

Chapter 6

POLICY RECOMMENDATIONS

Going Digital in Colombia: An Integrated Policy Framework

The previous chapters of this Review have analysed recent developments in several policy fields in relation to digitalisation in Colombia. The analysis has led to an assessment of performance and a set of policy recommendations for each field. These recommendations are discussed below and mapped against the Going Digital Integrated Policy Framework presented in Chapter 1 and summarised in Figure 6.1.

The components of the framework under analysis were those expressed by the Colombian authorities as priorities: access, use, innovation, jobs and market openness.

Figure 6.1. Going Digital Integrated Policy Framework



Source: OECD (2019), *Going Digital: Shaping Policies, Improving Lives*, <https://doi.org/10.1787/9789264312012-en>.

Access

Reliable communications infrastructures and services underpin the use of all digital technologies, and facilitate interactions between connected people, organisations and machines. High-quality fixed and mobile communication networks are crucial for the further development of the digital economy in Colombia as is ready access to these networks at competitive prices.

Enhance access to broadband

Growth rates of fixed and mobile broadband subscriptions in Colombia have been among the highest in OECD and Latin America and Caribbean (LAC) countries since the early 2010s. Despite rapid growth, Colombia still has the lowest fixed and mobile penetration rates in the OECD. Data usage is also lower than the OECD average. While the number of fibre connections has shown a sharp increase in recent years, Colombia lags behind and the average broadband speed is lower than the OECD average and other LAC countries.

In recent years, the deployment of a fibre backbone through a public-private partnership has connected most of the Colombian municipalities and regions. While the backbone reaches the centre of municipalities, connecting the “last mile” has proven challenging. The Commission for Communications Regulation (Comisión de Regulación de Comunicaciones [CRC]) should continue addressing regulatory issues as to create the market conditions for telecommunication operators to connect more businesses and homes through the backbone. Connecting the “last mile” in remote municipalities is particularly important to close the digital gap between urban and rural areas.

The Ministry of Information and Communications Technologies (Ministerio de Tecnologías de la Información y Comunicaciones [MinTIC]) should also continue supporting broadband access for people living in low-income areas (Strata 1 and 2), through temporary measures which have proved to have long-run effects, including subsidies for monthly subscriptions and free delivery of computers.

Spur competition in fixed and mobile communication markets

Prices for both fixed and mobile telecommunications in Colombia have decreased in recent years, but tend to be much higher than the OECD average. High telecommunication prices typically point to low competition. While the increase in the share of mobile virtual network operators (MVNOs) has spurred competition, Colombian communication markets remain characterised by a high level of concentration.

As of December 2018, the prices of the low-usage (20 gigabytes [GB]) and high-usage (200 GB) fixed broadband baskets were, respectively, about 2 and 2.5 times higher than the OECD average. While decreasing, the prices for the medium- (300 calls and 1 GB of data) and high-usage (900 calls and 2 GB of data) mobile baskets were also more expensive than the OECD average.

In 2017, the CRC issued a new regulation to facilitate agreements between mobile network operators (MNOs) and MVNOs. While the new regulation has facilitated market access and improved conditions for MVNOs, the CRC, as planned in its 2019-20 Agenda, should look into the new rules for the registration of the mobile handsets as to avoid an excessive burden on MVNOs.

Move ahead the 700 MHz spectrum auction

The spectrum in the 700 megahertz (MHz) band is highly valued as it propagates well over greater distances. It is well suited for connectivity in remote areas and is used for 4G services in many OECD countries.

The Colombian government has planned to auction spectrum in the 700 MHz band since 2014, but the auction has repeatedly been delayed. In the second quarter of 2019, MinTIC published an action plan on the auction design and conditions. Expressions of interest have been received and comments on the auction design and process are expected to be published in the third quarter of 2019 along with a draft resolution that includes the auction conditions. The auction is planned to take place in the last quarter of 2019.

It is highly recommended to auction the 700 MHz spectrum as soon as possible to meet the increasing demand from mobile applications, e.g. the Internet of Things (IoT). A further important reason why the auction should be undertaken as a priority is that not all MNOs have spectrum in the low frequency range, which puts them at a disadvantage with respect to the other players.

When planning the auction design, two key policy issues should be taken in mind simultaneously: coverage and competition. In order to extend coverage, the auction should be designed as to allow all operators in the market to bid for the spectrum that they need. Coverage obligations are common across the OECD and can further contribute to a broader coverage of the population in rural and remote areas. The extent of the coverage obligation, however, should not be an impediment for certain operators to bid in the auction.

Some operators currently do not have spectrum in the low frequency range, making it more expensive and complex for them to deploy networks efficiently. One mechanism that could be envisaged to allow all operators to compete on equal footing is to design the auction in two rounds, with the first round being open for operators that currently do not have nation-wide spectrum in the low frequency range and the second round being open for all. This would allow to strive simultaneously for both goals of extending coverage and creating a level-playing field for the operators.

The allocation of spectrum should not be used to maximise public revenues from the auction as telecommunication infrastructures provide the foundation for the digital economy. By setting investment and social welfare as the objectives of spectrum use, the ICT Modernisation Law seems to embrace this orientation.

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Increase local Internet traffic exchange

A well-functioning communication infrastructure includes an efficient exchange of Internet traffic. Colombia is well served by multiple submarine fibre cables, with large investment promoted by the Live Digital (Vive Digital) plan. Yet, only a very small number of companies are exchanging traffic at the Colombian Internet exchange point (IXP) “NAP Colombia”. In addition, a strikingly low amount of Internet traffic is exchanged at this IXP.

Colombia should assess the current barriers to the use of this IXP and consider the opportunity to build additional IXPs in larger cities as to reduce costs and improve services. A new IXP, “IXP del Caribe”, is currently under construction. Unlike other neutral exchanges, which are operated by a third-party non-profit entity, this exchange will be run by a large private carrier.

Increasing access to 4G networks and their upgrading for 5G services require significant investment. Investments in mobile communication infrastructure rose from 2008 to 2011 but have been declining since. Policies should help to reverse this negative trend and create conditions conducive to investment.

Enhance effective regulation in converged markets

Colombia has recently issued a new law on “the modernisation of the ICT sector, the distribution of competences, the creation of a single authority, and other provisions”. One key feature of the law is the creation of a “converged regulator” and one single fund for the telecommunication and broadcasting sectors.

While the law represents progress over the current institutional structure, it is essential that the independence of the new, converged regulator be preserved and even strengthened.

In order to prevent any undue pressure from the government on the regulator, a clear distinction should have been made between the funding of the regulator and the funding of MinTIC.

MinTIC should not have the power to revoke permissions of spectrum use nor to inspect, carry out surveillance or control any communication service. These functions should be granted to an independent institution, such as the CRC, which should also issue the glossary of terms and definitions of the telecom sector.

Neither the Minister nor a Vice Minister of MinTIC should have a seat on the CRC Board of Commissioners. With respect to the election of commissioners, the proposed selection process should be amended, in particular by revoking the faculty of the president to select commissioners and the exclusivity of regional public TV channels to select the broadcasting commissioners. All members of the board should be elected through a merit-based procedure.

The transition regime should also been designed as to ensure the independence of the regulator. The suspension of all proceedings and analyses currently undertaken by the CRC should be revoked: a suspension would set back the regulatory work by several years and undermine the regulation of the telecommunication sector.

To ensure effective regulation, the National Spectrum Agency (Agencia Nacional del Espectro) should be an integral part of the CRC.

Finally, competition should have been included among the key goals and criteria for decision making. More broadly, the enhancement of competition should have had a larger role in the law and its importance weighted against the goal to promote investment.

Use

Access to digital networks provides the technical foundation for the digital transformation of the economy, public sector and society but does not ensure widespread diffusion of digital tools and their effective usage, which are needed for individuals, governments and firms to reap the benefits of digital transformation through increased participation, innovation, productivity and well-being.

Diffusion and effective use crucially depend on investments in information and communication technologies (ICTs) complemented by investments in knowledge-based capital, including data and organisational change; on a favourable business environment, for example one that fosters business dynamism; on the availability and allocation of skills; and on trust.

Concentrate resources for public Internet centres in communities that need them most

Colombia is lagging behind in Internet usage, with 64% of individuals using the Internet in 2017, a position achieved by most OECD countries in the mid-2000s (OECD, 2018b). Despite persistent differences in Internet use, there is some evidence that the digital *puntos* and the smaller digital kioscos, i.e. Internet centres in poor and remote communities, have been successful in reducing the digital divide. By giving the public access to ICTs for entertainment, training and online government services, these access points have also helped users to develop their skills and serve as useful locations for training programmes.

These centres require appropriate funding to maintain ICT equipment and infrastructure and train municipal staff to assist the public in using ICTs. Public funding, therefore, should be better targeted to communities where ICT use is likely to remain limited or too costly, and away from areas well served by market providers. Indeed, the government plans to reduce the number of these access points by a quarter between 2019 and 2022 (MinTIC, 2019).

Strengthen programmes to improve computer skills among pupils and adults

Higher sophistication in ICT use requires better skills among users. Many computer users in Colombia lack some basic computer skills, with a quarter of them unable to send emails with attachments, and a third unable to connect additional devices, such as printers (DANE, 2017).

The Computers to Educate (Computadores para Educar) programme has been successful in providing Colombian schools with computers as well as training 50 000 teachers and 150 000 parents on the use of ICTs for educational purposes. As the programme is linked to the royalties from the extractive sector, its funding has dropped further due to the fall in commodity prices. New sources of funding should be found to continue this programme.

Better targeting of the beneficiary schools and better co-ordination with other programmes aimed at increasing Internet access is necessary. For instance, Computadores para Educar has systematically financed the purchase of computers in schools without Internet access. As a result, the number of computers per student in Colombia is among the highest in OECD countries, but the number of Internet-connected computers per student is below average (OECD, 2016).

Extra-curricular activities to develop computer skills, such as computer clubs and online competitions, should also be developed, following the positive experience of other OECD countries.

Numerous programmes are in place in Colombia to improve basic digital skills among adults. While it may be beneficial to have programmes targeting specific groups, many of them seem to overlap, with very little assessment of their effects. These programmes should be better co-ordinated and integrated within adult education policies.

Improve conditions for the use of paid-for Internet services

Internet users in Colombia tend to carry out simple activities on line, e.g. e-mail and social media, while more sophisticated services such as e-commerce and e-banking are less widespread.

Expansion of paid-for online services seems to be hampered by low financial development and the high cost of financial services. The government has prioritised the promotion of formal financial products through the expansion of the physical banking network and increasing the use of digital transactions. Although such steps have been beneficial, further progress is needed. In particular, exempting electronic payments from the tax on financial transfers (4 *por mil* or 4 x 1 000) would help promote greater use of electronic banking and boost formality in the economy.

A further obstacle to e-commerce uptake among individuals is a lack of trust in online retailers. Although Colombia does not have specific legislation to target cybercrime, a law to counter the illegal appropriation of electronically stored confidential information has been in force since 2009. In addition, a Police Cyber Centre (Centre Cibernético Policial) was established in 2010 to investigate and support the prosecution of cybercrime. However, criminal judges may lack expertise in dealing with online fraud. Establishing a special department of the public prosecutor's office to deal with cybercrime could improve confidence among consumers in the security of e-commerce.

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Dissatisfied consumers can already make a civil complaint on line via the Superintendencia de Industria y Comercio. A number of further steps could help to improve consumers' trust and promote e-commerce. These include the creation of a dedicated website for complaints related to online transactions; the publication of data on the number of such complaints received and the time taken to resolve them; as well as the introduction of a quality mark for online retailers that are most responsive to customer complaints.

Promote competition as a driver for digitalisation in firms

Colombian firms lag behind those of other OECD countries, even for relatively unsophisticated Internet activities such as use of a website or interacting with public authorities. A relatively large share of firms receive orders over computer networks, including the Internet, but e-commerce accounts for a small share of their turnover, even for larger firms.

Low competition in the product markets seems to be the main reason for low digital uptake by firms. Although institutional restrictions on competition and state control of the economy in Colombia are in line with other OECD countries, the government should work to reduce a number of non-regulatory barriers to competition: poor infrastructure, a slow court system and a tax code that favours family firms (OECD, 2017c).

Imperfect capital markets also result in slow digital uptake by businesses. Policies should facilitate access to loans at a preferential rate for ICT investments by micro, small and medium-sized enterprises (SMEs), which have limited access to bank loans and account for 80% of employment in Colombia.

The high rate of informal employment can also inhibit adoption. Informal firms tend to be small, have low productivity, are typically run from a household and lack access to credit, which can lead to low investment and innovation. Bureaucracy can be a hindrance to the formalisation of firms. The ongoing simplification of the administrative procedures should be continued in relation to setting up a business, registering property and paying taxes.

Foster digital uptake by firms

Colombia has many programmes in place to promote the use of ICTs among firms. Some of these programmes are targeted to ICT firms, such as encouraging the development of apps and websites, while others benefit firms in all sectors. Dispersing efforts over a large number of firms and a wide range of programmes tends to reduce their effectiveness. In order to avoid fragmentation, Colombia should consider pooling the funding of the existing programmes into a single agency.

Reviewing existing regulations to ensure they are consistent with the digital transformation would further contribute to boosting the use of digital technologies among firms. For instance, further simplifying the registration requirements for firms in the tourism sector would stimulate the use of online platforms. Similarly, removing the legal requirement that consumers sign hard copies of a contract, for example when buying insurance, would foster the development of online services.

Improve institutional co-ordination of the Gobierno Digital

With its Digital Government (Gobierno Digital) policy, the Colombian government is moving beyond the use of ICTs to improve internal processes and interactions with citizens (such as online form filling) towards using digital technologies to provide new services such as the Digital Citizen Services (Servicios Ciudadanos Digitales). The policy was developed in co-ordination with several agencies, with MinTIC having the main responsibility for its co-ordination and design.

Although the majority of national level institutions consider Gobierno Digital to be a high priority, many found it difficult to align their development plans with it. This seems due to the fact that the consultation within government occurred at a late stage – during the implementation and evaluation phases. In the future version of the policy, government institutions should be involved at an earlier stage of development. In addition, MinTIC should take a more strategic role, such as improving skills in public institutions and developing standards for digital government.

Foster open data in government

Further to its Open Data (Datos Abiertos) initiative, Colombia scores highly at the central government level for implementing the International Open Data Charter Principles (OECD, 2017a), which aim to promote the accessibility, availability and reuse of government data by both public and private users. Use of government data, however, is hindered by a system of data governance that largely focuses on protecting security and privacy.

The government should facilitate data sharing as well as access and management of its own data by citizens. It should also leverage the expertise of universities and the private sector. Although the aim of Datos Abiertos is that all government data be published in an open format, this may prove unfeasible in some cases. Therefore, the government should consult with potential end users, citizens, firms and other public institutions in order to prioritise which data should be made publicly available.

Ensure interoperability among public institutions

In addition to sharing data publicly, Colombia has a programme to promote the internal sharing of data to improve processes within the public administration, based on the interoperability framework (OECD, 2017a). Although almost half of national institutions use their own data to improve policies, very few use the data of other institutions.

The government should develop an interoperability platform to boost efficiency in data sharing among public institutions. It should also adopt a principle of openness by design and promote the use of data catalogues in order to help avoid dataset duplication and to highlight the potential applications of data (OECD, 2018a).

Digital participation and collaboration could be further enhanced by setting ICT planning objectives within institutions, generalising ICT monitoring practices and ensuring the implementation of the online management policies that are part of the Gobierno Digital.

Improving the dissemination of good practices among public institutions would also promote the use of advanced data techniques for better policies and services, according to the Colombia's national Big Data Strategy.

Enhance monitoring and evaluation of ICT programmes

More regular monitoring and evaluation of ICT projects, which at present are not standard activities for public institutions, could lead to better outcomes. However, most Colombian public institutions lack the resources and skills to carry out monitoring and evaluation of digital government initiatives.

The Colombian government uses a *Digital Government Index* to rank public institutions on the implementation of the Gobierno Digital policy. The index focuses on the supply of digital services rather than their impact. In addition, public institutions have shown a reluctance to report data to central government that could negatively impact their ranking. Moving away from a system of ranking towards impact assessments could give institutions a greater incentive to report the data they have.

To help institutions in their information management, the government has distributed several implementation guides, such as for information technology (IT) strategy and IT governance. However, use of the guides has been limited, especially by municipalities. Their promotion among municipalities should be accompanied by mentoring and technical advice.

Develop a government-wide approach to the procurement of ICTs

There is room for improvement in relation to procurement of ICTs. While there is a framework with ICT suppliers (managed by Colombia Compra Eficiente), there is no government-wide procurement approach for ICTs. The lack of a central procurement approach allows different agencies and ministries greater flexibility in their procurement of ICTs. However, some ministries and agencies do not have the capacity to take effective decisions on these technical matters.

The government should take steps to centralise ICT procurement in order to increase its bargaining power and prevent some public entities from becoming dependent on a few IT providers. A more centralised approach would also provide public institutions with shared ICT resources (such as cloud computing) and limit their exposure to the maintenance of infrastructure for which they are not well suited.

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Innovation

For Colombia to seize the opportunities of the digital transformation, it is necessary to have innovative firms. Colombia presently spends relatively little on innovation, with a focus on science and research in higher education institutions (HEIs) rather than on innovation in firms. Colombia has introduced policies to promote a range of ICT companies with various levels of sophistication and to facilitate the adoption of their innovations. However, available supports to firms are complex, with many programmes with overlapping aims. Streamlining these policies could boost their effectiveness.

Ensure resources and capabilities for innovation policies

Resources for science, technology and innovation (STI) policies in Colombia, which are financed out of the oil and related royalties, have decreased significantly in recent years following the fall in commodity prices. At the same time, a proportion of the money earmarked for local governments was not spent due to their limited capability to evaluate projects.

The government should ensure greater stability of funding for the newly created Ministry of Science, Technology and Innovation. Capabilities of local governments should also be strengthened and appropriate mechanisms developed to ensure that available funds for innovation are effectively spent. More broadly, Colombia should develop an integrated view of innovation and promote a greater role for businesses.

Strengthen links between research and firms

The creation of two centres of excellences, one on big data (CAOBA) and another on the IoT (CEA en IoT), has been successful to promote co-operation in innovation between several HEIs based in Bogotá, Cali and Medellín; private and public companies (including Colombian firms and multinational enterprises); and the state. However, the funding of these two centres over the forthcoming years is uncertain. Ensuring adequate resources is necessary to strengthen links between research and firms around big data and the IoT.

Streamline support for entrepreneurship

The Colombian government has put in place a number of programmes to support entrepreneurs and start-ups in recent years. Some programmes, for example Fondo Emprender and iNNPulsa, are open to firms in all sectors, while others, such as Colombia Bring IT On and App.co, are targeted at the ICT sector.

While these programmes have shown some success, there is a significant overlap in their aims, target groups and methods. Colombia should make an assessment of these programmes, scale-up those that are more successful and terminate the others. Clearer divisions of responsibility among different agencies would improve the effectiveness of the programmes and allow agencies to develop their core expertise. The selected programmes should be integrated into the general system of innovation rather than being scattered initiatives. This would also make it easier for firms, particularly SMEs, to navigate among the various supports.

Jobs

Colombia is making progress in adapting its labour market for the digital transformation, though significant challenges remain. Digitalisation can increase wages due to higher productivity and benefit those with skills that complement new technologies. However, those with lower skills are at risk of being displaced and left behind due to weak social safety nets in Colombia. At the same time, digital technologies can increase information for students about the courses to pursue, improve targeting of social protection and reduce informality in the labour market.

Invest in skills for the digital transformation

Changing the skill mix in the workforce is necessary to take full advantage of the digital transformation. Only half of adults had an upper secondary education in Colombia in 2016, compared to about three-quarters in the OECD. While there have been improvements in attainments over the past decade, many younger Colombians, particularly in rural regions, continue to leave education without the skills necessary for the future (Radinger et al., 2018).

In order to meet the skill needs for the digital transformation, Colombia must invest more throughout the education cycle. The foundational stages of education for young Colombians should be strengthened in terms of resources and content. As tertiary education expands, measures will need to be put in place to ensure that quality is maintained. It will also be necessary to strengthen adult and continuous education for older Colombians, as many have left education in recent years with low skills. Finally, Colombia needs to ensure that a sufficient number of ICT specialists are available to take advantage of the digital transformation.

Scale-up programmes to improve ICT specialist skills

Colombia has recently introduced a new curriculum allowing students to specialise in ICT-related subjects in the final two years of their secondary education, leading to an ICT Certificate (Bachillerato TIC). However, only four schools have been allowed to award this certificate. Increasing the number of such schools has the potential to increase participation in the programme. In order to keep pace with technological change, it is also necessary to regularly update other modules and provide continuous training for teachers.

The Colombian National Training Service (Servicio Nacional de Aprendizaje [SENA]) offers a range of free-of-charge IT-related courses to individuals with upper secondary education, either on line or in classrooms. These include short 40-hour courses to update workers' skills and as an introduction to ICT occupations. As drop-out rates for online courses tend to be high, increasing the availability of courses delivered through traditional channels should be a priority for this programme.

Other forms of ICT training, such as coding bootcamps, have been used extensively as part of the Apps.co programme. While there is no systematic evaluation, available evidence suggests that they did not have any significant effect on the employment rates of participants nor on their probability of finding a higher quality job. Therefore, coding bootcamps should not be continued unless clear evidence of their benefits is found.

Use data to improve the quality of tertiary education

There is evidence that students in Colombia take poorly informed decisions regarding what tertiary course to pursue. Colombia has taken steps to provide students with information on public HEIs, though only some private HEIs also do so. It also ranks HEIs – but not individual courses – based on a number of quality indicators. The Labour Observatory for Education (Observatorio Laboral para la Educación) tracks the labour market outcomes of graduates, although much of the information provided is outdated. Providing more timely information would help prospective students take better informed decisions.

A system of accreditation is used to signal the quality of individual courses, but is only compulsory for some programmes and based on a small set of information. Including information about students' outcomes would improve the accreditation process and better reflect quality. In addition, extending the ranking system currently applied to HEIs to individual courses would improve information for students.

Strengthen the safety nets along the digital transformation

Digitalisation benefits workers with skills that complement new technologies whereas individuals with low skills or performing routine tasks are at risk of being displaced and facing unemployment spells.

Compared to most OECD countries, Colombia lacks an effective system of unemployment insurance, active labour market policies (ALMPs) and social protection. Protection for unemployed workers has improved with the introduction of an unemployment protection system (*mecanismo de protección al cesante*) in 2013. However, ALMPs remain available for formal workers only. Given the large size of the informal economy, opportunities for training should be provided to all working-age individuals out of work and financed by the general system of adult education.

Use of big data and web scraping may help Colombia improve the match between labour demand and supply. Although firms have a legal obligation to notify vacancies to SENA, the use of such data is limited and the Public Employment Services (PES) only accounts for a very small proportion of job matches in Colombia. The use of big data and web scraping could help SENA improve information on vacancies. Yet, the PES should be supported by an adequate number of well-trained counsellors.

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The use of ICTs could improve the targeting of social protection and make it more effective. The strata system currently in place to determine geographical areas eligible for subsidised public services is inefficient: people with a higher income may move to a lower strata area to take advantage of public subsidies. In addition, the reorganisation of strata boundaries may be controversial. Use of ICTs and big data would allow a more targeted use of social spending, based on up-to-date information on the income of households and individuals rather than on their area of residence.

Use digital technologies to reduce informality

Like other countries with a similar level of gross domestic product per capita, Colombia suffers from widespread labour informality. Use of digital technologies may offer a route to increase formality in the labour market, which is a priority for the new government.

The use of online platforms to undertake transactions that previously took place through word of mouth can allow tax authorities to gain data on such transactions. The different approaches taken by some countries, such as Estonia, Finland and Mexico, can help Colombia to facilitate data sharing between platforms and tax authorities. Clarifying and streamlining regulation on online platforms would also increase incentives for data sharing.

Colombia should continue using digital technologies to simplify business and worker registration, in particular with initiatives such as the Ventanilla Única Empresarial (a one-stop shop for business registration). Promoting electronic invoicing in firms can help to enforce tax collection and reduce frauds. Finally, the use of algorithms to analyse administrative data can improve the detection of tax evasion.

Market openness

High commodity prices on international markets, followed by a surge in capital investments into the mining sector, have determined much of the good performance of the Colombian economy in past years. However, total factor productivity growth has been negative. To reduce dependency on commodity markets, Colombia requires a new growth strategy. The digital transformation provides Colombia with the opportunity to diversify its activities from a commodity-based to a high value-added services economy.

Seize new growth opportunities from digitalisation in services

The digital transformation represents an opportunity for improving productivity growth by enabling innovation and reducing the costs of a range of business processes. This involves a process of search and experimentation with new technologies and business models, where some firms succeed and grow and others fail and exit (Andrews and Criscuolo, 2013). Establishing a business environment that enables this process is crucial for Colombia to seize the benefits from digital transformation.

Colombia's rich cultural assets and creative industries – the *Economía Naranja* (Orange Economy) – provide great potential for productive jobs, including in remote areas. Several legislative changes have helped push the sector forward and should be continued in the forthcoming years.

To fully develop the potential of e-commerce, the government should foster consumer trust through stronger consumer protection. It is important to reduce transaction costs associated with digital payments and keep regulatory hurdles low for small entrants. Improving access to finance for micro-enterprises and SMEs in the warehousing and transportation sector should be a priority to promote innovation in the sector.

Digitalisation also brings new growth opportunities for financial services and Colombia has an active Fintech scene. Fintech regulation, however, appears to be overly burdensome and access to funds for Fintech start-ups more problematic than in other countries. The government has taken some important steps to create a more favourable regulatory environment for the sector, including crowdfunding legislation. These efforts should be continued to accompany the development of Fintech.

E-health services also have great potential, but challenges remain with regard to connectivity in remote areas, interoperability and data security.

Creating the right ecosystem for professional services will be of utmost importance. The government should therefore reassess whether the current regulatory framework is fit for the digital transformation.

More generally, it is crucial to ensure that the multitude of policy programmes supporting the productive transformation of the country are closely co-ordinated across government actors and over time, as to reduce duplications and create clear responsibilities for cross-sector objectives such as skills or digital uptake.

Export policies for ICTs should be better co-ordinated

The Colombian government is actively engaged in promoting exports by local firms and fostering their integration into global value chains (GVCs), with some programmes focusing specifically on services and ICTs, e.g. Colombia Bring IT On and Colombia Exporta Servicios. Better alignment of these programmes could help firms to find and access available support more easily.

Enhance market openness in the digital era

Colombia has made great progress in developing a regulatory framework supportive of trade and investments. This included improvements in the legal framework for intellectual property rights protection and numerous bilateral investment treaties and free trade agreements. Significant progress has also been made in the area of digital trade policy and non-tariff trade barriers.

New business models, deeply integrated GVCs and increasing cross-border data flows are changing the determinants of market openness and related policies in the digital economy. In order to promote cross-border e-commerce, Colombia should extend collaborations with multinational online platforms to help SMEs to connect to Latin American markets. It should also enhance trust in digital transactions through effective and accessible consumer protection mechanisms and information campaigns.

To increase competition among domestic producers and provide access to a larger variety of goods and services at lower prices for consumers, Colombia should reduce the relatively high level of non-tariff measures. In particular, it should extend the number of procedures that can be processed electronically using digital tools to reduce the time required for border procedures.

Colombia should also enhance interoperability of national contract rules for cross-border transactions, in particular by ratifying the UN Convention on the Use of Electronic Communications and International Contracts.

Interoperability of data protection regulations, particularly with key trading partners, is essential from a trade perspective. It is also important to improve regulatory predictability and government communication to create trust in the regulatory environment.

Building a National Digital Strategy for Colombia

Digital transformation affects different parts of the economy and society in complex and interrelated ways, making trade-offs between public policy objectives difficult to navigate. This section analyses digitalisation policies in Colombia in terms of coherence across different domains, with a view to foster synergies across government ministries, levels and institutions. Its aim is to help Colombia build a coherent and cohesive whole-of-government approach to better respond to digital transformation and make it work for growth and well-being.

Digitalisation policy is spreading thin on too many programmes

Over the last decade, digitalisation policies in Colombia have been organised around three components. The first one is the ICT Law issued in 2009 (Ley 1341 de 2009). Under Title IV “Promoting access and use of information technology and communications”, the ICT Law has given the Information Technologies and Communications Fund (Fondo para las Tecnologías de Información y las Comunicaciones [FONTIC]) the objective

“... to finance plans, programs and projects to primarily facilitate universal access and universal service when appropriate to do so, all the inhabitants of the country for information technology and communications, and support the activities of the ministry and the National Spectrum Agency ...”.

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The second component of digitalisation policies in Colombia consists of three National Development Plans (Planes Nacionales de Desarrollo [PNDs]) issued in 2010-14, 2014-18 and 2018-22. The PND is the formal and legal instrument that establishes the objectives of government, setting programmes, investments and goals for a four-year period.

The PNDs are developed, monitored and evaluated by the National Planning Department (Departamento Nacional de Planeación [DNP]), which is an administrative department of the executive branch that reports directly to the president. As an administrative department, the DNP is a technical body, at the same level as ministries but without legislative initiative. Any government agency seeking to implement investment projects interacts closely with the DNP. In particular, all investments made by MinTIC need to be approved by the DNP, including those funded by resources drawn from FONTIC.

The third component of digitalisation policies in Colombia are the ICT strategic sectoral plans set by the MinTIC: Live Digital (Vive Digital) (2010-14); its follow-up Live Digital for the People (Vive Digital para la Gente) (2014-18); and the newly launched The Digital Future is for All (El Futuro Digital es de Todos) (2018-22).

While FONTIC provides the bulk of the budget for digitalisation policies, the programmes undertaken over the last decade have resulted from the interaction between the PNDs and the ICT plans.

The PND and the ICT plan 2010-14 were mainly aimed at increasing Internet access for households, businesses, schools and the government. The subsequent plans, however, set a larger number of objectives with a broader scope.

The new objectives require policies in fields well beyond the typical boundaries of MinTIC: education, industry, economy, international trade, labour, culture and public administration. However, the co-ordination between MinTIC and the other ministries with competences in those areas has remained unclear. Similarly, the fact that FONTIC was by far the main source for financing these programmes has resulted in a number of small-scale projects, with little integration with the policies undertaken in these areas.

Between 2010 and 2017, FONTIC financed 47 different programmes. Two of them – Social communications (38%) and Computers for Education (20%) – together accounted for about 58% of FONTIC investment over the period. Ten other programmes accounted for an additional 25%. The remaining 17% of FONTIC investment, therefore, was spread over 35 programmes. In addition, while Social communications and Computadores para Educar were financed over the whole period, many others were short lived: 28 new programmes were initiated over 2011-17 and 20 terminated over the same period (DNP, 2018a).

Clearer long-term priorities, a stronger focus on larger scale programmes and better integration with other policies are necessary to increase the effectiveness of digitalisation policies in Colombia.

FONTIC does not live up to the ambitions of digitalisation policies in Colombia

Policies for the digital transformation are financed out of FONTIC. This fund is a special administrative entity with separate legal status and patrimony, dependent on MinTIC.

All registered market participants providing telecommunication networks and services, including Internet service providers (ISPs), are obliged to contribute 2.2% of their gross revenues from the provision of the networks and services to FONTIC. Revenues from spectrum tenders also go to FONTIC.

As any other tax, the contributions by telecom operators and ISPs to FONTIC has a direct negative impact on the growth of the sector, either via lower profit margins and investment or via higher prices and lower demand by consumers. On the other hand, by financing public policies to promote universal access and use of ICTs, FONTIC stimulates the demand for telecommunications services and fosters the growth of the sector. The effects of the tax, therefore, depend on the balance between these two opposite effects.

While it may be argued that telecommunication operators and ISPs benefit most from public policies to promote universal access to ICTs, thus potentially offsetting the negative effect of the tax on the sector, the rationale for a sector-specific tax to finance policies that benefit a much wider set of industries, businesses and institutions becomes much weaker.

Indeed, FONTIC's missions have been extended to include the promotion of digital uptake by the government and businesses; support to software, digital content and social applications for health, agriculture, SMEs and poverty alleviation; support of exports of digital content; enhancing human capital in ICTs; as well as the improvement of education through the use of ICTs. The benefits from these programmes go well beyond the scope of telecom operators and ISPs, spreading to the whole society and economy. As such, these programmes should not be financed by a sector-specific tax, but instead out of general revenues of the central government.

The same arguments apply to the proposal in the PND 2018-2022 of single fund resulting from a merger of FONTIC and the Fund for Development of Television and Content, which is financed out of the contributions from TV operators.

Not only does FONTIC provide for the bulk of expenditures for digitalisation policies in Colombia, it also contributes to other policies beyond digitalisation. On average, 20% of FONTIC's annual expenditures in 2010-17 were redirected to the general state budget while an additional 8% went to other national and international current transfers. Therefore, FONTIC has been acting *de facto* as a transfer of resources from the ICT sector to other industries of the Colombian economy (DNP, 2018a).

Finally, FONTIC's revenues have been declining since 2015, further to the decline of the revenues in the telecommunication sector. While the reasons of the latter trend remain unclear, it is not unlikely that the sector's contribution to FONTIC contributes to hampering its growth, thus reducing the very tax basis for the fund.

For Colombia to undertake digitalisation policies that reflect its ambition, it is necessary to finance these policies out of the government's general revenues. This requires that the appropriation for these policies' resources be earmarked in the state budget.

At the same time, FONTIC's objectives should be narrowed down, to those put forward by the ICT Law: "facilitate universal access and universal service". Furthermore, the law calls for the development of public programmes "when appropriate to do so". Therefore, an assessment should be carried out on whether the current approach – a tax on telecommunication operators and ISPs to finance public policies – is the most effective one to achieve the objectives of universal access and universal services. There are a variety of models used in OECD countries to achieve these objectives, which may be better suited to Colombia, ranging from bidding and tenders to grants, loans and direct investments (OECD, 2017b).

Colombia needs a National Digital Strategy

The broadening missions for FONTIC and the increasing number of objectives sets by the PNDs and the ICT strategic sectoral plans are a clear indication of the pervasiveness of digital transformation and the need for policies to address it across several policy areas.

To do so, Colombia needs a National Digital Strategy, where priorities and objectives for digitalisation policies are set coherently across policy areas and budgetary appropriations are allocated accordingly.

The new PND 2018-2022 points out that a long-term vision and a robust governance framework are required to "co-ordinate and articulate the needs of all sectors of government and the private sector with a transversal perspective and in the context of the digital economy" (DNP, 2018b). It does not, however, seem to develop the general lines of a National Digital Strategy nor a path towards it.

While acknowledging that the digital transformation is not only important for the ICT sector, the Pact for the Digital Transformation of Colombia (Pacto por la Transformación Digital de Colombia) (Section VII) tends to focus on a limited number of core areas, such as the institutional setting of the ICT sector, connectivity and access, including social inclusion (VII.A) and digital government (VII.B).

A few sections go beyond these narrow areas, e.g. skills (VII.B.3.b) and productive transformation (VII.B.3.b), but are not linked to other policy areas addressed in the document in a whole-of-government approach. These areas include primary education (I.C); inclusive labour markets (I.F); productivity (II); sustainable development (IV); STI (V); mining (IX); and culture (I.G and X).

This narrow focus is also reflected in the limited amount of resources devoted to the Pact for the Digital Transformation of Colombia: 1.5% of the provisional budget 2019-22. While some of the budget allocated to other areas may contribute to digitalisation policies, e.g. entrepreneurship and productivity, the plan would benefit from a clearer vision about the cross-sectoral nature of digital transformation.

Yet, the proposal for a Pact for the Digital Transformation of Colombia put forward by the PND 2018-2022 is a right step towards a National Digital Strategy. Like a pact, a national strategy requires the voice of the government as well as of businesses, academia, the civil society and the technical community.

The advantages of a National Digital Strategy would be threefold. First, it would bring the policy discussion about digital transformation out of the limited political circle and closer to the people, businesses and institutions that need to embrace the transformation. Second, policy making would benefit from different expertise and the perspectives of all stakeholders, which is particularly useful in a field that is still poorly understood by policy makers. Finally, it would help the country build a long-term vision about digital transformation, which does not seem to have emerged yet.

Building a National Digital Strategy through a multi-stakeholder participative process is not an easy endeavour. However, some countries have succeeded. For instance, in March 2018, Brazil launched its Digital Transformation Strategy, E-digital, as the result of the broad engagement of the private sector, the scientific and academic community as well as the civil society, through many stages of a participative process culminating in a public consultation (Box 6.1).

Box 6.1. Brazil's E-digital: A multi-stakeholder process to the National Digital Strategy

The development of the first Brazilian Digital Transformation Strategy, E-Digital, began in February 2017 with the establishment of an Inter-Ministerial Working Group (IWG), tasked to prepare a draft document of the strategy for submission to public consultation.

The IWG set up five subgroups (Infrastructure; Citizenship and Digital Government; Research, Development and Innovation; Trust and Security in the Digital Environment; and Digital Economy). The work of the subgroups involved intense interaction with government agencies and other public entities, providing an exchange of knowledge and ideas as well as the co-ordination of government initiatives in the digital economy. Overall, the IWG held 9 meetings, in addition to the 25 meetings of its subgroups.

The IWG also sponsored a preliminary consultation focused on a group of 130 experts in government, academia and the private sector, aimed to identify relevant topics for a digital transformation strategy for the country and indicate priority strategic actions.

A series of meetings provided further engagement of representatives of the private sector, non-governmental entities and government agencies. These events, known as “sectoral meetings”, covered the following topics: education; ICT in health; application service providers and the ICT industry; social impacts of the digital transformation; banks, fintechs and venture capitalists, among others.

Finally, four major workshops and seminars were held on Privacy and Data Protection; Education in the Digital Age; ICT Indicators and Metrics; and Cyber Security. All of these events actively engaged representatives of civil society, academia, the private sector and the government.

The conclusions of this process led to the first version of the strategy, submitted to public consultation in August-September 2017 on a dedicated Internet platform. Over 2 000 participants accessed the platform. Among these, more than 700 individuals and organisations offered suggestions and contributions.

Based on the contributions from the public consultation, the IWG prepared a revised version and submitted it, accompanied by draft normative instrument, to the consideration of the President of the Republic. On 21 March 2018, the president signed a decree enacting the “Brazilian Digital Transformation Strategy. E-Digital”.

Source: MCTIC (2018), Brazilian Digital Transformation Strategy. E-Digital.

Colombia should develop a whole-of-government policy for the digital transformation

Traditionally, MinTIC has been the main agency responsible for policies related to ICTs, in particular for the implementation of the ICT strategic sectoral plans. As the policy objectives of these plans have moved from promoting universal access and services of ICTs to technology uptake by firms, digital content, exports promotion, training and education, the need to involve ministries and agencies responsible for these areas has become apparent. This has led to two main policy initiatives: the creation of the Intersectoral Commission for the Development of the Digital Economy (CIDED) and the appointment of a Presidential Advisor for Innovation and Digital Transformation.

The Intersectoral Commission for the Development of the Digital Economy

The first initiative to improve policy co-ordination was the creation of the CIDED in 2018 (Decree 704, 20 April 2018). The CIDED is mandated to provide

“co-ordination and guidance ... of functions and socio-economic activities enabled by ICTs to promote the development and consolidation of the digital economy in Colombia”.

The decree defines the digital economy as being composed of three components: ICT infrastructures, digital business processes and e-commerce transactions. Accordingly, the CIDED is composed of the following members:

- the Minister of ICTs, which leads policies for ICT access and use
- the Minister of Commerce, Industry and Tourism, which leads policies to promote digital uptake by businesses, including e-commerce, online platforms and the collaborative economy
- the Minister of Education, with leads skill policies for the digital transformation
- the Director of the DNP, which is responsible for the PNDs, including policy objectives related to ICTs
- the Director of National Tax and Customs, which is competent for the “commercial, economic and legal conditions” that are conducive to digital transformation, particularly in relation to e-commerce, online platforms and the collaborative economy.

The decree provided that the CIDED be chaired by MinTIC, which will also act as the Technical Secretariat to the Commission, through its Directorate of Digital Transformation.

The committee may invite other public entities to its meetings, whose representatives will have the right to vote when the issues addressed by the CIDED fall within the functions and powers of the entities they represent. Representatives of the private sector, academia and the civil society may also be invited to intervene depending on the topics addressed at the meetings, but with no voting power.

The functions of the CIDED are to:

- serve as a forum for dialogue and co-ordination for the implementation of socio-economic activities enabled by ICTs
- recommend the formulation and implementation of policies, plans, programmes, projects and draft law proposals that may serve to support agencies and entities to take actions in relation to economic and social activities enabled by ICTs in their sector of competence
- recommend to local authorities the formulation and implementation of guidelines, policies, programmes, plans and projects related to socio-economic activities enabled by ICTs, in compliance with the autonomy and the functions conferred to local authorities by the law
- advise the government on the position to take before the public opinion and in national and international organisations on issues related to economic and social activities enabled by ICT
- issue its own rules.

In relation to the latter point, the rules of the CIDED are approved by simple majority in the first session of the commission. They shall set the frequency of meetings, the quorum required to deliberate, the co-ordination mechanisms with other commissions and any other aspects necessary to ensure the functions of the commission.

6. POLICY RECOMMENDATIONS

By addressing the cross-sectoral implications of the digital transformation, the CIED is an attempt to improve policy co-ordination within government. There are, however, several issues that may limit its effectiveness.

The first issue relates to its composition. The scope for policy co-ordination required by the digital transformation is much broader than the policy fields covered by the current members of the CIED. In order to be effective, the CIED should ensure that the perspectives of all governmental stakeholders are voiced in its discussion and contribute to its decisions. For instance, the Ministries of Finance, Labour and Transport or the Administrative Department of Public Service have an important role in the digital transformation. Similarly, it is not clear why the National Tax and Customs is a member of the commission while its ministry of reference (the Ministry of Housing, City and Territory) is not.

The second issue is related to the rules for decision making in the CIED. In order to implement a decision taken by majority, the CIED should have the power to enforce such decision on CIED members who may have voted against it. As the commission does not have this power, its decisions may remain ineffective if not taken unanimously.

The decree provides that the CIED may invite other ministries and agencies, but does not set an obligation to do so. In principle, therefore, the commission may take decisions in some policy areas without the participation of the ministries and agencies competent for these areas. Not only would such decisions be difficult to implement, they would also miss the very aim of the CIED: policy co-ordination.

An additional issue arises from the choice of the Technical Secretariat and its functions. The decree grants the Directorate of Digital Transformation in MinTIC the power to “monitor compliance of decisions, agreements and commitments” originated from the activities of the commission. Granting this authority to the Technical Secretariat, but not to the CIED, tends to create an imbalance in favour of MinTIC, which is also the chair of the commission. Furthermore, it is unclear whether, given its mandate, the technical expertise in MinTIC extends to the much broader range of policy fields that the CIED is expected to address.

More fundamentally, the CIED seems to lack political support even by some of its members. The PND 2018-2022 argues that the CIED continues to have a sectoral focus on ICTs, unaware that the digital economy is transversal and that the ICT sector is only an enabler. It further argues that intersectoral commissions in Colombia have a history of low effectiveness, providing as an example the Intersectoral Commission for Information Policy and Management in the Public Administration (COINFO) as well as the National Commission for Digital and State Information (CNDIE). Since all members of these intersectoral commissions are at the same hierarchical level, it is difficult to reach binding decisions or ensure effective co-ordination. Therefore, the DNP’s view seems to be that, in order to be effective, the CIED should report directly to the president.

The Presidential Advisor for Innovation and Digital Transformation

The second initiative to co-ordinate digitalisation policies is the appointment of a Presidential Advisor for Innovation and Digital Transformation in 2019 (Decree 179 of 8 February 2019). The advisor is one of the 14 presidential advisors established by the same decree.

The functions of the Presidential Advisor for Innovation and Digital Transformation are wide and include:

- advise the President of the Republic and the government on technology appropriation, technological architecture, digital transformation, e-commerce, digital government, technology price framework agreements, innovation and digital security
- co-ordinate the governmental actors involved in the policy implementation in the above fields, including the adoption of smart regulations for the development of the digital economy
- advise on the monitoring and implementation of policies, guidelines and instructions issued by the President of the Republic and the national government in relation to the digital economy
- lead the CIED
- lead the development of the digital ecosystem among public entities, the private sector and the national government

- recommend actions that guarantee that the state and society have the level of human capital required for the digital economy
- provide guidelines for the investment of public resources in the development of technology and associated services
- follow up on the OECD digital agenda, the Pacific Alliance and other international organisations.

The presidential advisor does not have influence on the budget, personnel or functions of the ministries, although he participates directly in the Council of Ministers as well as the meetings with other presidential advisors.

The presidential advisor's budget was allocated by MinTIC in 2019 but is expected to be set by the Presidency from 2020 onwards. As part of the Administrative Department of the Presidency of the Republic, the presidential advisor's Office for Innovation and Digital Transformation consists of the presidential advisor himself, two advisors and one secretary.

By granting the presidential advisor the leadership of the CITED, the decree introduces some uncertainty about the role of MinTIC, which, according to the 2018 decree establishing the CITED, should chair the commission.

From the above description, it is apparent that the functions of MinTIC, the CITED and the presidential advisor overlap to a large extent. Among these three institutions, MinTIC is the only one with the authority to take policy initiatives related to the digital economy and the resources to implement them. The CITED and the presidential advisor have, in principle, a much wider mandate, but their role is, *de facto*, mainly limited to advising on issues related to the digital economy and making non-binding recommendations on how to improve co-ordination. This situation creates incentives for MinTIC to spread its resources thin on too many programmes, without necessarily the expertise and institutional channels that the implementation of such programmes would require.

A National Digital Strategy with a whole-of-government approach

Colombia needs to develop a National Digital Strategy that sets a long-term vision and high-level objectives. As argued above, the strategy should be developed by the government through a multi-stakeholder process, followed by a public consultation.

Opportunely reorganised, the CITED could become the body that co-ordinates and monitors the implementation of the National Digital Strategy. It would set the targets, define the policy instruments to achieve them, and agree on the role of each ministry and agency according to the strategy.

Ministries would maintain the policy initiatives in their respective areas of competence but would have to reach out to other ministries and develop proposals for joint policy programmes according to the strategy. They would then submit these proposals to the CITED, which may approve, suggest changes or reject them. A similar process would occur at regular intervals for monitoring the programmes approved by the CITED.

The CITED should consist of a small number of permanent members but systematically involve all other ministries and agencies as required by the policy areas addressed. This setting would facilitate the operation of the commission while promoting a whole-of-the-government approach.

One proposal is for the CITED to be composed of three permanent members only: the presidential advisor for Innovation and Digital Transformation, who would chair the committee as the direct representative of the president; the Director of the DNP, as the representative of the body that develops and monitors the four-year PNDs; and the Minister of ICTs, as the main agency responsible for programmes to support access to and use of digital technologies, which are a pre-condition for any further policies related to the digital transformation.

Any other ministry, agency or local government should be entitled to participate in the CITED meetings and vote on the proposals submitted to the commission. Non-governmental institutions, businesses, experts and individuals can also participate, but cannot vote.

6. POLICY RECOMMENDATIONS

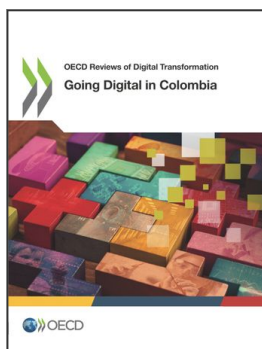
Meetings of the CIED are called by the chair, who sets the agenda and invites participants, after consultation with the other two permanent members. This rule grants the chair the institutional responsibility to involve all relevant stakeholders in the decision making of the commission.

In order to ensure policy coherence, the CIED should take decisions by unanimity of the permanent members and invited governmental entities together. In case of absence of any permanent member or invited governmental entity or in case of disagreement, the chair would submit a proposal to the president of the Republic for his/her validation. This mechanism would create incentives for all participants to reach an agreement within the CIED. It would also strengthen the role of the chair and ensure that the CIED reports to the president through the presidential advisor, without charging the president with the day-to-day operation of the commission.

Finally, the CIED Chair should be given the authority and adequate resources to recruit a team, with the adequate range of expertise and reporting directly to the chair, to serve as the Technical Secretariat of the commission.

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