

Digital technologies for a new future

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Fifteen years of change



A new digital world

- Ubiquitous and continuous connectivity (smartphones)
- Boom in global platforms
- Acceleration of technical progress (cloud computing, artificial intelligence, blockchain, augmented and virtual reality)
- Emergence of 5G technology



Digital technology in a new world

- Geopolitical tensions
- Environmental crisis
- Inequality and exclusion



A region ill-prepared

- Slow growth and little investment
- Slowdown in the fight against poverty and inequality
- A new challenge: the coronavirus (COVID-19) pandemic





Digital technologies helping to tackle the pandemic

Priorities Economic crisis New reality Social well-being -9.1% Online consumption models GDP of LAC **Productive Export values** -14% resilience **Businesses** -2.7 M **Unemployed** +21 M Intelligent Online +45.4 M **Poverty** production business model Sustainability models Connected Digital **Digital transformation** 5G Cloud computing IoT AI Robots economy economy

Post-crisis restructuring:

- Investment patterns, including the development of 5G networks
- Supply chain: proximity of suppliers (regionalization).
- Plants: automation of processes and adoption of advanced technologies
- Remote manufacturing, diagnostics and maintenance.
- Hybrid model with on-site and off-site workers.
- Data: greater use, big data and artificial intelligence.





Towards a new generation of digital agendas







E-government

Provision of State services Government portals and privacy regulations

Digital agendas and governments as platforms

Definition of general digitization indicators, applications for the public, open data policies

National digital development plans

The new technologies of the fourth industrial revolution enable a cross-cutting transformation that requires coordination and planning to eradicate asymmetries and maximize impact

2000 2005

2010

2015

2020

2025

2030

Basic Internet access and computers in schools

Focus on basic infrastructure: from computer rooms to computers in the classroom

Broadband plans

Building of fibre optic backbones, heavy public investment and efforts to improve connection quality, increase in the number of smartphones

COVID-19

Disruption and exponential increase in digital needs for teleworking, tele-health, e-government, etc. Need for skills transformation







Information society age

Proliferation of ICTs, broadband and smartphones Increased production of digital and multimedia content and the provision of public and private services and e-commerce



Digital transformation age and Industry 4.0

4G/5G and the Internet of Things, big data and artificial intelligence driving the new data-based economies and platformization as a result network effects

Digitization for equality and sustainability

Only 67% of the region's inhabitants and 60% of households use the Internet



70% penetration rate for mobile broadband and 14% for fixed broadband



1/3 of the population has limited or no access because of their economic situation



33% of urban households not connected



77% of rural households not connected

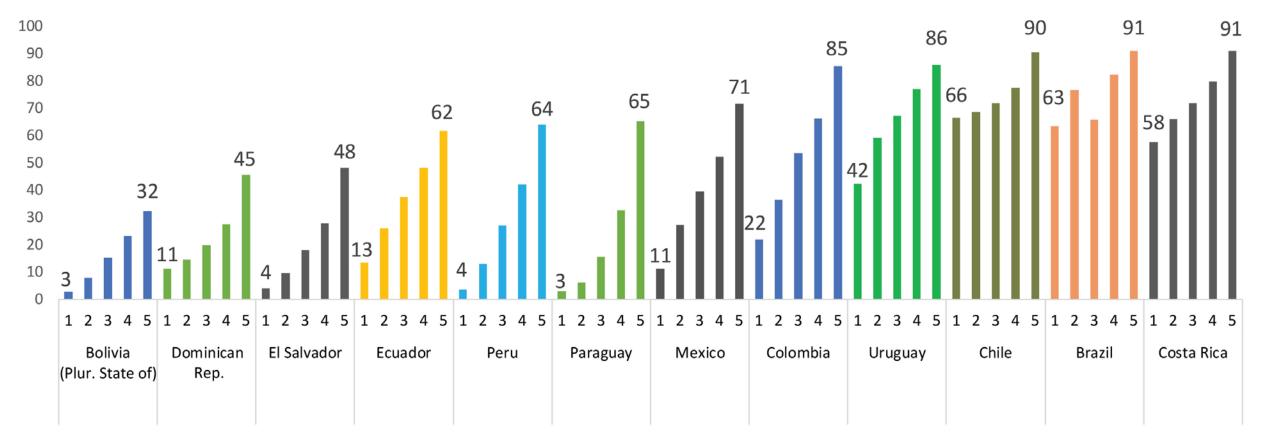


42% of those aged under 25 and 54% of those aged over 66 are not connected



More than 40 million households with no Internet connection: half of those in the two lowest income quintiles

LATIN AMERICA (12 COUNTRIES): HOUSEHOLDS WITH AN INTERNET CONNECTION,
BY INCOME QUINTILE, 2018



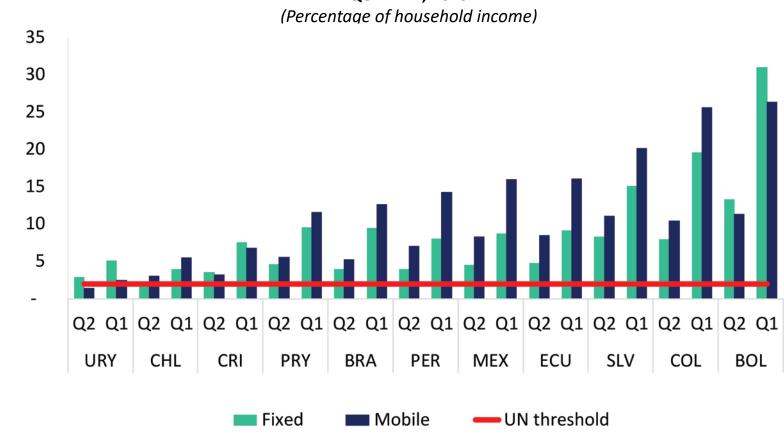


Source: ECLAC Regional Broadband Observatory (ORBA), on the basis of information from the Household Survey Data Bank (BADEHOG). **Note**: Statistics for Brazil, Chile, Costa Rica, Ecuador, El Salvador, Paraguay and Uruguay include mobile Internet. Data are for 2018 for all countries, except Chile and Ecuador, for which data are for 2017.

Lack of affordability excludes lower-income households

- For populations in quintile I and II, mobile and fixed broadband services cost 14% and 12% respectively of their income
- Approximately six times the reference threshold of 2% of income recommended by the United Nations Broadband Commission

LATIN AMERICA (11 COUNTRIES): AFFORDABILITY OF FIXED AND MOBILE BROADBAND BY INCOME QUINTILE, 2019



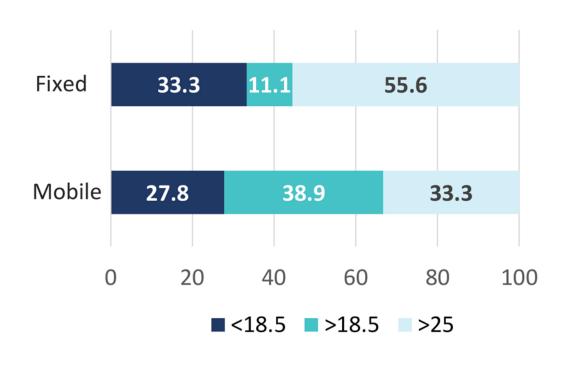


1/3 of the region's countries unable to provide the download speeds required for digital solutions

FUNCTIONALITY BASED ON BROADBAND DOWNLOAD SPEED

Low 5.5 Mbps	Medium 18.5 Mbps	High More than 25 Mbps		
Email, basic video and audio streaming	Two basic functions and one high-demand application can run simultaneously	Basic functions and more than one high- demand application can run simultaneously		
No teleworking or distance learning	Teleworking or distance learning	Teleworking and distance learning		

LATIN AMERICA AND THE CARIBBEAN (18 COUNTRIES):
MOBILE AND FIXED BROADBAND DOWNLOAD SPEEDS, JUNE 2020
(Percentages)

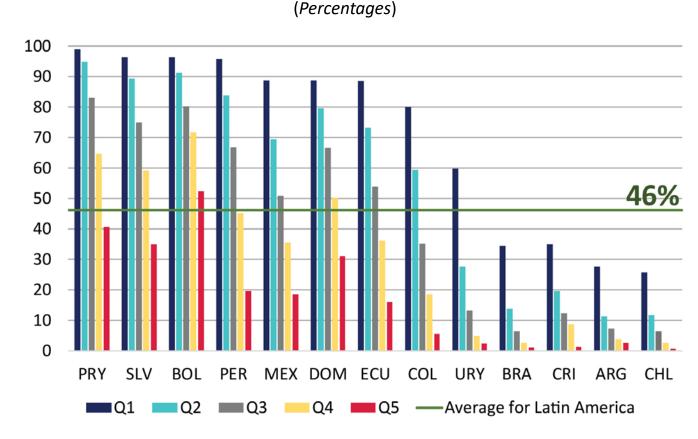




More than 32 million children have no access to online education

- 46% of children aged between 5 and 12 live in households that are not connected
- In El Salvador, Paraguay, Peru and the Plurinational State of Bolivia, more than 90% of children from the poorest households live in unconnected homes
- Differences between economic strata affect the exercise of the right to education and exacerbate socioeconomic inequalities

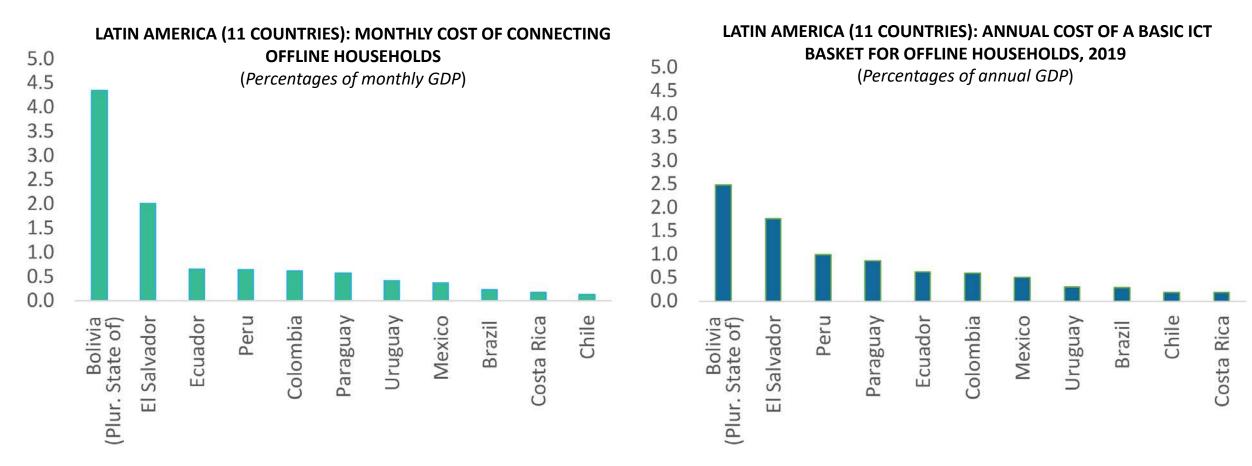
LATIN AMERICA (13 COUNTRIES): CHILDREN IN HOUSEHOLDS WITHOUT INTERNET ACCESS, BY INCOME QUINTILE, 2018



Source: ECLAC, on the basis of Household Survey Data Bank (BADEHOG). Percentage of total number of children in each income quintile of each country.



Challenge 1: universalize access and affordability

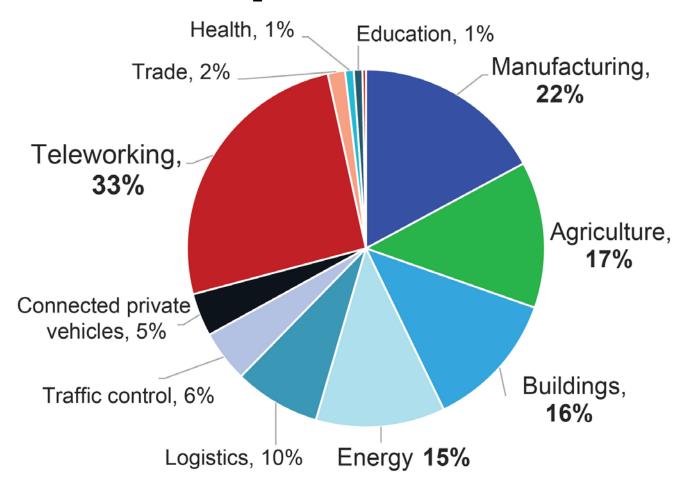


A basic digital basket for offline households would cost around 1% of GDP annually



Digitization for sustainability

POTENTIAL CO₂ REDUCTION BY 2030, BY SOLUTION



The implementation of sectoral digital solutions would reduce global emissions by 12 gigatons of CO2 equivalent by 2030, paving the way for sustainable growth



Challenge 2: digitization for sustainability

- Dematerialization
- Disintermediation
- Optimized resource management in manufacturing and logistics
- Conscious consumption

- 15%

reduction in global carbon emissions in 2030

2015

- **3.6%** of global energy consumption
- **1.4%** of CO2 emissions
- **49.8** million tons of e-waste

- Energy consumption
- Polluting hardware production processes
- Devices with short life spans



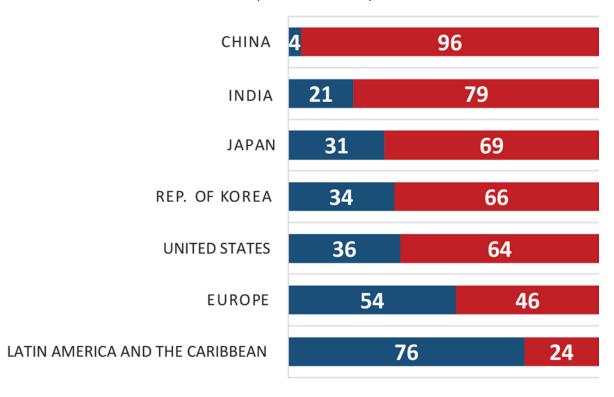


Digitization for productive development

A region that suffers from problems with productivity and technological maturity

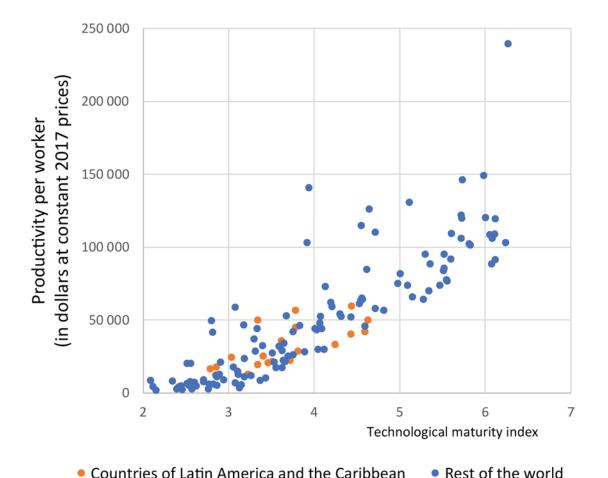
CONTRIBUTION OF PRODUCTIVITY AND EMPLOYMENT TO GDP GROWTH, BY COUNTRY OR REGION, 2000–2019

(PERCENTAGES)



■ Contribution of employment
■ Contribution of productivity

PRODUCTIVITY AND TECHNOLOGICAL MATURITY, 2010–2018





The pandemic will result in massive destruction of the production fabric

- Closure of 2.7 million formal businesses, of which 2.6 million are microenterprises
- Loss of 8.5 million formal jobs (through closures of businesses alone)
- Sectors:
 - Retail and wholesale will lose 1.4 million businesses and 4 million formal jobs
 - Tourism will lose at least 290,000 businesses and 1 million jobs



High risk of job destruction and erosion of capacities

LATIN AMERICA AND THE CARIBBEAN (27 COUNTRIES): POTENTIAL BUSINESS CLOSURES AND JOB LOSSES BY SECTOR OF ACTIVITY





Source: ECLAC, on the basis of official data.

The pursuit of greater productivity and efficiency must lead to a sustainable and inclusive transformation of production

Crisis



Higher variable costs



Higher fixed costs



Lower output

Dynamic response



Improve efficiency

- Energy efficiency
- Collective efficiency
- Big data
- The Internet of Things



Productivity

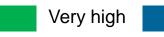
- Products with greater value added
- Increased automation

A model for transformation of production with digitization



Insufficient sector digitization

Level of digitization¹



High

Moderate

Low

Sector	Digitization by sector ¹							
	Colombia	Brazil	Argentina	United States	Israel	Poland	Czech Republic	
Financial services								
ICT services								
Logistics services								
Agro-industry								
Manufacturing								
Mining								
Trade								
Health								
Education								
Other services								



Source: ECLAC, on the basis of data from McKinsey Global Institute

Digitization of production chains

Advanced analytics and artificial intelligence

The Internet of Things

Advanced robotics

Cloud services and platforms

Blockchain

Autonomous and semi-autonomous vehicles

3D printing

Virtual and augmented reality

Agriculture

Manufacturing

Trade and tourism



One example: digital technology in agricultural chains

Harvesting **Purchasing** Cultivation **Transformation** Distribution and transport Sowing, irrigation, Inputs and Harvesting, transport **End products** fertilizers and **Logistics and sales** equipment and storage pest control Platforms for Smart irrigation Automated harvest Automated F-commerce acquiring inputs management (IoT) date selection production platforms (sensors and processes Crop monitoring Digital marketing advanced analytics) (industrial robots) platforms Sensors for Smart management of Predictive Robots for automated monitoring the cold inventories and assets maintenance of inspection chain machinery and Route optimization equipment Drones for crop and fleet management (sensors) monitoring (advanced analytics)





Smart agriculture



Real-time weather forecasts, including rainfall



Detailed information on fertility of soil and crop yields



Optimization of fertilizer use and of growing and harvesting times



Constant
monitoring of
crops and
smart
irrigation



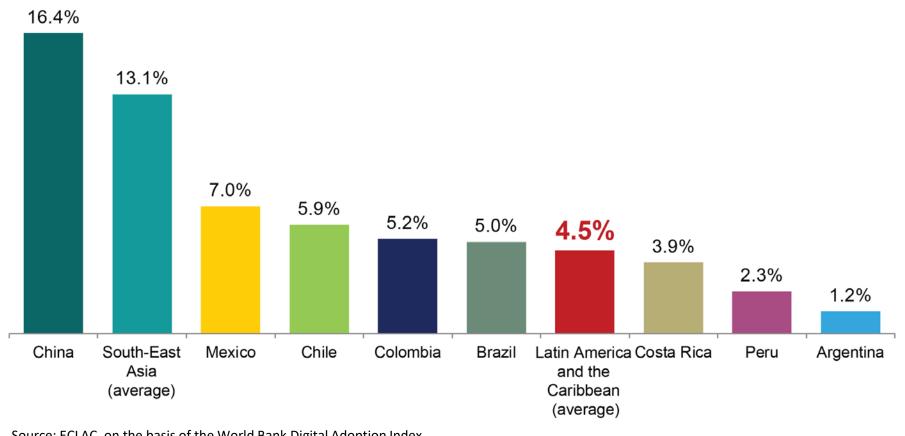
Consumers can monitor the entire production chain



Digitization in companies

Insufficient digitization of companies

GROWTH IN ADOPTION OF DIGITAL TECHNOLOGIES IN COMPANIES, 2014–2016 (PERCENTAGES)



Adoption of digital technologies in the region has been slower than in emerging countries

Source: ECLAC, on the basis of the World Bank Digital Adoption Index



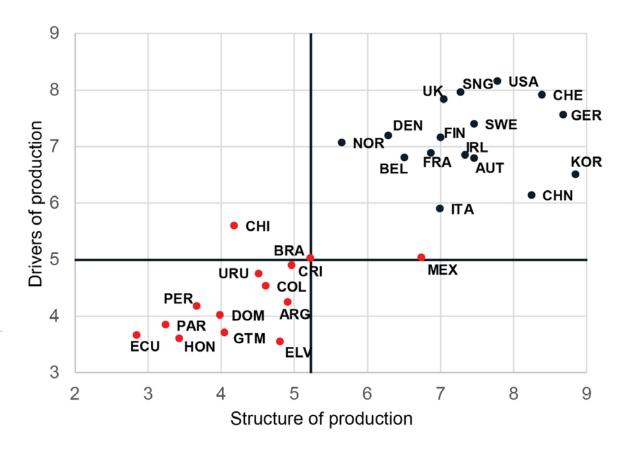


Unsophisticated use of digital technology

BRAZIL, CHILE, COLOMBIA: DIGITIZATION OF PRODUCTION PROCESSES, 2018

100% 89.0% 90% 78.4% 80% 70% 60% 50% 36.9% 40% 30% 17.7% 20% 10% 0% Percentage of Percentage of Percentage of Percentage of companies companies that use companies that use companies that connected to the Internet in their online banking have digital the Internet supply chains sales channels

READINESS FOR THE PRODUCTION OF THE FUTURE



Source: ECLAC, on the basis of data from company ICT surveys

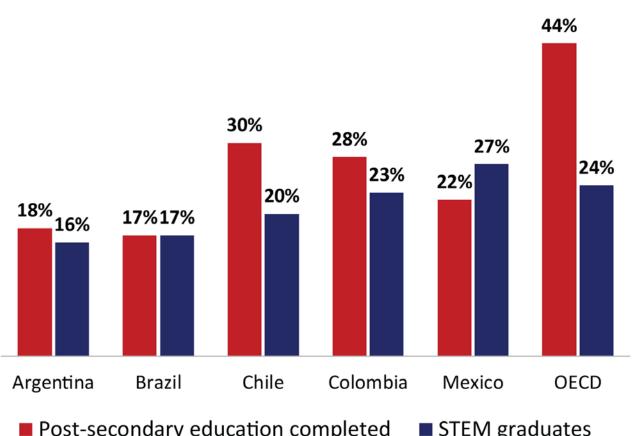




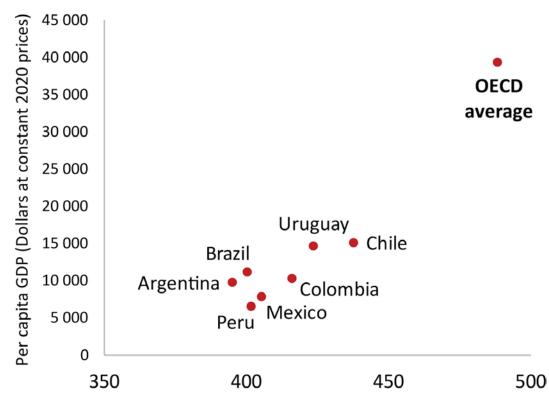
Capacity-building is fundamental

CHARACTERIZATION OF YOUNG PEOPLE AGED 24–35 BY TYPE OF EDUCATION, 2018

PER CAPITA GDP COMPARED TO PISA RESULTS, 2018





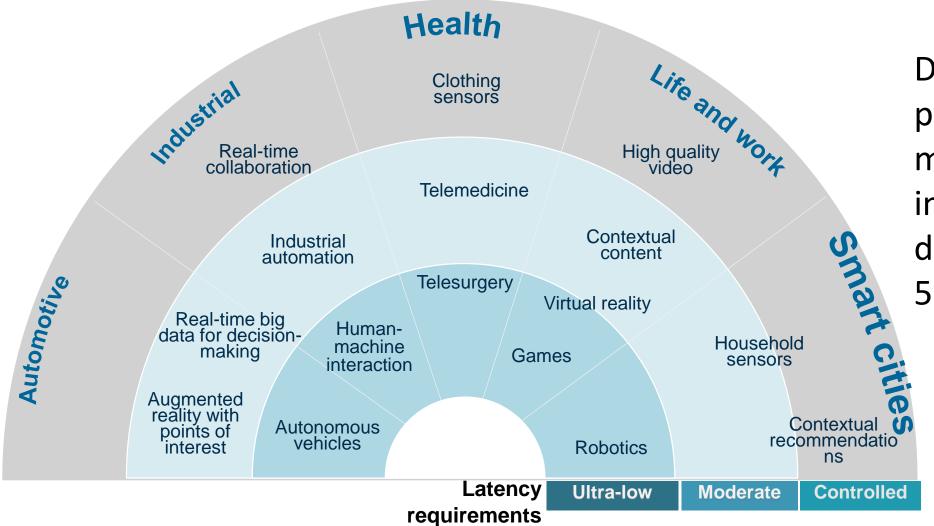


Average PISA results for mathematics, science and reading





The challenge of 5G infrastructure

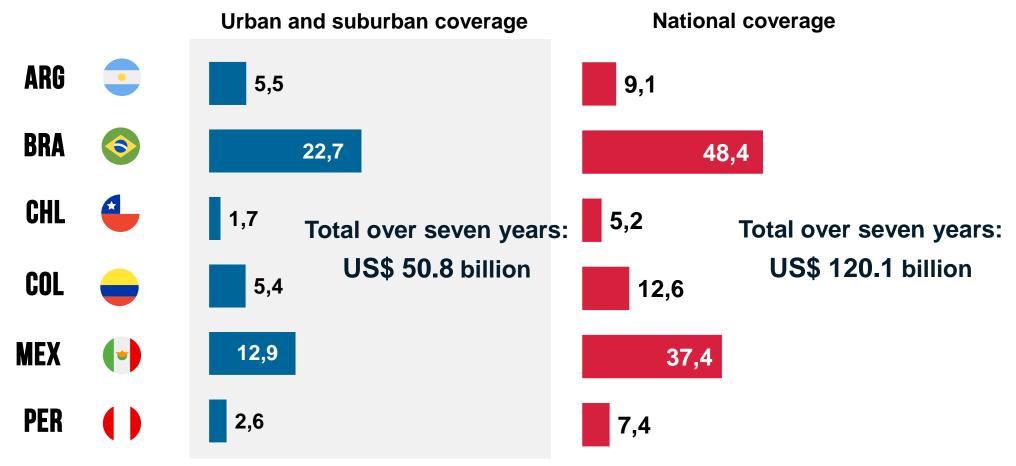


Digitization of production must take into account development of 5G networks



National 5G coverage will require investments totalling US\$ 120 billion

ESTIMATED COST OF 5G ROLL-OUT, TOTAL OVER 7 YEARS(BILLIONS OF DOLLARS)







Challenge 3: a digital transformation of production

Investment and innovation

Investment in technology

Digital R&D&I

Financing for companies

Skills

Universities and research

Technical education

Building skills in companies

Infrastructure

Broadband, 5G, IoT

Broadband for companies

Payment markets

Regulation

Standards

Competition

Labour markets

Other instruments

Technological centres

Attracting investors

Digital value chains





Digitization, governance and digital agendas

Components of the new digital agendas

Clear leadership and definition of roles and competence.

> **Prioritization of areas** and sectors to avoid overlapping initiatives.

Assessment of investment supply, incentives, requirements and determinants.

Analysis of demand with a focus on aggregation to create new markets and value chains.

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Measurement and continuous reporting of progress. Open data for participatory citizenship.

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Long-term vision. 8

Alignment of offices for innovation and digital government and crosscutting capacity to implement disciplinary measures.

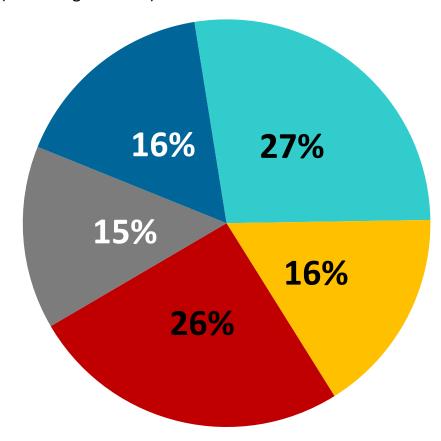
5 Encouragement of digital trust and reduction of transaction costs. Protection of privacy and development of cybersecurity policies.



Towards intelligent data management

WORLD: RESTRICTIONS ON THE FREE TRANSFER OF DATA, BY TYPE OF DATA (Percentage of total)

- Relating to accounting, taxes and finance
- Digital services
- Governments and public bodies
- Personal data
- Sectoral data



- 1. Regulation
- 2. Defence of competition
- 3. Cybersecurity
- 4. Protection of privacy



Aspects of the regional digital agenda

Dimensions

Areas of cooperation

Building of internal capacities

- Support mechanisms to design the agenda and digital policies.
- Technical support to design regional digital market strategies and the coordination of these among the different integration blocs (Pacific Alliance, MERCOSUR, Mesoamerica Integration and Development Project).

Inclusion of all stakeholders

- Agendas for joint work with private actors, civil society and the technical community.
- Involvement in a joint agenda with other public sector bodies in addition to those linked directly to ICT sectors.
- Strengthening of cooperation with other forums.

International cooperation

- Design of instruments (technical assistance programmes, technology transfer, etc.) to strengthen cooperation among countries.
- Continuous dialogue on digital policies and identification of important themes.





Towards a new eLAC agenda: nine pillars

Emerging technologies

Digital infrastructure

Digital trust and security

Digital transformation and the digital economy

Regional digital market



Digital government

Regional digital cooperation

Inclusion, competence and skills

Facing the pandemic and facilitating reactivation

