazil	1.29
Paraguay	1.52
Peru	1.66
Colombia	1.80
Ecuador	1.96
Bolivia	2.06
El Salvador	3.14
Guatemala	3.51
Nicaragua	5.39
Honduras	9.66

Alliance for Affordable Internet Target - "1 for 2" - 1GB priced at 2 percent Monthly Income¹¹

7 "Global Microscope 2019: The Enabling Environment for Financial Inclusion," EIU (Economist Intelligence Unit), 2019, https://content.centerforfinancialinclusion.org/wp-content/uploads/sites/2/2019/10/EIU_Microscope_2019.pdf.

8 "Center for the Fourth Industrial Revolution C4IR.Co, Colombia's Entry to the G20 Smart Cities Alliance," MinTIC, n.d., <http://www.mincit.gov.co/prensa/noticias/industria/centro-cuarta-revolucion-industrial-c4ir-co>.

9 "A4AI Mobile Broadband Pricing - GNICM Q2 2019," Alliance for Affordable Internet (A4I), accessed March 6, 2020, https://a4ai.org/extra/mobile_broadband_pricing_gnicm-2019Q2.

10 "Affordable Internet Is '1 for 2,'" Alliance for Affordable Internet, accessed March 6, 2020, <https://a4ai.org/affordable-Internet-is-1-for-2>.

Digital Infrastructure, Access, and Use

Digital Infrastructure, Access, and Use refers to the resources that make digital systems possible and how these resources are accessed and used by individuals and organizations. Infrastructure is assessed by understanding geographic network coverage, network performance, Internet bandwidth, and spectrum allocation. Infrastructure directly affects how the Internet is used, who does and does not have access to the digital ecosystem, and why. This includes ownership and use of mobile phones and broadband, Internet affordability, and digital literacy.

SEVERE URBAN-RURAL DIGITAL DIVIDE

In Colombia, the urban-rural digital divide is significant and a major obstacle to expanding the use of digital technologies. While Colombia boasts 116 percent mobile penetration and 77 percent mobile broadband penetration, adoption and use are highly concentrated in urban centers.¹¹ For example, fixed Internet penetration in urban areas is 63 percent, compared to just 16.2 percent in rural areas.¹² **FIGURE 2** below shows the concentration of strong digital connectivity in urban areas. Individuals who do access the Internet in rural communities tend to do so outside of their homes, through Internet cafes (24.5 percent), educational centers (43 percent), or free public hotspots (8 percent); mobile broadband options can be prohibitively expensive and slow.¹³ The country's rugged mountain terrain and dense Amazonian jungle, together with a history of conflict and violence, make it difficult, risky, and costly for mobile network operators (MNOs) to extend basic connectivity to rural areas. Delivering the high-quality connectivity needed for full participation in Colombia's digital society is an even more formidable challenge.

Though the urban-rural divide poses important challenges to the more widespread use of digital technologies, it can be seen as a product of underlying obstacles such as the difficulty of creating market conditions in rural areas. Colombia's mobile market is also highly concentrated, with only three major providers. As noted in **TABLE 2** below, the largest, Claro, holds about 55 percent market share.¹⁴ This tends to increase costs, making mobile less affordable for customers in sparsely populated areas and undermining connectivity expansion.

TABLE 2. MNO Market Share (2017)¹⁵

Claro (América Móvil)	54.7%
Movistar (Telefónica)	23.3%
Tigo (Millicom)	14.3%

*Avantel and ETB have less than 5%*¹⁶

The Digital Divide Explained

The digital divide is the distinction between those who have access and can use digital products and services and those who are excluded. There are often overlapping digital divides that stem from inequities in literacy, cost, social norms, or availability of relevant content. Digital divides may be associated with gender, economic status, geography, and age among other factors.



11 Mobile Connections (percent penetration) is defined as “total number of SIM cards divided by population” and Mobile Broadband (percent penetration) is defined as “total number of 3G and 4G SIM cards divided by population,” making each higher than measures of individual users, as a single user can have multiple SIM cards. For comparison, GSMA reports unique subscriber penetration as 70 percent. “GSMA Mobile Connectivity Index - Colombia,” GSMA, 2018, <http://www.mobileconnectivityindex.com/-year=2018&zonsocode=COL&analysisView=COL>.

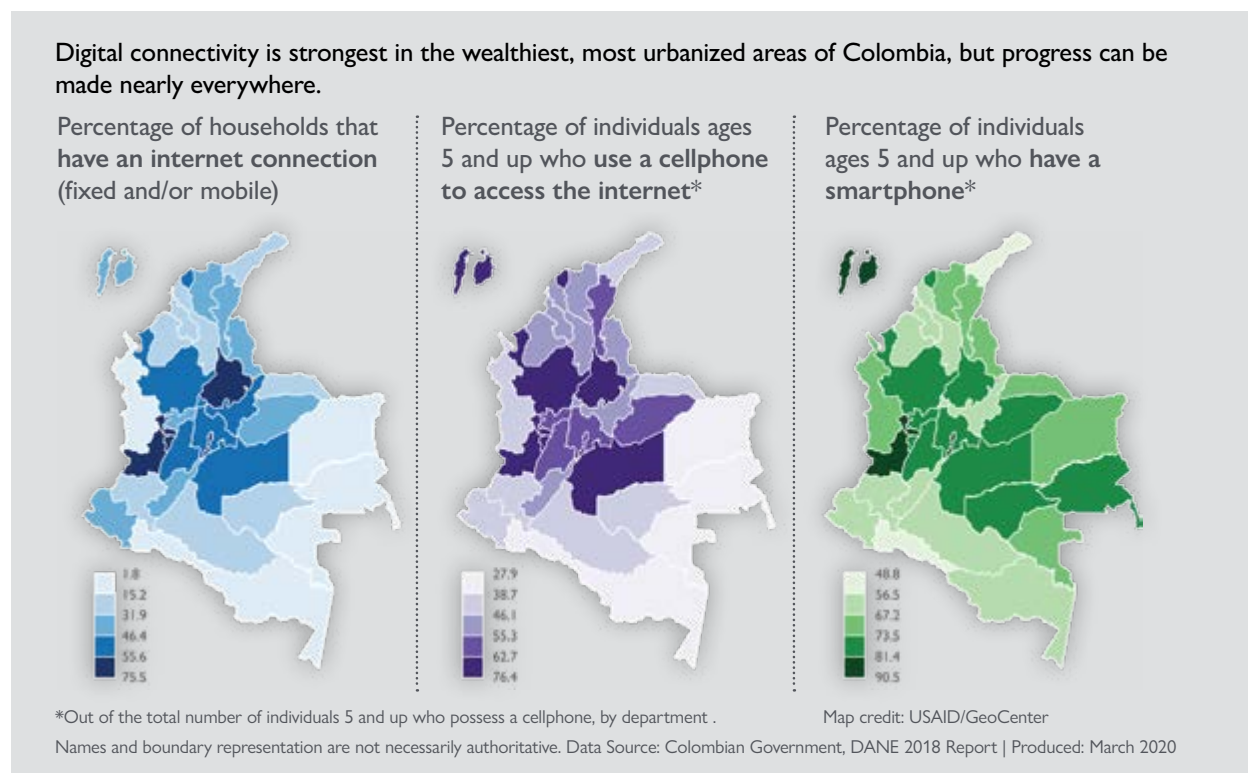
12 “Encuesta Nacional De Calidad De Vida (ECV) (National Survey of Quality of Life),” DANE, May 3, 2019, https://www.dane.gov.co/files/investigaciones/condiciones_vida/calidad_vida/Boletin_Tecnico_ECV_2018.pdf.

13 “Freedom on the Net 2019 - Colombia,” Freedom House, n.d., <https://freedomhouse.org/country/colombia/freedom-net/2019>.

14 “Latin America - Mobile Network Operators and MVNOs; 13th Edition” Paul Budde Communications Ltd, 2018, <https://www.budde.com.au/Research/Latin-America-Mobile-Network-Operators-and-MVNOs>.

15 ICT Ministry, quarterly ICT bulletin, 3rd quarter 2019.

16 “Country Overview: Colombia Mobile Industry Collaborating with Government to Promote Entrepreneurship and Innovation,” GSMA, 2017, <https://www.gsmaintelligence.com/research/?file=59bfcccd5a508f91be5dabb92a6b81621&download>.

FIGURE 2. Colombia Internet Connectivity 2018

ACCESS AND USE IMPLICATIONS FOR WOMEN

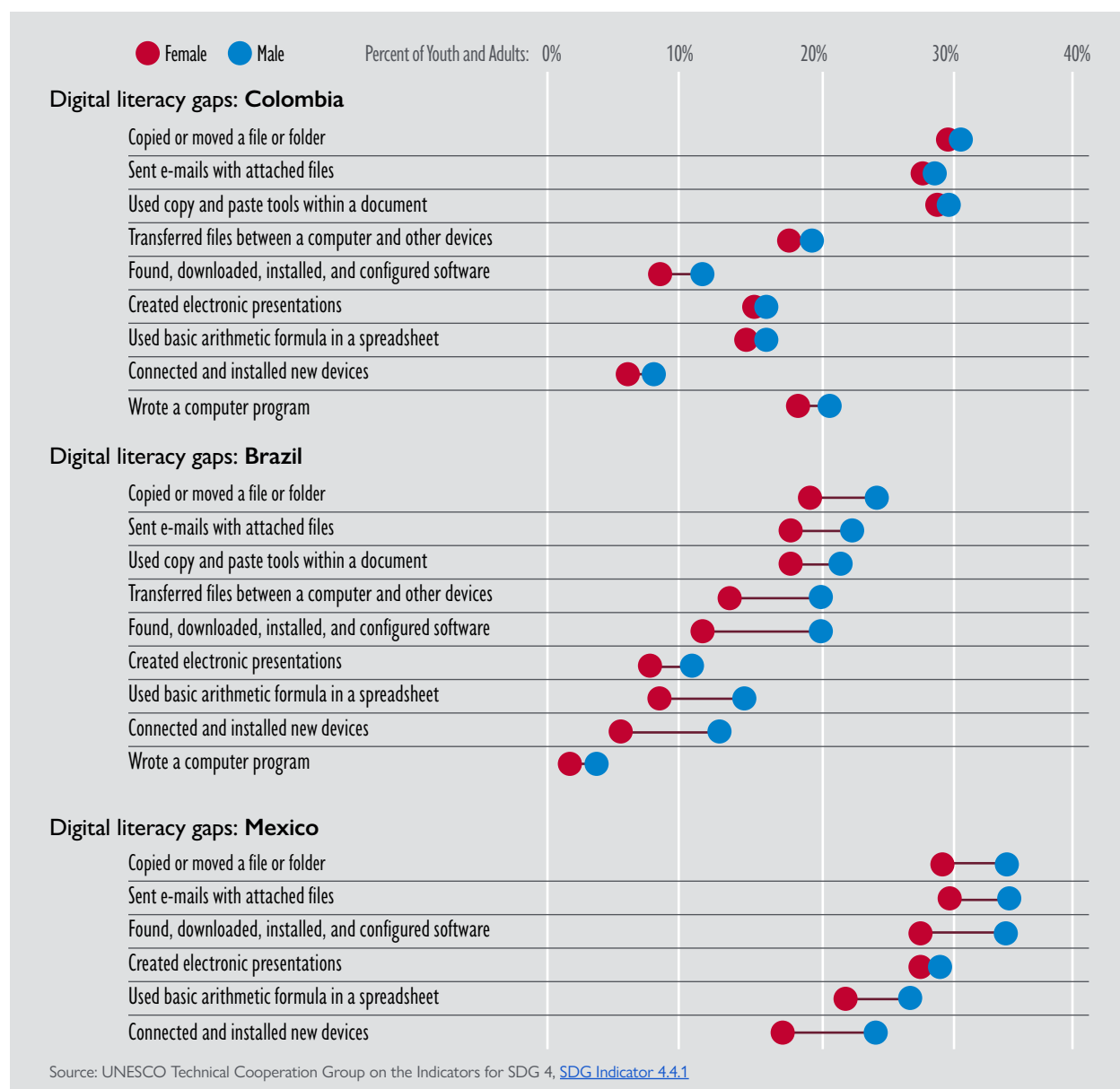
At a national level, Colombia is reported to have near gender parity in mobile phone ownership and mobile Internet use. In 2018, GSMA reported no difference between men and women in mobile phone ownership, while women were 4 percent less likely to use mobile Internet as compared to men.¹⁷ Globally, the gender digital divide tends to be more pronounced in rural areas, where women are less likely to own mobile phones. While Colombia seems to be an exception to this trend, insufficient sex-disaggregated sub-national data and a low base of connectivity in rural areas makes it difficult to ascertain how social norms are affecting women's adoption and use of digital technology. Even if women have similar levels of access to mobile phones and the Internet, the way in which women interact, utilize, and experience the benefits and risks of digital technology may be different. Underlying reasons for this can include cultural norms, unequal access to educational and training opportunities, and an absence of targeted gender programming. This may be of particular relevance for women from the most disadvantaged backgrounds including victims of armed conflict, ethnic minorities, and older women. One issue highlighted by interviews in Colombia pointed to the heightened risk women and young girls face of harassment and abduction facilitated through digital platforms (e.g., on social media) given the history of violence and ongoing crime in the country. In an effort to bring the power of technology to Colombia's most vulnerable populations, and specifically to women and girls, the Ministry of Information and Communications Technology (MinTIC) launched *Por TIC Mujer* (ICT and Gender) in 2019, to help Colombian women take advantage of the potential of ICT to generate economic independence and promote the defense of and ability to exercise their rights. The initiative encourages women and girls to use ICT productively and strategically.¹⁸

17 "Connected Women: The Mobile Gender Gap Report 2018," GSMA, 2018, https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2018/04/GSMA_The_Mobile_Gender_Gap_Report_2018_32pp_VEBv7.pdf

18 "Más colombianas podrán beneficiarse con el programa Por TIC Mujer en 2020," MinTIC, 2020, <https://mintic.gov.co/portal/inicio/Sala-de-Prensa/Noticias/126078:Mas-colombianas-podran-beneficiarse-con-el-programa-Por-TIC-Mujer-en-2020>.

Digital literacy, which includes computer and other ICT knowledge and skills, also appears to be similar among men and women in Colombia. UNESCO’s review of progress on Sustainable Development Goal Indicator 4.4.1 (Proportion of youth/adults with ICT skills), found little difference in Colombia’s basic computer skills between sexes, especially when compared to regional peers such as Mexico and Brazil (see **FIGURE 3** below).¹⁹ The largest gaps are associated with setting up and installing new devices and software. The same pattern exists in many advanced economies, possibly reflecting a widespread perception of men as “builders” of technology. This is further reflected in the underrepresentation of Colombian women with advanced degrees and careers related to ICT, as further discussed in the section on digital talent pool. These patterns, if not addressed, can create “gender blind” policies, programs, and products without the input of women, potentially exacerbating the gender digital divide.

FIGURE 3. Digital literacy gaps in Colombia, Brazil, and Mexico



¹⁹ “4.4.1 - Proportion of youth and adults with information and communications technology (ICT) skills, by type of skill,” Technical Cooperation Group on the Indicators for SDG 4, UNESCO Institute of Statistics, 2018, <http://tcg.uis.unesco.org/4-4-1-proportion-of-youth-and-adults-with-information-and-communications-technology-ict-skills-by-type-of-skill/>

PREVIOUS ATTEMPTS AT CLOSING THE DIGITAL DIVIDE

Successive Colombian governments have sought to spread technology and connectivity across the country. Attempts to provide tablets and computers to schools under the *Computadores para Educar* (CPE) program were accompanied by the placement of free public WiFi hotspots in community centers (with easily identifiable purple branding).²⁰ The current government is revamping the CPE program to include digital skills training for students, parents, teachers, and administrators. Under the previous government's Vive Digital program, 7,000 digital kiosks were established where people could access computers, photocopiers, scanners, and telephones, participate in digital training, and use the Internet for a nominal fee.²¹ While it is important to bring digital connectivity further afield, such initiatives seemed to lack long-term planning and communities appeared to be ill-equipped to assume the costs after central funding ended.

In 2011, the Colombian Government sought to address a more fundamental element of the digital divide—poor access to national-level infrastructure, or “backhaul” — by funding the extension of the national fiber backbone and making it available for telecommunications companies to use in servicing rural areas. This contract, won by Azteca, was completed in 2015, covering 80 percent of Colombia’s territory with 20,500 km of fiber optic cable.²² Despite this dramatic expansion, some interviewees noted low bandwidth and unreliable service on the fiber network, and MNOs reportedly do not use it to support their own infrastructure.²³



Free public WiFi hotspot outside Pereira, Colombia

NEW PLANS TO EXPAND RURAL CONNECTIVITY

In 2018, the newly elected administration of President Iván Duque unveiled a new ICT Plan (“Digital Future for All”),²⁴ shortly followed by a National Plan for Rural Connectivity.²⁵ Together, these plans set an ambitious agenda for a digitally enabled Colombia and look to expand Internet connectivity by:

- **Incentivizing MNOs:** In the December 2019 spectrum auction, the government incorporated two key changes in an attempt to push the MNOs to build networks in more rural areas. First, the license terms were doubled in length from 10 to 20 years, allowing operators more time to build and develop in rural areas. Second, competing bids were valued in part by the number of unconnected communities that operators committed to reach. Additionally, MNOs now have the option of diverting up to 60 percent of their fees for use in their own social investments.

In an effort to benefit market competition, a new telecom operator was awarded bandwidth in the recent spectrum auction. The results of the auction will also bring connectivity to 3,658 localities in rural areas throughout Colombia.²⁶

20 Computadores Para Educar, <http://www.computadoresparaeducar.gov.co/index.php/en>

21 “Kioscos Vive Digital,” 1 World Connected, accessed March 6, 2020, <http://1worldconnected.org/case-study/kioscos-vive-digital/>.

22 “Comms Update,” Comms Update (blog), March 10, 2015, <https://www.commsupdate.com/articles/2015/03/10/azteca-completes-20500km-fibre-backbone-in-colombia/>.

23 “OECD Reviews of Digital Transformation: Going Digital in Colombia,” OECD, October 25, 2019, <https://www.oecd-ilibrary.org/sites/781185b1-en/index.html?itemId=/content/publication/781185b1-en>.

24 “Plan TIC 2018-2022: El Futuro Digital es de Todos (ICT Plan 2018-2022: The Digital Future Is for Everyone).” Colombia Ministry of Information Technologies and Communications (MinTIC), n.d., https://www.MinTIC.gov.co/portal/604/articles-101922_Plan_TIC.pdf.

25 “Plan Nacional de Conectividad Rural (National Rural Connectivity Plan),” 2019, https://www.MinTIC.gov.co/portal/604/articles-100886_py_res_adopta_plan_nacional_conectividad_rural_v20190530_comentarios.pdf.

26 “Colombia awards three operators bandwidth in \$1.5 billion auction,” Reuters, December 21, 2019, <https://www.reuters.com/article/us-colombia-telecoms/colombia-awards-three-operators-bandwidth-in-1-5-billion-auction-idUSKBN1YP0CL>.

- **Funding social projects:** The government is planning to issue a new set of tenders to reach up to 10,000 rural communities with new, free WiFi hotspots—primarily in schools—as well as 450,000 urban and semi-urban households with fixed Internet services. Given the structure of the tender process fewer communities may be reached. The tenders for 342,000 households have already been adjudicated and are in the process of installation. To avoid the pitfalls of the previous administration’s community WiFi hotspots, the current government plans to set the terms of the contract to ten years, hoping this will allow more time for local governments or other partners to take over the costs of operation.

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These new plans hold great promise, but will require careful implementation. Previous attempts to expand connectivity fell short of achieving sustainable results. Many interviewees felt this was due in part to a lack of digital literacy in communities where Internet access was being established.²⁷

The Venezuelan Migration Poses New Challenges for Connectivity



As Venezuelan migrants and Colombian returnees cross into Colombia, the need to communicate with family and friends and to access information on health, education, and employment services is high. NetHope has deployed free WiFi access points for migrants and the organizations supporting them. Now, however, the third wave of Venezuelan migrants is poorer and more vulnerable than their predecessors; many are either selling their mobile phones for cash or losing them to theft and coercion.²⁸ Many free WiFi networks provide migrants with direct access to free resources, but most migrants are unaware of the access points, highlighting the need for better communication by humanitarian organizations.

ALTERNATIVE AND COMPLEMENTARY LAST-MILE SOLUTIONS

Access to Internet connectivity is a major challenge in rural Colombia, but there are innovative technology solutions and partnership models that could complement the government’s efforts to reach last mile users. Whereas MNOs provide mobile and Internet connectivity through the use of licensed spectrum allocated by the government and paid for through costly fees, other private-sector companies, civil society organizations, and even local communities are experimenting with alternative ways to leverage the following technologies:

- **WiFi / Unlicensed Spectrum:** WiFi enables data to be transmitted between devices and the closest network node. It operates on a spectrum that is designated as unlicensed and therefore does not incur cost or require a permit. The equipment to set up a WiFi network is inexpensive and relatively easy to use. It has a fairly short-range (approx. 50m), but by setting up a series of antennas within line-of-sight, a WiFi network can be established beyond the original backhaul connection (e.g. to a fiber optic cable or satellite). WiFi can typically provide Internet access at faster speeds and lower costs than mobile data (3G, 4G). For these reasons, it is a popular technology for rural communities and has been used widely in free public WiFi zones, including in cafes, town centers, schools, etc.

²⁷ Digital literacy includes both the skills to functionally be able to use the Internet and digital technologies, as well as the knowledge of how to do so safely, securely, with trusted information and protected data.

²⁸ The first wave of migrants in the early 2000s was mostly those with high education levels and economic status, the second wave in 2015 included middle class and professionals, while the third wave 2017 to present includes the vulnerable populations. Muñoz-Pogossian, Betilde. “Heading Out: A Tale of Three Migration Waves.” Caracas Chronicles, December 7, 2018. <https://www.caracaschronicles.com/2018/12/06/heading-out-a-tale-of-three-migration-waves/>.

In the town of Ulloa, for example, the civil society organization Nuestra Red is leveraging WiFi technology to set up a community network—one that is built, owned, and operated by community members. They started with an intranet model, providing an offline site where community members could access regularly updated, curated content. Such a model does not require access to backhaul and allows users to become accustomed to using technology and accessing information through an “Internet-like” site. Now Nuestra Red is transitioning to a connected network, with full access to the Internet through a pre-paid model where community members can purchase access codes to go online. By accessing a fiber node in a nearby community, Nuestra Red has set up a series of antennas and routers to extend coverage to the Ulloa area, working with local businesses, the municipal government, and community members to secure their support and participation.

- **TV White Space:** TV White Space (TVWS) is unused spectrum in the frequencies typically reserved for television broadcast. Colombia was the first country in Latin America to regulate the use of TVWS, enabling network operators to access it for rural connectivity. The equipment required for TVWS networks is often more expensive than that for WiFi, but it can cover greater distances (10-15 kilometers) and can travel through dense foliage, buildings, and other obstacles. It still requires a connection to a network node (via fiber or satellite) from which TVWS radios and antennas can extend coverage into more rural areas.

Microsoft has been active in developing and helping Internet service providers (ISPs) to deploy fixed wireless solutions that include TVWS technology, specifically through the Microsoft Airband Initiative.²⁹ In Colombia, Microsoft is developing a connectivity ecosystem which includes partnering with ISPs such as ANDITEL to build fixed wireless networks as well as establish programming for local communities on Internet adoption. One approach they are piloting is to work with large, private corporations such as Occidental (an oil and gas company) and Lavazza (an international coffee exporter) who see value in bringing Internet to the communities where they work and are willing to pay for such connectivity in the short term. By rolling out new digital services and training alongside network expansion, Microsoft, ANDITEL, and their civil society partners aim to build the capacity of local communities to leverage the Internet for economic benefit. In doing so, they hope to increase demand and willingness to pay for the Internet so individual users can ultimately take over the costs after corporate partners’ commitments end.

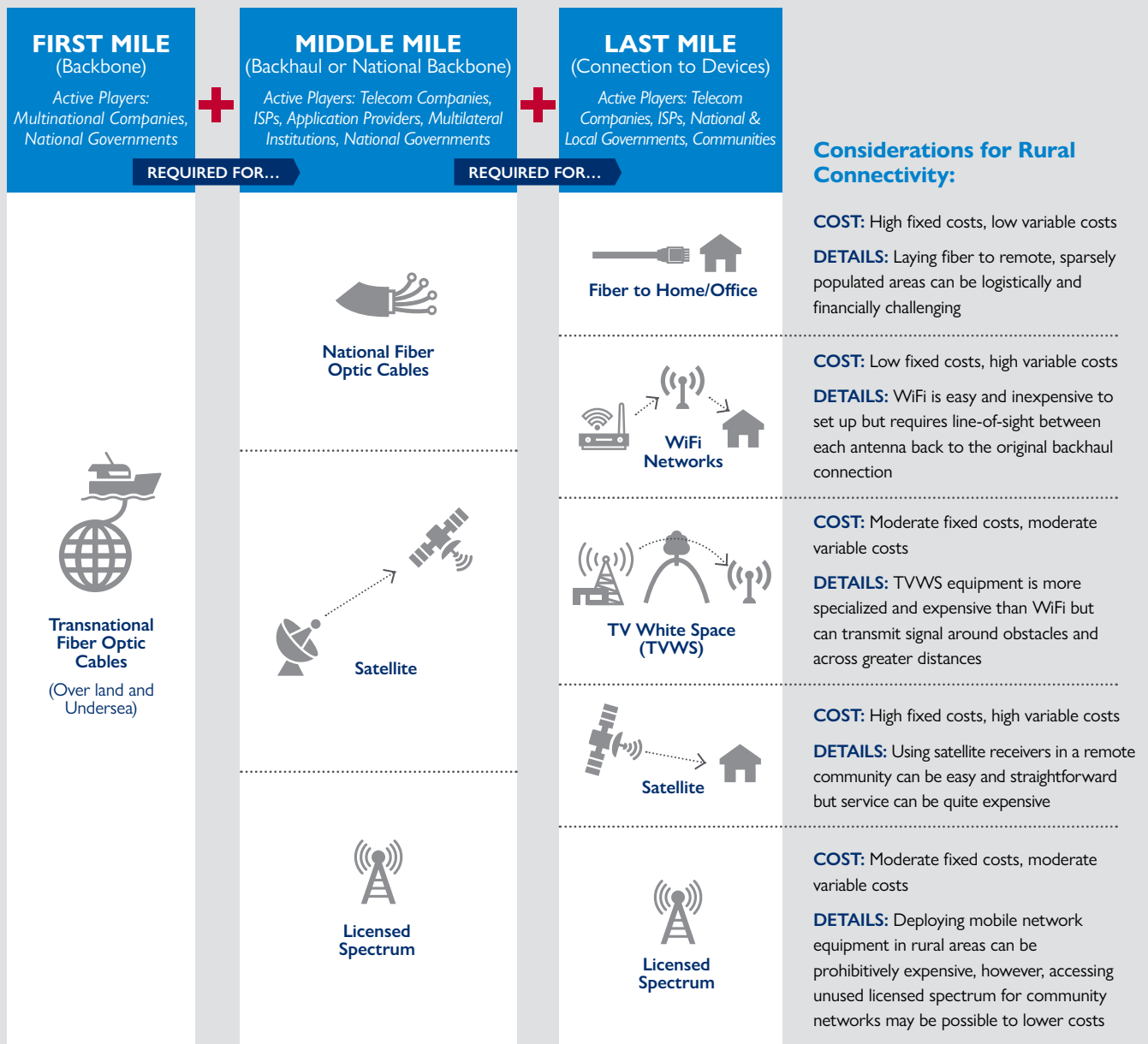
FIGURE 4. Digital Connectivity’s Impact on a Coffee Farmer’s Livelihood



²⁹ “Rural Broadband Access & Connectivity,” Microsoft, accessed March 6, 2020, <https://www.microsoft.com/en-us/corporate-responsibility/airband>.

- Licensed Spectrum:** An innovative pilot is taking place using licensed spectrum reserved for mobile communications to establish a community network. There are several advantages to using licensed spectrum: 1) mobile handsets can work in both the community network as well as in cities, on an MNO's network; 2) connectivity between rural and urban networks can be seamless to the end user, with appropriate arrangements made between providers and with government regulation and enforcement; and 3) licensed spectrum can be more reliable than WiFi or TVWS, as the signal can go through walls, trees, and rain (it also does not create conflict with incumbent spectrum holders, which TVWS has to contend with).

BUILDING A NETWORK



Although access to licensed spectrum is expensive and typically only feasible for major telecommunication companies, Colnodo—a non-governmental organization (NGO) focused on ICT—is working with the Colombian Government to pilot licensed spectrum use for community networks in Buenos Aires, Cauca. In 2017, Colnodo started advocating for coordination with the government to carry out the pilot and access the licensed spectrum. However, an agreement was not signed until two years later, in April 2019. The pilot establishes a community network using the 900MHz band that is reserved for mobile communications, but is currently not assigned to any operator. Now, Colnodo continues to work with the local community on the adoption and integration of the community mobile phone network, while also working to establish an Internet network. The organization is also working on mechanisms to ensure financial and organizational sustainability for maintenance and continuity. This pilot in Buenos Aires could help set a precedent for accessing licensed spectrum in the deployment of community networks, something that has been done elsewhere in Latin America, including Mexico.³⁰

Innovations in last-mile Internet connectivity could complement and help inform the Colombian Government's efforts to improve rural coverage.³¹ Regardless of the technology, a common pain point is the high fixed and sunk costs of initial network design, construction, and deployment. Network operators generally have to incur these high costs up front. Therefore, to succeed as an enterprise, they need customers to adopt, use, and pay for network services relatively quickly; “if you build it, they will come” business models generally fail in the telecom sector. As a result, even the most innovative network operators face challenges of driving use, adoption, and payment for services once Internet connections are established.

Interviewees recommended digital literacy training and relevant digital services be rolled out in tandem with network deployments to ensure communities can make productive use of digital connectivity, experience economic benefit, and eventually drive sustainability. Such efforts may prove more effective if designed alongside community members, taking into account a community's expectations for and potential uses of the Internet.

Community network approaches (such as the Nuestra Red and Colnodo examples above) typically focus on building networks that are right-sized to match community needs and then upgrading them as digital literacy and usage grow. Several interviewees expressed a need for regulatory changes that would formally recognize community networks, including allowing the use of licensed spectrum.

30 “Closing the Access Gap: Innovation to Accelerate Universal Internet Adoption,” USAID, Caribou Digital and the Digital Impact Alliance, February 2017. p. 25, <https://www.usaid.gov/sites/default/files/documents/15396/Closing-the-Access-Gap.pdf>.

31 Ibid.

Digital Society and Governance

Digital Society and Governance focuses on how digital technology intersects with government, civil society, and the media. This intersection includes policies and regulations, the use of social media and social norms around technology, digital tools for accountability and openness, and digital ID systems. Digital society and governance also assesses risks associated with access to digital platforms and information and how they are managed. This includes data privacy, cybersecurity, censorship, disinformation, and misinformation.

“PARTLY FREE”

In many respects, Colombia’s digital environment can be considered free, open, and democratic. None of our interviewees were aware of overt cases of Internet shutdowns or state-sponsored censorship. The 2019 *Freedom on the Net* report from Freedom House ranks Colombia as “partly free,” citing concerns about threats to journalists, election-related disinformation, and weaponization of copyright and defamation laws.³² Many of these concerns were echoed by our interviewees, although in general they ascribed problematic actions to non-governmental actors including armed militias, political parties, and individual elites. In addition, there have been several high-profile scandals in recent years related to wiretapping and digital surveillance.³³ Journalists and activists reportedly expect to be surveilled by the police, and the mere perception of widespread monitoring may have a chilling effect.

REGULATORY INDEPENDENCE

One recurring source of concern for some interviewees was Colombia’s recently approved ICT Modernization Law.³⁴ The law contains many positive developments, including the modernization of ICT regulation. While the law asserts the legal and financial independence of the regulator, some observers have raised concerns about the potential for political interference.³⁵ Because this regulator’s purview covers media content in addition to telecommunications infrastructure, there are also concerns about freedom of expression. These issues came to the fore in a 2019 controversy over accusations of censorship in Colombia’s public media system (RCTV)—allegedly an attempt to silence a critic of the ICT Law.³⁶

ICT Modernization Law

The new law signed on July 25, 2019 seeks to improve the current ICT institutional framework, facilitate adoption of international best practice in spectrum policy, streamlining legislation, and improving digital inclusion. As part of digital inclusion legislation, the “maximization of social welfare,” can play a key role in closing the urban/rural digital divide by removing regulatory barriers to infrastructure deployment.



32 “Freedom on the Net 2019 – Colombia,” Freedom House, n.d., <https://freedomhouse.org/country/colombia/freedom-net/2019>.

33 “Shadow State: Surveillance, Law and Order in Colombia,” Privacy International, September 1, 2015, <https://privacyinternational.org/report/991/shadow-state-surveillance-law-and-order-colombia>.

34 El Futuro Digital Es De Todos/The Digital Future Belongs to Everyone - Plan Information Technologies and Communications 2018-2022,” Colombia Ministry of Information Technologies and Communications (MinTIC), n.d., https://www.MinTIC.gov.co/portal/604/articles-101922_Plan_TIC.pdf.

35 “OECD Reviews of Digital Transformation: Going Digital in Colombia,” OECD, October 25, 2019, pgs. 42-45 https://www.oecd-ilibrary.org/sites/781185b1-en/1/2/2/index.html?itemId=/content/publication/781185b1-en&csp_2e55b885b2f1f6b5f49b8e209518fce4&itemGO=oecd&itemContentType=book#sect-33

36 Higuera, Silvia, “Journalism in the Americas (blog),” accessed January 24, 2019, <https://knightcenter.utexas.edu/blog/00-20537-manager-colombian-public-media-system-presents-his-resignation-after-complaints-censor>.

CITIZEN SECURITY AND CYBER HYGIENE

Although surveillance and wiretapping scandals receive frequent news coverage, public understanding of privacy and cyber hygiene issues is still limited.³⁷ For example, in rural regions, young women are at risk of becoming victims of harassment, exploitation, and trafficking through social media platforms including Facebook and WhatsApp. Civil society interviewees noted that cybersecurity breaches (often as simple as a stolen phone or laptop) are underreported and may contribute to physical violence by revealing the names and locations of sensitive contacts. To make matters worse, many activists may avoid reporting information breaches because they fear connections (real or perceived) between the police and violent actors, who could find out that their data is “on the market.” As a result, the scope and severity of the problem is poorly understood.

DIGITAL ID SYSTEMS

Electronic biometric collection (particularly fingerprints) appears to be far more widespread than in other countries, with the National Civil Registry (*Registraduría Nacional del Estado Civil - RNEC*) offering fingerprint authentication services through private-sector partners. According to interviewees at RNEC, they have not encountered much resistance or criticism related to the widespread use of biometric authentication. While a reliable ID system can be a boon for security and business efficiency, public concern about the risks of biometric surveillance seems more muted than in the United States or Europe.

DIGITAL LAND REGISTRIES

One key element of the peace accord implementation is the restitution of land that was appropriated during the Colombian conflict. This is a daunting legal and technical undertaking, made more complex by numerous municipality-level land registry systems. The USAID-funded Land and Rural Development Program developed digital systems that aid with information-sharing between government systems and can significantly streamline some aspects of this process. These digital systems accelerate restitution case processing and improve the quality, accessibility, and security of information for the Colombian Government and future generations of rural families to more easily legally claim their land.³⁸

Venezuelan migrants and Colombian returnees may be at risk



Venezuelan migrants and Colombian returnees may be at a relatively higher risk of being targeted by misinformation campaigns. The latest wave of migrants are of lower economic status than previous waves. They are vulnerable due to their more limited digital literacy levels, awareness of their online presence, and ability to analyze online information. While humanitarian organizations leverage digital platforms to provide these migrants with access to social services such as healthcare, armed groups can also take advantage of digital platforms for recruitment or misinformation campaigns.

37 “Shadow State: Surveillance, Law and Order in Colombia,” Privacy International, September 1, 2015, <https://privacyinternational.org/report/991/shadow-state-surveillance-law-and-order-colombia>.

38 “Land and Rural Development Project, Colombia,” Tetra Tech, accessed March 13, 2020, <https://www.tetrattech.com/en/projects/land-and-rural-development-project-colombia>.

DIGITIZED GOVERNMENT SERVICES

Interviewees at MinTIC described an extensive plan for the “digital transformation” of Colombia’s government services. One key piece of this plan is the adoption of X-ROAD, an open-source interoperability service that was initially developed by the Government of Estonia and has been adopted by governments in Finland, Kyrgyzstan, Japan, and elsewhere.³⁹ MinTIC’s mandate is to modernize and digitize the citizen-facing services offered by other government agencies and create systems allowing them to seamlessly share information among themselves. This is a significant task, both technologically and in terms of organizational culture change, and success could dramatically improve government-citizen relations.

³⁹ “X-Road,®” e-estonia, n.d., <https://e-estonia.com/solutions/interoperability-services/x-road/>.

Digital Economy

Digital Economy looks at how people can use money digitally and how businesses are moving online and becoming digitally enabled. This includes digital financial services (credit or debit cards, payment apps, mobile money, and digital savings and loan products), and how they are affected by the regulatory environment. Areas of inquiry include financial inclusion, mobile money usage, and the Fintech enabling environment. E-commerce typically depends on digital financial services for seamless online payments, often across borders. The digital economy depends on a local digital talent pool; a healthy economy requires a supply of ICT skills that matches the demand.

REGULATION AND POLICY BOLSTER FINANCIAL INCLUSION AND TECHNOLOGY-DRIVEN INNOVATION

In recent years, Colombia's financial regulator instituted changes that may pave the way for digital financial services (DFS). Efforts include simplified procedures for opening digital and traditional savings accounts, electronic deposits, and the regulation of specialized electronic payment processing companies (SEDPEs). Interviewees highlighted the following aspects of Colombia's policy and regulatory environment:

- **Robust support for financial inclusion:** Colombia ranks among the top countries in the world when it comes to policy-level support of inclusive financial services, according to the 2019 Global Financial Microscope.⁴⁰ In July 2014, the Colombian Government launched its National Financial Inclusion Strategy through an inter-institutional committee with members from various ministries that engage with the private sector.⁴¹ Much of the strategy's focus is on expanding access to the formal banking system, use of financial products, and financial literacy. The government's current goal is to financially include 84 percent of the adult population.⁴² More recently, in June 2017, the Colombian Government launched its National Economic and Financial Education Strategy, with a broad aim to ensure financial literacy training is available to all Colombians through projects led by public and private actors.⁴³
- **Promotion of innovation, with an emphasis on enabling Fintech:** Colombia's financial superintendent (the regulator), Jorge Castaño, was appointed in April 2017 and has become a voice for the promotion of innovation across financial systems. In an interview, he detailed three major recent initiatives to strengthen the Fintech ecosystem: 1) an Innovation Hub that provides support and advice on financial and technological innovation; 2) a "regulatory sandbox" that allows Fintechs, financial institutions, and regulators to test products and services under targeted regulatory and supervisory assistance; and 3) a RegTech space to leverage technology for regulatory monitoring, reporting, and compliance.⁴⁴

40 The Global Financial Microscope assesses the enabling environment for financial inclusion across 55 countries in terms of government and regulator practices. "Global Microscope 2019: The Enabling Environment for Financial Inclusion," EIU (Economist Intelligence Unit), 2019, https://content.centerforfinancialinclusion.org/wp-content/uploads/sites/2/2019/10/EIU_Microscope_2019.pdf.

41 "Reportes De Inclusión Financiera/Financial Inclusion Reports," Banca de las Oportunidades, 2017, http://bancadelasoportunidades.gov.co/es/reportes/*.

42 Ibid.

43 "A Financial Education Strategy for the Different Stages of Life," World Bank, July 26, 2017, <https://www.worldbank.org/en/news/feature/2017/07/26/una-estrategia-de-educacion-financiera-para-las-distintas-etapas-de-la-vida>.

44 "Fintech Radar Colombia: Colombia Consolidates Its Maturity and Position as the Third Largest Fintech Ecosystem in the Region," Finnovista, March 15, 2019, https://www.finnovista.com/fintech_radar_colombia_2019/?lang=en.

This pattern of regulation that supports technology-driven innovation is further demonstrated by regulations passed in July and December 2018 that support crowdfunding and bank investments in Fintech solutions. Ideally, these reforms support a regulatory system that is more agile and better suited for Fintechs to successfully experiment, launch, and scale products and services that can reach financially excluded populations.⁴⁵ This is of particular relevance given that unbanked and underbanked consumers and Small and Medium Enterprises (SMEs) represent a large target market for Colombia's Fintechs.⁴⁶ The Colombian Government wants to be a global leader in DFS by replicating similar regulatory frameworks and practices being implemented in Singapore and the United Kingdom. Like these countries, Colombia strives to foster an enabling environment that leverages Fintech innovation, resulting in new market entrants, improved efficiency of near real-time payments, and the development of regulatory sandboxes.

- **Regulation still has a role to play in the enabling environment:** Despite recent emphasis on inclusion and innovation, there is room for regulation to further enable digital finance. Not everyone is impressed by the recent changes. Interviewees from the Fintech space voiced concern over barriers to starting and sustaining a business including the collateral and revenue requirements needed to access finance, as well as high business registration fees and corporate income and municipality taxes. Though heralded as a necessary protection for investors, some interviewees described the July 2018 crowdfunding regulation as rigid and limiting to new funding sources. However, because many of the government's initiatives were launched in the last two years, their impact is still unclear.

Regulatory Sandbox Explained



A regulatory sandbox is a framework used by the regulator to enable financial entities to experiment with innovative products, services, and business models in a controlled environment with targeted regulatory and supervisory policies. A sandbox can be seen as a signal to innovators in the financial sector that regulators are willing to engage.

The first Fintech innovation approved to carry out a pilot in Colombia's regulatory sandbox is Tpage, a mobile wallet for the unbanked.⁴⁷



SPOTLIGHT ON TPAGA:

Tpage was born out of the realization that close to 300 unbanked taxi drivers using the founders' taxi app, Tappsi, could not receive credit card payments. The solution was to develop a mobile wallet within Tappsi. With Tpage the unbanked can begin to build income records and credit histories, which can be a stepping off point for accessing the formal banking system.

45 "Colombia Leads the 2019 Global Financial Inclusion Microscope for the 2nd Consecutive Year," Inter-American Development Bank, October 31, 2019, <https://www.iadb.org/en/news/colombia-leads-2019-global-financial-inclusion-microscope-2nd-consecutive-year>.

46 According to Finnovista 2019 survey, 45 percent of Colombia's Fintechs claim to offer their products/services to underbanked, unbanked, and SME customers. "Fintech Radar Colombia: Colombia Consolidates Its Maturity and Position as the Third Largest Fintech Ecosystem in the Region," Finnovista, March 15, 2019, https://www.finnovista.com/fintech_radar_colombia_2019/?lang=en.

47 Bolaños, Laura R. Fernanda, "New Supervisor Sandbox Approves Fintech's First Project to Democratize Investments," Colombia Fintech, Diario La República, January 20, 2019, <https://www.colombiafintech.co/novedades/supervisor-aprueba-primer-proyecto-de-fintech-en-sandbox-para-democratizar-inversiones>.

BANKS ARE ENCOURAGED TO SCALE AND REACH NEW CUSTOMERS

The government's vision for financial inclusion and digital innovation encourages the banking sector to scale and reach new customers, particularly in rural areas. An example of this effort is Davivienda's *Daviplata*, a mobile person-to-person payment platform often used for remittances, bill payment, and mobile phone credit top-up as well as government-to-person payments. BanColombia also launched products that target harder-to-reach customers. These include *Ahorro a la Mano*, a simplified savings account, and *Credito a la Mano*, small loans using cash outflow monitoring of savings accounts. However, adoption and use at scale has yet to take hold, particularly in rural areas. This may be due in part to the bias toward developing smartphone-based solutions, which are better-suited to urban customers.

ACCESS VS. USE OF FINANCIAL PRODUCTS

Colombia has a higher financial inclusion rate than many countries in the region. According to a 2018 report by the government inclusion program *Banca de las Oportunidades*, about 80 percent of the population had access to at least one financial product. However, only about 68 percent of adults actively use their financial products.^{48,49} DFS enables e-commerce, and can broaden meaningful financial inclusion for the poorest Colombians. However, barriers to adoption can be complex and include elements of behavior change, cost, physical infrastructure, and digital connectivity, among others.

Faster, More Secure, Mobile Transactions Launched in February 2020

ACH Colombia, Colombia's main electronic payment system, is attempting to "combat the use of cash" and promote faster, more secure transactions. In February 2020, ACH Colombia launched



Transfiya, a service that allows people to send, receive, and request money immediately using their mobile phones. Transfiya was launched with six financial institutions including a cooperative bank and two mobile wallets.



ACH Colombia used two strategies to encourage adoption and scale: (1) charge zero transaction fees for the first two years and (2) earn support from the banks to promote the new service industry-wide as Transfiya; in the past banks' need for individualized product branding slowed new product rollout. These efforts speak to ACH Colombia's motivation to play a role in increasing DFS adoption.

What does this mean for DFS and financial inclusion?

ACH Colombia is strategically rolling out Transfiya in the major cities. However, with the support of USAID and through a partnership with a local chamber of commerce, ACH Colombia tested outreach to a small locality and sent representatives to a town fair to promote and demo the new service with small vendors. In an interview, ACH Colombia noted they need local partners to help spread the word about Transfiya in smaller, more remote communities as they don't have networks there. There is opportunity for ACH Colombia to work with local governments and banks that have networks in these communities to initiate the use of Transfiya, which may be able to help build a more robust foundation for expanded DFS adoption and increased financial inclusion.

48 "Financial inclusion report - 2018," Banca de las oportunidades & superintendencia financiera de Colombia, 2018, http://bancadelasopportunidades.gov.co/sites/default/files/2019-10/banca_rif2018_english.pdf.

49 These statistics are based on those reported in the 2018 Colombian Government report where the number of adults with financial products is tracked using national identification numbers. The financial inclusion indicator is calculated as the ratio of adults with a financial product to the total adult population estimated by the National Department of Statistics. Three entities providing financial products are included in this calculation: credit establishments overseen by the SFC, financial credit unions, and MFIs.

BURDENSOME TRANSACTION COSTS

Interviews revealed that a major barrier to broader DFS adoption is the widespread reliance on cash, due in large part to a variety of taxes and fees levied on digital financial transactions. This includes a 0.4 percent tax imposed on all financial transactions, including cash withdrawals from ATMs, wire transfers, Internet banking, bank drafts, and bank checks. Interviewees estimated that the overall cost of payments could be as high as 7-8 percent for digital payments (due to various taxes and bank and credit card-imposed transaction fees), compared to 1-2 percent for cash (mostly associated with physical security and transportation). In addition to these direct costs, many Colombians perceive non-cash transactions to be more expensive because they miss out on opportunities to negotiate on price. According to a study published by the Inter-American Development Bank (IDB), 90 percent of Colombians prefer to pay in cash because of high costs for digital transactions.⁵⁰ Interviews also revealed that banks have been successful at managing cash for “large payers” such as fast-moving consumer goods companies (FMCGs), resulting in very little demand for digital payment solutions such as bulk payment products.

LARGE BANKS MINIMIZE COST OF CASH FOR LARGE SUPPLY CHAINS

In other countries, large supply chains can be leveraged to foster demand for digital payment services. For example, FMCGs such as Unilever, Nestle, and Coca-Cola transact often between suppliers, distributors, and retailers, moving cash frequently and widely. This dependence on cash can present major risks around security, corruption, and liquidity, among other things. As a result, FMCGs may de-risk transactions by adopting digital payments. This presents an opportunity for input suppliers, distributors, and retailers to use complementary digital services. Getting large companies on-boarded to digital payments can often be an easy way to aggregate demand for digital payment services.

In Colombia, however, large banks have stepped in to address the risks associated with cash handling. They set up cash-in and cash-out points at various places along the supply chain; for example, at handling centers and warehouses. An interviewee provided an example of many large beverage distribution companies having small bank branches that allow for the easy movement and transfer of cash. The banks benefit from managing large deposits and are therefore willing to provide free cash handling services to the large companies. Large banks have created a scenario in which the costs and risks of operating in cash are not a concern for market actors that manage large volumes of cash.

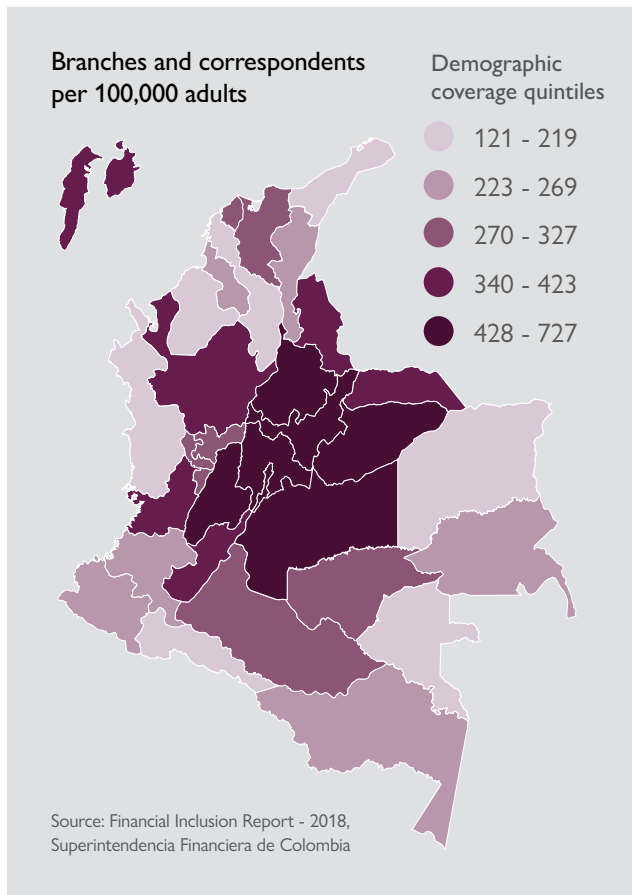
BANKING AND CONNECTIVITY INFRASTRUCTURE

Weak rural connectivity is an impediment to DFS adoption. The degree of use tends to correlate with broadband and mobile penetration; urban centers are home to the primary users of online banking and digital finance applications. This urban-rural divide is compounded by years of armed conflict, which made opening physical bank branches in many parts of Colombia risky if not impossible. In 2018, the 67 percent of Colombians who live in the most populated urban areas had access to 78 percent of all physical bank infrastructure in the country, while the 17 percent of Colombians who live in the least populated rural areas had access to only 10 percent of that infrastructure.⁵¹ This is illustrated in **FIGURE 5**, which shows lower density of bank branches and correspondents per 100,000 adults in more rural areas. This can be compared to the population density and household income

50 Tamayo, Cesar, Jonathan, Granda, Hamann, Franz, Rey, et al., “Ensayos Sobre Inclusión Financiera En Colombia (Essays on Financial Inclusion in Colombia),” Inter-American Development Bank, June 5, 2017, <https://publications.iadb.org/es/ensayos-sobre-inclusion-financiera-en-colombia-sthash.2syZsDn5.dpuf>.

51 “Financial inclusion report - 2018,” Banca de las oportunidades & superintendencia financiera de Colombia, 2018, https://bancadelasoportunidades.gov.co/sites/default/files/2019-10/Banca_RIF2018_English.pdf.

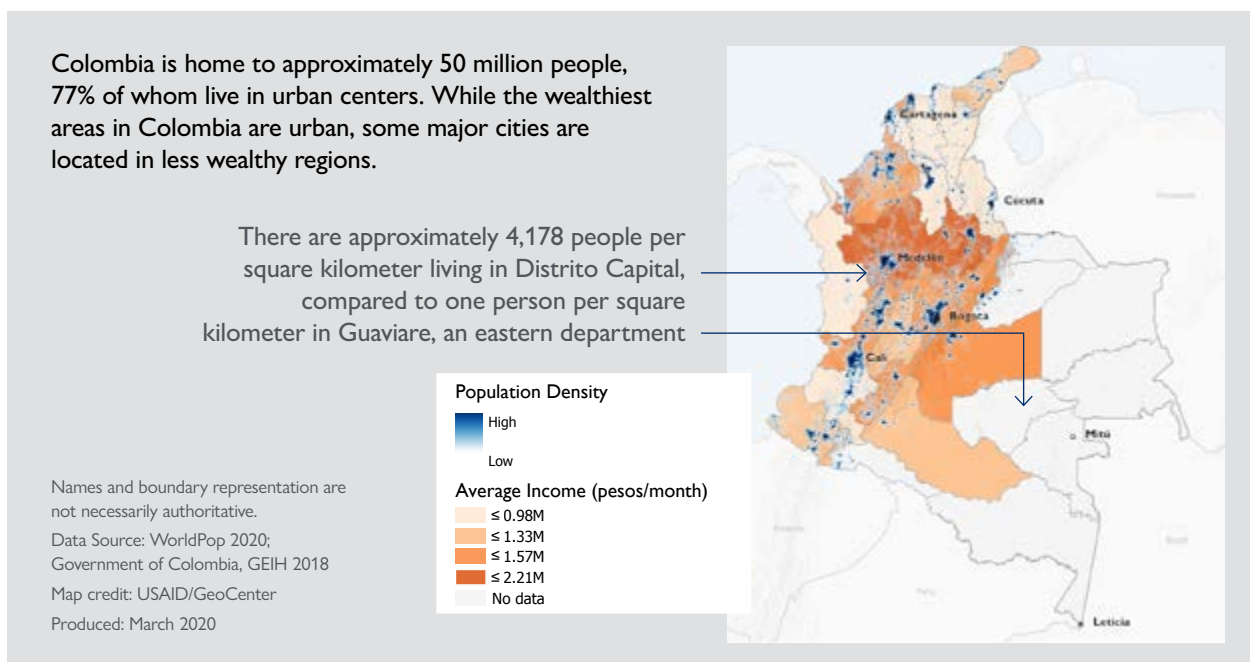
FIGURE 5. Bank Coverage, by department



map shown in **FIGURE 6** below. According to a 2017 survey conducted by the USAID/Colombia Rural Finance Initiative (RFI) with a representative sample of 3,047 rural customers across 10 municipalities, only 29 percent take less than 15 minutes to reach a financial entity and there is an average of one bank office or agent access point every 6 km.⁵²

There are an estimated 136,000 agent access points throughout the country where customers can access services such as simple savings accounts and cash deposits and withdrawals.⁵³ However, an interviewee noted that this may be an overestimation due to double counting as most agents work for multiple financial institutions. A small minority of these agents work for cooperatives; most serve as outposts for formal banks. Remote communities, particularly those in conflict-affected zones, remain excluded due to the costs and risks involved in reaching them.

FIGURE 6. Population Density and Household Income in Colombia



52 “Digital Financial Services in Rural Areas of Colombia,” USAID Rural Finance Initiative, 2019.

53 Ibid.

TRUST IMPEDES DEMAND AND RISK IMPEDES SUPPLY

Trust in the formal banking system among rural and low-income populations remains low. This is compounded by the reluctance of large banks to serve these populations due to cost and risk (real and perceived). Typically, any access to financial services that rural and low-income groups have is provided by community-based cooperatives and microfinance institutions (MFIs). In contrast to large banks, these types of financial institutions are modeled on long-standing personal relationships and circles of trust. When it comes to DFS, low levels of digital literacy often further undermine trust and adoption.

CHALLENGES TO INTEROPERABILITY

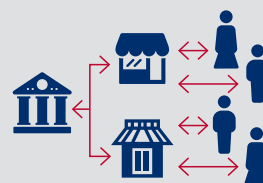
Challenges around interoperability prevent more widespread adoption of DFS. There are two systems for electronic payments: ACH Colombia, operated privately by a group of commercial banks for company and individual payments, and ACH CENIT, operated by the central bank for government collections or payments.^{54,55} When it comes to interoperability and facilitating new market entrants such as entities specialized in deposits and electronic payments (SEDPE), interviewees described these systems as cumbersome and expensive. The burdensome fee structure of ACH Colombia may undermine digital payments and digital financial inclusion. MFIs and cooperatives that serve rural and other marginalized communities may find it challenging to absorb costs associated with using the electronic payments systems. Visionamos, an entity under a major cooperative bank (COOP Central), has made a valiant attempt at creating an interoperable payment network for cooperatives. However, the network is built on ACH Colombia, and to satisfy their fees, Visionamos must charge participating cooperatives. Thus, they struggle to incentivize cooperatives to join their interoperable payment network. It remains to be seen whether the platform can successfully sustain itself while expanding its network.

Agent Banking Explained



The agent banking model lowers the cost of reaching marginalized, formerly unbanked populations. Agents are able to provide financial services to consumers in areas where banks do not have sufficient incentive or capacity to establish physical branches or ATMs.

Agents can take many forms including individuals at small shops, petrol stations, and supermarkets, among others. Financial services provided by agents can include cash-in and cash-out points, credit, loans, insurance, bill payment, and person-to-person transfers, among others.



54 "Global Payments: Spotlight on Colombia," Icon Solutions, November 7, 2017, <https://iconsolutions.com/wp-content/uploads/2017/11/Colombia-VVP-07-11-17.pdf>.

55 Maruland, Beatriz, "Colombia's Online E-Payments Platform: Private Sector Innovation Inspired by Government Vision," Better Than Cash Alliance, January 2015, https://btca-prod.s3.amazonaws.com/documents/30/english_attachments/Colombia-PSE-Case-Study-Highlights-ENG-Jan-2015.pdf?1438936070.

E-COMMERCE IS SLOW TO GET OFF THE GROUND

In 2018, 8 percent of Colombians used e-commerce platforms.⁵⁶ While use of e-commerce is increasing, Colombia's cash economy and lack of trust in online purchasing systems contribute to slow uptake. When making online purchases with cash, Colombians can choose to pay the postal carrier in cash or to use the *Punto de Recaudo* system, whereby consumers receive a pin number (similar to a tracking code), and go to a physical location to pick up and pay for the product. Adoption is further stymied by the postal system, which was privatized in 2016 but reportedly outsources many core delivery functions and still uses an analog system to process and track packages. In the post-conflict era, narcotics police inspect all packages for drugs, which further slows down processing time. Despite these challenges, the Colombian Chamber of Electronic Commerce (CCEC) is working with regional Chambers of Commerce to offer Google Digital Garage, a training curriculum that teaches SMEs how to build an online presence and increase their revenue streams.⁵⁷ To tackle issues of trust in online payments, the CCEC is developing a *Sello de confianza*, or seal of trust, which denotes that the company has implemented the gold standard of practices around data privacy and knows how to manage, process, and secure personal information.

INSUFFICIENT DIGITAL TALENT POOL

Interviewees from both the private sector and government stressed the need for Colombia to expand its skilled digital workforce. The high-end technology talent pool was described as being limited in size and diversity, highly sought-after by local companies, and mostly in the urban centers of Bogotá and Medellín. The Colombian Government and other actors are attempting to fill this gap by training the existing labor force and expanding the pipeline of new ICT workers graduating from Colombia's universities. The government emphasizes the importance of training in data science and AI as well as STEM education for early grade students. STEM initiatives include the Coding for Kids program and the Pedagogical Strategy (Digital Curricula) and STEM Laboratories initiative.

Promoting Women in STEM

There is a large gender gap in ICT careers in Colombia. In 2019, only 17% of ICT roles were occupied by women, however 61% of Colombia's female population are interested in being trained in ICT.⁵⁸ A key component to closing this gap is engaging more women and girls in the ICT sector. The Government of Colombia's High Presidential Advisory Office for Gender Equality is convening civil society groups and the private sector, including Microsoft, to develop STEM curricula that train girls ages 9–18 in hard technical skills and soft management skills, including coding, leadership, and communication. The program also will provide mentoring opportunities to prepare girls for secondary degrees in STEM and to seek jobs in the ICT sector. Reaching young girls is key. They are more open to learning technical skills, are not yet burdened by informal labor and household duties, and help to combat social norms about women not being capable or skilled enough to work in ICT.



56 "CCEC Home," Cámara Colombiana de Comercio Electrónico (Colombian Chamber of Electronic Commerce), accessed March 2020, <https://www.ccece.org.co/>.

57 "Learn Online Marketing with Free Courses," Google Digital Garage, accessed March 2020, <https://learndigital.withgoogle.com/digitalgarage>.

58 "Women in Tech: Latin America's Visionary Approach to Gender Equality," PSL Corp, January 7, 2020. <https://www.pslcorp.com/resources/news/women-in-tech-latin-america-s-visionary-approach-to-gender-equality/>.

SECTION THREE

Recommendations

There are several key opportunities for the international development community to leverage and strengthen Colombia’s digital ecosystem. This section outlines a few, providing recommendations for specific actions and partnerships as well as general guidance for digitally enabled programming. The list of recommendations begins with those that are more specific and actionable and proceeds to those that are more general and can be applied across various activities.

To make each recommendation actionable, [TABLE 3](#) below summarizes the recommendations as follows:

WHAT: links to the recommendation details in the section below

WHY: provides the motivation or intended impact of the recommendation

HOW: details the recommendation with a short summary and important considerations including unknowns, potential challenges, recommended partners, relevant context, and related existing USAID/Colombia programming.

Prior to acting on these recommendations it is prudent to understand best practices in digital development program design as outlined in the [Principles for Digital Development](#).

TABLE 3. Guidelines for implementing DECA recommendations for USAID/Colombia

WHAT?	WHY?	HOW?
<p>1 Coordinate a digital connectivity pilot</p>	Enhanced connectivity	<p>Convene stakeholders for a co-creation event to explore ways to expand connectivity in collaboration with technology companies, Internet service providers, civil society, and the Colombian Government; pilot a connectivity project informed by the co-creation event, in the form of a public-private partnership, or new procurement.</p> <p>Important considerations: Diverse actors with disparate timelines and goals may cause uncertainties. The private sector has short timelines while expanding community networks is innately more long term. Consider how to change/combine existing models to achieve intended impact of enhanced connectivity.</p>
<p>2 Support policy and regulation for digital connectivity</p>	Enhanced connectivity	<p>Support the development, strengthening, and/or implementation of ICT policy and regulation that expands access and use of digital connectivity in rural areas.</p> <p>Important considerations: This is a critical moment for engagement given the relatively recent administration change (2018); helping to ensure effective implementation of ambitious policies is key.</p>

TABLE 3. Guidelines for implementing DECA recommendations for USAID/Colombia (continued)

WHAT?	WHY?	HOW?
3 <u>Integrate women in digital development and connectivity programming</u>	Increased digital inclusion (for women)	Evaluate current programs, pursue new programming for women in digital development and connectivity, and promote opportunities for women to work in STEM. Areas for further consideration: When developing and evaluating effective programs, it is imperative to understand how men and women utilize digital tools differently, how social norms might affect digital literacy, and implications for broader community impact. Women in Connection Colombia's STEAM committee and the High Presidential Advisory Office for Gender Equality are prime opportunities for collaboration. ⁵⁹
4 <u>Promote digital security for civil society</u>	Improved online and offline safety for civil society	Provide cybersecurity assessments of partners' systems, conduct cyber hygiene training, explore tools for community-level physical security, and document potential information breaches. Important considerations: Digital security and physical security may be linked, and there is a need to systematically document threats to civil society, but this may be a complex task as threat reports are not reliable or consistent. Collaborate with stakeholders to build on the progress of previous projects to promote cyber hygiene capacity building and digital tools for physical security.
5 <u>Scale digital land registry systems</u>	Increased integration of agriculture dependent, conflict-affected populations	Collaborate with other donors to build on the Land and Rural Development Program to implement scalable solutions. Important considerations: Current efforts at formalization are reportedly insufficient and costly to scale; collaboration will be important.
6 <u>Promote locally grown digital innovations for the poorest Colombians</u>	Increased digital inclusion	Work with implementers to partner with local innovators, use open innovation, and build ICT skills in rural and PDET communities. Important considerations: It will be important to identify existing social entrepreneurship ecosystems in Colombia (even if not technology-focused) to ensure collaboration.
7 <u>Facilitate market entry for last-mile solutions</u>	Increased digital financial inclusion	Support new market entrants that offer digital financial solutions to underserved customers. Important considerations: External private-sector actors can play a role in servicing beneficiaries at scale. Risk mitigation and market intelligence can aid the commercial viability of DFS for low income customers.
8 <u>Build digital literacy</u>	Increased digital inclusion	Ensure last-mile connectivity activities are coupled with digital literacy programming. Important considerations: There are broad applications for digital literacy; programming could be tailored for different communities (e.g. Venezuelan migrants and Colombian returnees and their receptor communities).

59 Women in Connection is a global professional network for women working in the ICT sector. Colombia has a chapter with a sub-committee on STEAM (Science Technology Engineering Arts and Math).

TABLE 3. Guidelines for implementing DECA recommendations for USAID/Colombia (*continued*)

WHAT?	WHY?	HOW?
9 Support interoperable government systems	More efficient public service delivery and resource mobilization	Support MinTIC's interoperability efforts, and integrate the Principles for Digital Development during the design phase. Important considerations: Use lessons learned from comparable countries or regions. The health sector is a good place to look for success stories.
10 Support innovative financial regulation	Increased digital financial inclusion	Facilitate global peer-to-peer learning exchanges between different regulatory bodies, which can contribute to Colombia's financial inclusion vision. Support the development of a RegTech Accelerator . Important considerations: Colombia's regulatory sandbox was launched in May 2019 following other recent regulations promoting innovation. This is an opportune moment to support these efforts from the outset and during an enthusiastic administration.
11 Understand best practices in program design for digital development	Targeted intervention design to increase impact.	Familiarizing with the Principles for Digital Development is a critical first step to effective program design for digital development. Important considerations: Important considerations: the Principles for Digital Development were originally designed with the donor community in mind, however they can be applied under any scenario related to digital development. Use them as foundational guidance and a solid introduction to working in digital development.

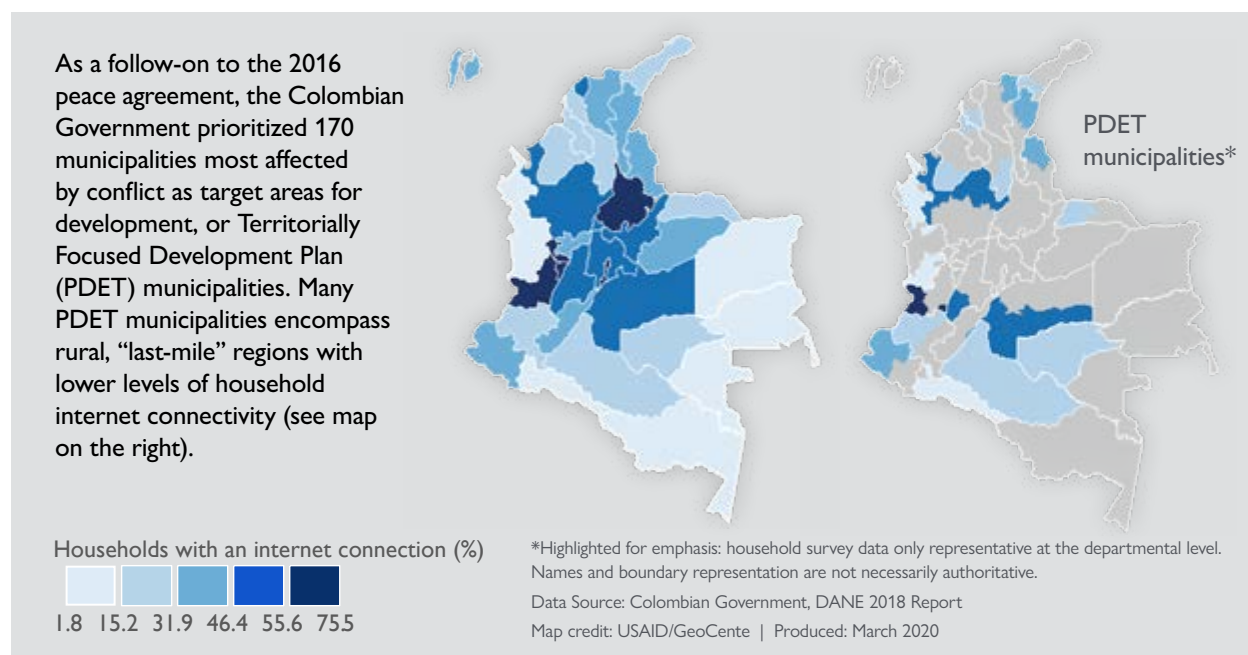
Detailed Recommendations

1. COORDINATE A DIGITAL CONNECTIVITY PILOT

A critical challenge to leveraging digital technology to help achieve development impact is the lack of connectivity in rural areas. While the government is embarking on an ambitious agenda to expand rural connectivity, ISPs and civil society are also experimenting with alternative last-mile solutions. There are many actors and technologies available to deploy a rural network. What is needed is coordination to align efforts in a particular geographic area, select the right technology, integrate digital literacy and safety, and oversee learning and planning for sustainability.

There is a need for a convener to help shape smart investments in connectivity in areas where it works. Beginning with a pilot to showcase how partners could come together and coordinate their respective resources could help establish early learning and a model to be replicated elsewhere. Doing so in the near-term could have important implications for informing broader program design and further roll-out of the Colombian Government's connectivity projects. The format of such a pilot could take many forms: a public-private partnership, expansion of a community network model, or a multi donor partnership initiative. Actors in the international development community could convene a co-creation event, conduct a research assessment, or otherwise hold initial exploratory conversations to identify a location, structure, and approach for such a pilot.

FIGURE 7 below shows the varying levels of digital connectivity in the PDET municipalities. Some of the PDET municipalities do have more than 50 percent of households with Internet. This map can help structure a connectivity pilot as it identifies which PDET municipalities have lower levels of connectivity.

FIGURE 7. Priority Development Regions and Internet Connectivity 2018

2. SUPPORT POLICY AND REGULATION FOR DIGITAL CONNECTIVITY

There is an opportunity to support the current administration’s implementation of its new policies and projects to bridge the rural-urban digital divide. Actors who have technical experience in developing policy and regulatory frameworks for an inclusive, affordable, and secure Internet are well positioned to act on this recommendation. Furthermore, involvement is relevant for those that have programming, both existing and forthcoming, in the regions where MinTIC plans to establish new Internet connections. The Colombian Government could be supported through technical assistance and capacity building as it implements programming and evaluates the effectiveness of its new approach. nected areas through its Universal Service Fund and new spectrum licenses.

3. INTEGRATE WOMEN IN DIGITAL DEVELOPMENT AND CONNECTIVITY PROGRAMMING

To catalyze the impact of digital programs and promote digital inclusion, women’s roles and future in ICT must be considered. As international development actors move forward with digital development programming, women’s access to and use of digital technology should be considered throughout design and implementation in order to reach female beneficiaries, address existing gender gaps, and prevent a gender divide in the adoption and use of new digital technologies.⁶⁰ Moreover, as new networks are built and Internet usage increases, new economic, educational, and entrepreneurial opportunities can also be strengthened to include more women, further reinforcing women’s equitable use of ICT and addressing their underrepresentation in the ICT workforce. Women can be employed as network engineers, receive training in managing ICT centers, sell their goods and services online, and help educate others on safe and secure online behavior.

60 See also USAID’s [Gender and Information Communication Technology \(ICT\) Survey Toolkit](#) for guidance on collecting data on women’s access and use of digital technology and how to use this data to inform the program cycle.

4. PROMOTE DIGITAL SECURITY FOR CIVIL SOCIETY

Programs such as the USAID Human Rights Activity (HRA) have already explored some innovative technology approaches for improving the safety of social leaders, including community alert systems and online platforms for physical security training, but these are still in early stages of design and piloting.⁶¹ In addition, many interviewees felt that there is likely a connection between cybersecurity and the physical security of social leaders. They also noted that many activists may avoid reporting information breaches (such as a stolen laptop or cell phone) because they fear connections between the police and violent actors. As a result, it seems the scope and severity of the problem are not fully understood. Experienced actors can continue to build these systems by documenting potential information breaches and cases of online harassment and work to improve cyber hygiene among its civil society partners. Digital security programming could include:

- **Provision of cybersecurity and vulnerability assessments of partners' systems;** training on best practices such as deleting chat histories, changing passwords, and encrypting sensitive information; and/or awarding small grants for civil society capacity building on the subject matter.
- **Design programming that helps develop the evidence base for cyber hygiene** by understanding the extent to which improved information security can help deter attacks.
- **Explore tools** for community-level physical security, such as mobile alert tools and low-cost digital security systems.

5. SCALE DIGITAL LAND REGISTRY SYSTEMS

After approximately 50 years of conflict and the forced displacement of many rural Colombians, Colombia's National Land Agency, in coordination with the National Development Agency and the Agency for Territorial Renovation, is seeking to formalize property rights, organize the national registry, and recover state lands. USAID/Colombia's Land and Rural Development Program (2013-2018) worked to develop a digital land registry tool that was piloted in several municipalities. Various other donors (including SIDA, DFID, GIZ, BMGF, and others) are investing in similar approaches. Still, interviewees estimated that these efforts at formalization will only be able to cover about 20 percent of Colombia's unresolved land cases. Closing the rest of this gap will require a concerted effort on behalf of the donor community to collaborate with each other, build interoperable registry technologies, and bring innovative solutions to scale.

6. PROMOTE DIGITAL INNOVATION FOR THE POOREST COLOMBIANS

While Colombia's technology startup community is growing, many products are geared toward high-income and foreign customer bases. Several interviewees noted a relative lack of innovative technology products being developed specifically to address Colombia's own development challenges. Building a social innovation ecosystem requires time and commitment from many stakeholders, but there are several ways digital social innovation can be promoted:

- When projects involve a significant technology component (including developing an app or website), **encourage partnership with local technology companies** rather than sourcing abroad.
- When feasible, **use open innovation approaches such as prizes and challenges** to elevate development issues within Colombia's tech community.
- **Build networks within the startup community and encourage promising social technology enterprises** to take advantage of challenge, grant, or incubator opportunities that will help them scale.

61 "Strengthening Human Rights in Colombia," Chemonics International., Accessed March 2020, <https://chemonics.com/projects/strengthening-human-rights-colombia/>.

- **Work to build digital skills in rural and marginalized communities.** This can have many other benefits (such as increasing productive use of connectivity), but experience elsewhere has shown that successful social entrepreneurs are often tech professionals who want to “give back” to the communities they came from.

7. FACILITATE MARKET ENTRY FOR LAST-MILE SOLUTIONS

High perceived and real risk often prevent private-sector actors from using digitally enabled products and services with Colombia’s more marginalized populations (rural, conflict-affected, urban poor, Venezuelan migrants and Colombian returnees). New market entrants can benefit from market intelligence and de-risking instruments that enable alignment of private-sector investment with the goals of the international development community. There is an opportunity to use strategic financial instruments such as blended finance to facilitate market entry of new private-sector actors looking to penetrate the Colombian market with innovative financial solutions that serve marginalized populations. In general, market dynamism is best served by a technology-neutral approach in which governments (and external donors) focus on the desired social impacts of technology, rather than on promoting specific technology solutions.

8. BUILD DIGITAL LITERACY

Whenever projects aim to improve connectivity or introduce a new digital tool, they should also be working to empower recipient communities to do more with technology. Unlike more affluent urban customers, connectivity costs will be significant for rural customers, and they may be unconvinced of the Internet’s value until it tangibly improves their livelihoods. MinTIC’s connectivity and digital literacy efforts are housed within two different directorates, and literacy efforts may struggle to keep pace with rapid expansion. Strategic digital literacy programming can be supported by taking into consideration the following:

- **Identify what connectivity and digital literacy initiatives MinTIC and the major MNOs are planning in the near future.** If the balance seems to skew toward connectivity without digital skill-building, seek ways to incorporate digital literacy into existing programming.
- Digital literacy programming is often based on an assumption that literacy-building interventions will bolster demand and increase willingness to pay for services. **Digital literacy programming should include a robust evaluation component** so that this effect can be quantified and evidence-based approaches to digital adoption can be promoted.
- **Evidence-based digital literacy programming may also provide opportunities for marginalized populations** (e.g. rural, migrant, women, minorities, conflict-affected persons) to acquire digital skills that could help improve their incomes and fill workforce gaps.
- Parallel to connectivity expansion, financial service providers are attempting to grow their agent networks and leverage digital channels. **Digital literacy initiatives can help foster demand** for these services, and thus help expand access points throughout the country.
- **Venezuelan migrants and Colombian returnees in Colombia face a unique set of digital challenges**, including the threat (real or perceived) of surveillance by Venezuelan security services. Many will want to participate in Colombia’s digital society and economy but may lack adequate identity documentation. Attention to the unique digital needs of migrants could be part of a longer-term transition from humanitarian support to community-based development assistance.

9. SUPPORT GOVERNMENT INITIATIVES FOR INTEROPERABLE INFORMATION SYSTEMS

MinTIC has developed a “digital transformation” agenda, part of which aims to make siloed government information systems interoperable through an architecture first developed by the Government of Estonia. This could accelerate the use of digital tools for domestic resource mobilization, government assistance programs, and other aspects of public financial management. It may be helpful to monitor and encourage the Colombian Government’s interoperability efforts, and support the integration of the [Principles for Digital Development](#) with the development of new digital government systems.

10. SUPPORT INNOVATIVE FINANCIAL REGULATION

Colombia’s financial regulator is enthusiastic about technology-driven innovation and is testing DFS products and services within a regulatory sandbox. The financial regulator can be supported by facilitating global peer-to-peer learning exchanges and helping to set up RegTech accelerators that match supervisory challenges with potential technology solutions in Colombia. Actors with experience supporting regulatory sandboxes and RegTech accelerators in other markets are well positioned to act on this recommendation.

11. UNDERSTAND BEST PRACTICES IN PROGRAM DESIGN FOR DIGITAL DEVELOPMENT

To ensure digital programming achieves intended outcomes and impact it is critical to understand and integrate the [Principles for Digital Development](#) into program design. The Principles are nine living guidelines that provide best practices for every phase of the project life cycle. They were created in consultation with various international development organizations including USAID. The Principles are: (1) design with the user; (2) understand the existing ecosystem; (3) design for scale; (4) build for sustainability; (5) be data driven; (6) use open standards, open data, open source, and open innovation; (7) reuse and improve; (8) address privacy and security; and (9) be collaborative. All actors working in digital development are encouraged to use the Principles as foundational guidance for digital programming.

Appendix

A. Methodology

The Colombia DECA included four components:

1. **USAID/Colombia engagement:** USAID/Colombia designated one point of contact (POC) within the USAID/Colombia program office. This POC was responsible for leading communication with CDD; helping identify key informants; reviewing relevant documents pre-, during-, and post-TDY; and attending selected interviews during TDY.

The POC also helped organize an in-brief and out-brief at USAID/Colombia on the first and last days of the in-country research. These meetings were important to socialize the DECA purpose and preliminary findings across various USAID/Colombia technical offices.

This engagement was not only important for ensuring an appropriate mix of interviewees, but was also critical to building the research team's understanding of USAID/Colombia's priorities.

2. **Desk research:** The desk research used a standardized template organized around six pillars (digital infrastructure; access and use; censorship, information integrity, and digital rights; digital society and governance; digital finance; and digital trade and e-commerce). The desk research included three components: 1) quantitative analysis of open-source data and indices to produce regional comparisons (e.g., GSMA, World Economic Forum, International Telecommunication Union, and Varieties of Democracy); 2) Internet research guided by high-level questions under each pillar about the state of Colombia's digital ecosystem; and 3) review of USAID/Colombia's CDCS, funding allocations, and digitally relevant programming.

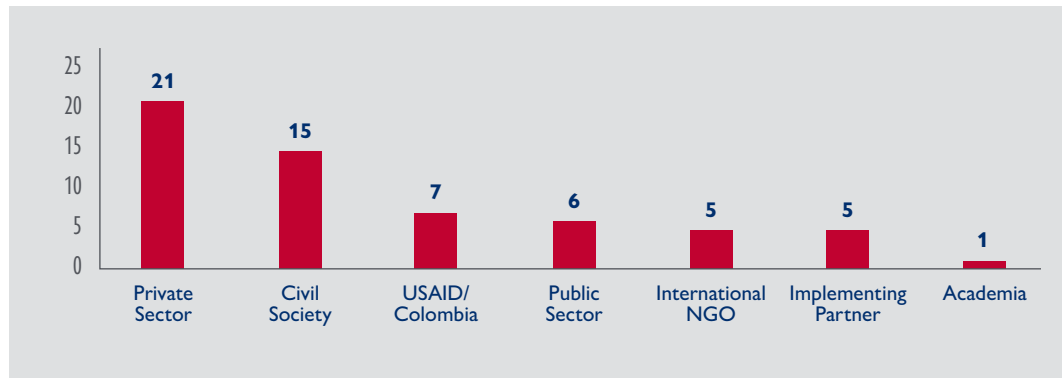
The desk research was shared with the USAID/Colombia POC before TDY and was used to inform the interview guide questionnaires.

3. **Key informant interviews:** The research team collaborated with USAID/Colombia to compile a list of target stakeholders across civil society, academia, international organizations, the private and public sectors, and within USAID/Colombia. Initial interviewees were secured through CDD and USAID/Colombia networks. Additional interviewees were added throughout the research process via referrals from completed interviews.

To ensure a diverse mix of interviewees, the research team evaluated the list of scheduled interviews prior to TDY and conducted additional outreach in an attempt to fill identified gaps.

The chart below shows the 60 interviews by sector; this includes three site visits. The private-sector interviewees, comprising the majority of interviews, included commercial banks, microfinance institutions, large tech companies, and business associations, among others.

FIGURE 8. Summary of Key Informant Interviews, by Sector



During the in-country research, the six-member research team conducted anywhere from two to six interviews per day. Most interviews were attended by at least two team members, with a lead interviewer and a notetaker. To best triangulate findings and to test different interview styles, team members rotated whom they paired with on interviews. Each interviewee was asked a general set of questions, which were developed pre-TDY and tailored to be more targeted based on the interviewee and learnings from previous interviews.

4. **Data polling:** Data polling was integrated into the DECA research process to fill gaps, confirm findings, and illuminate individual-level perspectives on Colombia's digital ecosystem. After TDY, a 20-question survey was developed in partnership with a contracted data polling research company and was deployed using computer-assisted telephone interviewing (CATI) about 6 weeks post-TDY. The survey asked questions about Internet and mobile phone access and use, online privacy and security, and adoption of DFS. The results will be included in a follow-on document. The timing, utility, and design of the data polling is being tested during the initial DECA pilots.

Analysis

The bulk of the analysis was conducted while in-country. Every day during the two weeks in Colombia, the research team conducted daily debriefs. These meetings not only ensured that all team members were briefed on each interview, but facilitated the triangulation of emerging themes that could then be tested in subsequent interviews. At the middle/end of the second week, the team identified primary themes and developed content for the out-brief to USAID/Colombia based on these initial findings. Upon returning from the in-country research, the team convened to revisit these themes, confirmed their validity against some interview notes, and proceeded to organize the findings around the three pillars outlined in this report (digital infrastructure, access, and use; digital society and governance; and digital economy).

Limitations

The research team was limited, to an extent, by their technical expertise. Research Team members were chosen to provide coverage of key technical areas identified in a preliminary review, particularly around digital infrastructure and digital finance. This may introduce some bias—weighting the specializations of team members more heavily than areas such as governance, trade, and e-commerce.

A large portion of interviewees were selected through USAID/Colombia and CDD networks, which may have excluded stakeholders who are less comfortable engaging with U.S. government representatives. While three site visits were conducted, most interviews took place in Bogotá. As a result, information is limited to Bogotá-based interviewees' knowledge and work across the country. Rather than rigorous qualitative methods (e.g., thematic coding), analysis of interview notes depended on triangulation of findings within the research team, who attempted to balance thematic gaps by consulting CDD technical experts and seeking out additional interviewees.

Research team

The six-member research team was composed of digital development generalists and specialists with technical expertise in digital infrastructure, access, and use and digital financial services. Team members who were technical experts attended most interviews that were relevant to their expertise.

B. Key Informants

PRIVATE SECTOR	
1	Amazon Web Services (AWS)
2	Microsoft Airband
3	Airtm
4	Anditel
5	BanColombia
6	BanColombia Foundation
7	Bancamía
8	Casa Luker
9	Colanta Dairy
10	Colombia Fintech
11	Colombian Automated Clearing House (ACH)
12	Colombia Chamber of Electronic Commerce (CCEC)
13	Centro Nacional de Consultoría (CNC)
14	IBM
15	Intel Corporation
16	Marulanda Consultants (CGAP consultant)
17	Ruta N
18	Sistema de Pago Cooperativo Visionamos
19	Village Capital
CIVIL SOCIETY	
20	Alo & Partners
21	Ancestra
22	Asociación Nacional de Empresarios de Colombia - ANDI
23	CINTEL
24	Cooperative Microempresas de Colombia
25	Colnodo
26	Datasketch
27	Foundation for Press Freedom/ Fundación para la Libertad de Prensa (FLIP)
28	Fundacion Karisma
29	Internews
30	NetHope
31	NuestraRed
32	Makaia
33	Juliana Soto, Journalist
34	WeConnect International , Women in Connection Colombia, STEAM Committee
ACADEMIA	
35	Rosario University (Universidad del Rosario)
PUBLIC SECTOR	
36	Financiamiento Superintendente
37	Instituto Departamental de Salud de Norte de Santander
38	Ministry of Information and Communications Technology (MinTIC) (This interview included a series of interviews with over 10 MinTIC representatives from various offices)
39	Secretaría de MinTIC, Departamento de Norte de Santander
40	National Civil Registry/Registraduría Nacional del Estado Civil (RNEC)
41	Víctor Muñoz - Presidencia de la República de Colombia

INTERNATIONAL NGOS	
42	The Trust for the Americas at Organización de los Estados Americanos(OAS)
43	Centre for the Fourth Industrial Revolution (Centro para la Cuarta Revolución Industrial Colombia - C4IR)
44	International Committee of the Red Cross - ICRC
45	Colombian Red Cross (La Cruz Roja Colombia) - Montebello Migrant Center
46	United Nations Capital Development Fund (UNCDF) Better than Cash Alliance (BTCA)
USAID IMPLEMENTING PARTNERS	
47	Chemonics Human Rights Activity (HRA)
48	Chemonics Rural Finance Initiative (RFI)
49	iMMAP
50	Fintrac Producers to Markets Alliance (PMA) project
51	Tetrattech Land and Rural Development Project (LRDP)
U.S. GOVERNMENT	
52	USAID/Colombia Democracy, Human Rights, and Government Office
53	USAID/Colombia Program Office
54	USAID/Colombia Environment Office
55	USAID/Colombia Reconciliation and Integration Office
56	USAID/Colombia Rural and Economic Development Office
57	USAID/Colombia Venezuelan Response and Integration Office
58	State Department - Economic Section

NOTE: two key informants did not consent to be included in this list.

C. Relevant Resources

The following is a list of publicly available resources shared by key informants. These may be helpful to gain a deeper understanding of Colombia’s digital ecosystem, both broadly and as it relates to specific topics. This list is not representative of the breadth of information shared during the DECA, but is a short list of publicly available resources shared by key informants.

[Centro Nacional de Consultoría \(CNC\)](#) shared the following resources:

- [ViaData](#) CNC’s open data platform presented on PowerBI that provides a wide range of national-level data including multiple digital appropriation, access, and use data.
- [Presentation on digital appropriation](#) CNC’s presentation summarizing key indicators on digital appropriation including sex-, education-, and age- disaggregated data on access, use, and digital transformation.
- [Library of market research publications](#) (Spanish) CNC’s digital library of market research and business consulting studies.

[Foundation for Press Freedom/ Fundación para la Libertad de Prensa \(FLIP\)](#) shared the following resources:

- [Cartografías de la Información](#) FLIP’s mapping of media “silent zones” across Colombia
- [Mapa de violaciones a la libertad de prensa](#) FLIP’s mapping of freedom of the press violations in Colombia
- [En las entrañas de una ‘bodeguita’ uribista](#) an article analyzing data from WhatsApp on disinformation
- [Así nos informamos en Internet, nuevo informe de profesoras del Ceper](#) a report on how people get information online
- [La política \(en Whatsapp\) es dinámica](#) a report on misinformation and political chains in Colombia
- [“WhatsApp en esta campaña: poca verificación y poca conversación”](#) (also [English](#)) the results of a survey deployed two weeks prior to local elections in Barranquilla, Bogota, Cali, and Medellin on WhatsApp’s use in political disinformation

[OECD Reviews of Digital Transformation: Going Digital in Colombia](#) analyzes recent developments and policies related to Colombia’s digital economy and makes recommendations to increase policy coherence. The report includes topics such as digital infrastructure, telecom markets, and related regulations and policies. The [key findings flyer](#) summarizes the report’s findings, focusing on the country’s challenges and opportunities for policy intervention.

[Social Maps](#) is a dashboard created by ANDI in partnership with the Colombian Government National Planning Department during the previous administration. It maps all social initiatives implemented by governments, donors, and private companies. Data has not been updated since 2018.

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