

DIGITAL ECONOMY REPORT 2021

Cross-border Data Flows and Development

For Whom the Data Flow

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UNCTAD: P166 Short course for Geneva-
based diplomats
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Palais des Nations, Geneva



STRUCTURE OF THE COURSE


SESSION 1: Background and issues at stake

SESSION 2: Policies on cross-border data flows

**SESSION 3: Way forward: In search of a
balanced approach for global data
governance**



SESSION 1: Background and issues at stake

- A. Motivations behind the Report**
 - B. Recent trends in the data-driven digital
economy**
 - C. Cross-border data flows and development:
Issues at stake**
- 

SESSION 1

A. Motivations behind the Report

Data increasingly important economic and strategic resource



“Data have become a key strategic asset for the creation of both private and social value. How these data are handled will greatly affect our ability to achieve the Sustainable Development Goals.”

António Guterres,
Secretary-General, United
Nations

Literature on cross-border data flows has various limitations and gaps



Commonly agreed definitions

of data and cross-border data flows are missing, hampering their measurement as well as constructive discussion and consensus-building on their governance



Few studies discuss the **development implications** of cross-border data flows



Most recent studies on cross-border data flows mainly look at them from a trade angle, and few consider them in a **multidimensional manner that factors in economic and non-economic dimensions**



Many studies have clear **ideological leanings** reflecting certain interests



Few studies are for developing countries and most are **anglophone**



There is **little hard evidence** to support free data flows or strict data localization policies



Research gaps





Priorities for future research

Working on definitions and the **measurement** of data and data flows

Focusing on the **development implications** of cross-border data flows

Stronger emphasis on the **multi-dimensional nature of data**

More balanced assessments of cross-border data flow policies, pondering the pros and cons

Data in the rivalry-excludability spectrum

RIVAL

EXCLUDABLE

Private goods:

Food, oil, clothing and other manufactured products (smartphones), fish in a private pond, etc.



NON-EXCLUDABLE

Common goods:

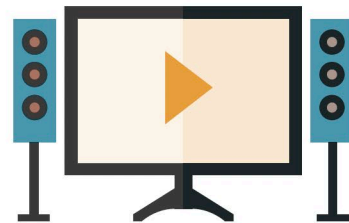
Forests, land, atmosphere, water, fish in the ocean, etc.



NON-RIVAL

Club goods:

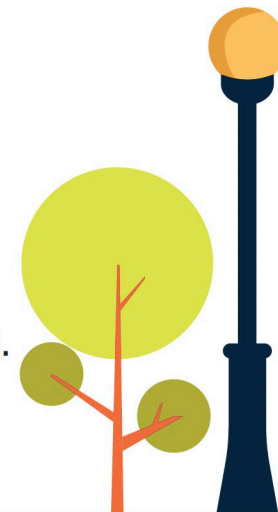
Satellite TV, private parks, cinemas, copyrighted software, broadband Internet, paid streaming movies, etc.



DATA

Public goods:

National defence, air, sunshine, news, public TV, public parks, streetlight, lighthouses, etc.



Data are a special resource, different to goods and services

The data pyramid

EXPLANATION

Captures both high level of knowledge and the ability to apply knowledge towards particular goals

Information applied to answer “why” questions

Data used and contextualized as answers to “who, what, where, when” questions

Discrete, objective facts about phenomena, often obtained from sensors, experiments or surveys

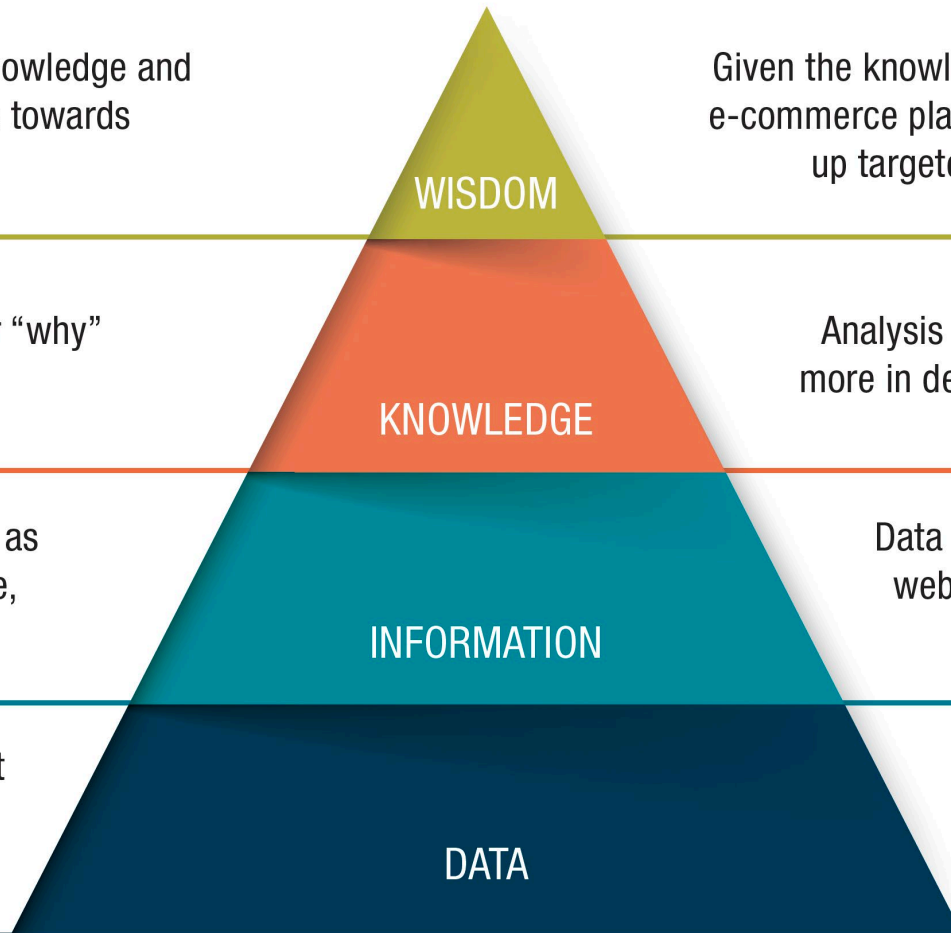
REAL-WORLD APPLICATION

Given the knowledge about its web visitors, the e-commerce platform can adjust prices and set up targeted advertising to increase sales

Analysis suggests that certain items are more in demand at a certain price among users with a particular profile

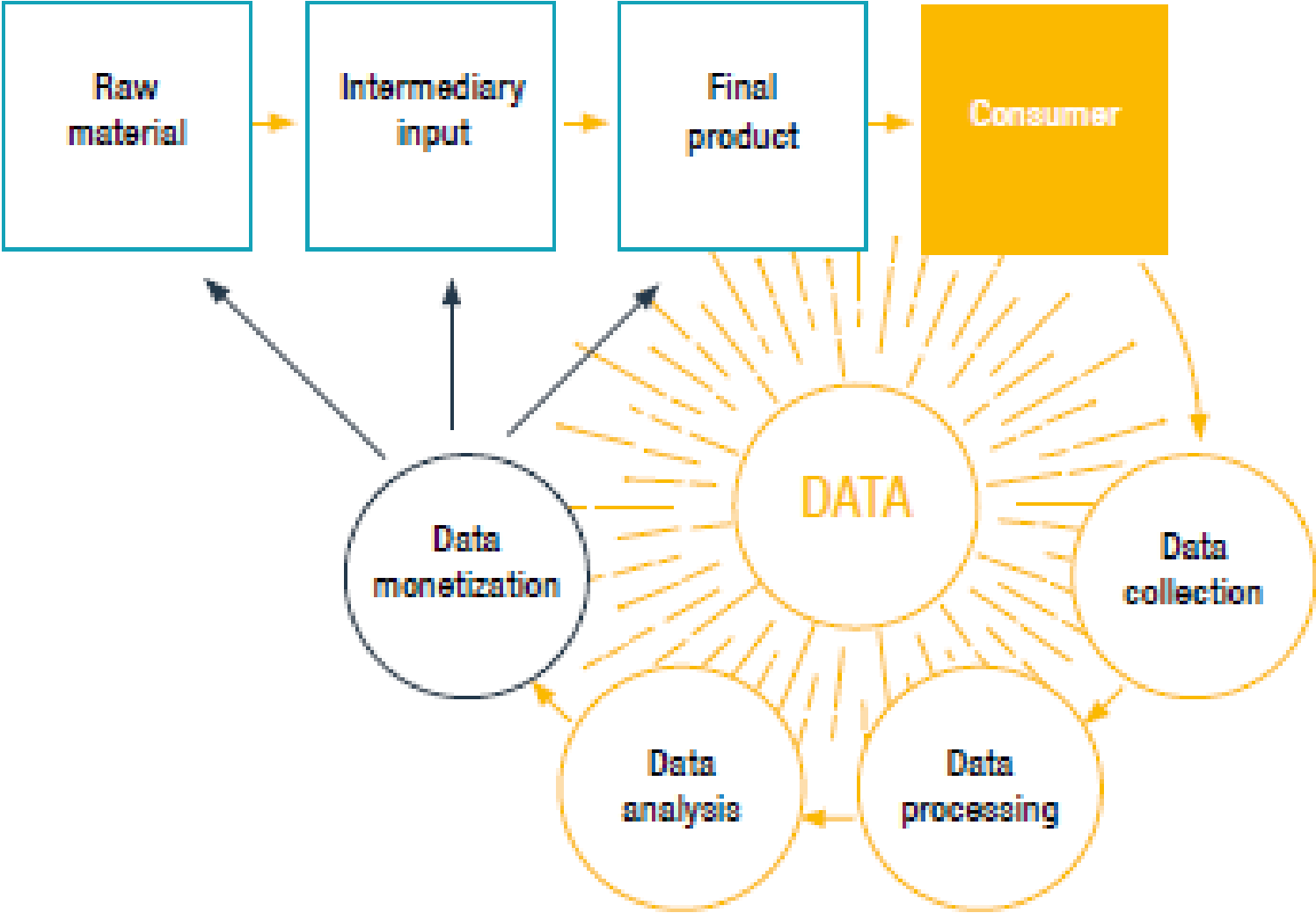
Data indicate who is looking at what web shop item from which location at what time and for how long

E-commerce platform registers website visits and user activity



For development, the distinction between raw data and data products (digital intelligence) is critical

The data value chain



SESSION 1

B. Recent trends in the data-driven digital economy

Data-driven digital economy is rapidly evolving amidst huge divides in digital readiness

Global Internet Protocol traffic in **2022**

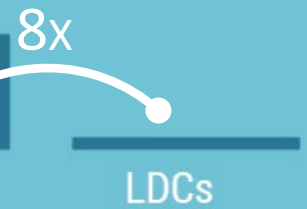
WWW 

Internet traffic up to **2016**

WWW 



Average internet speed



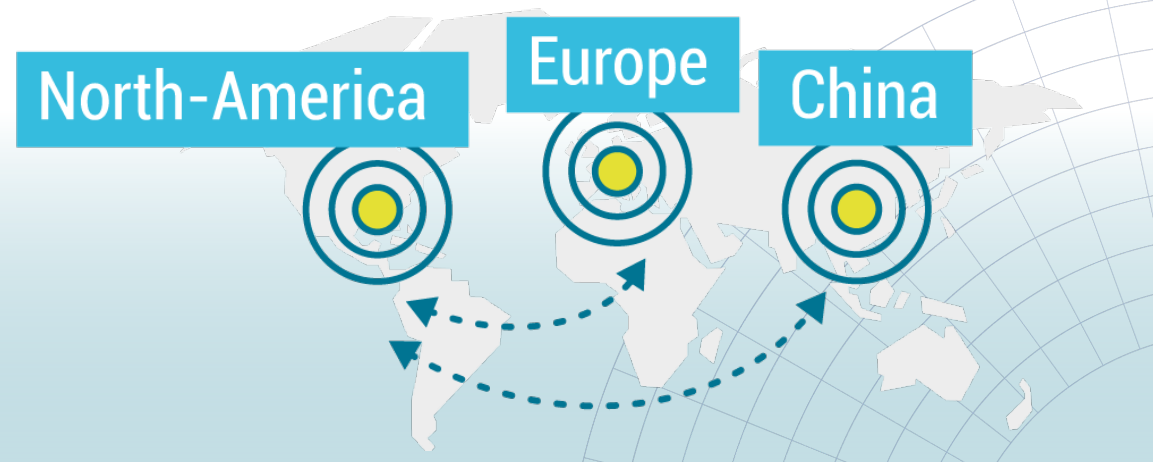
8x



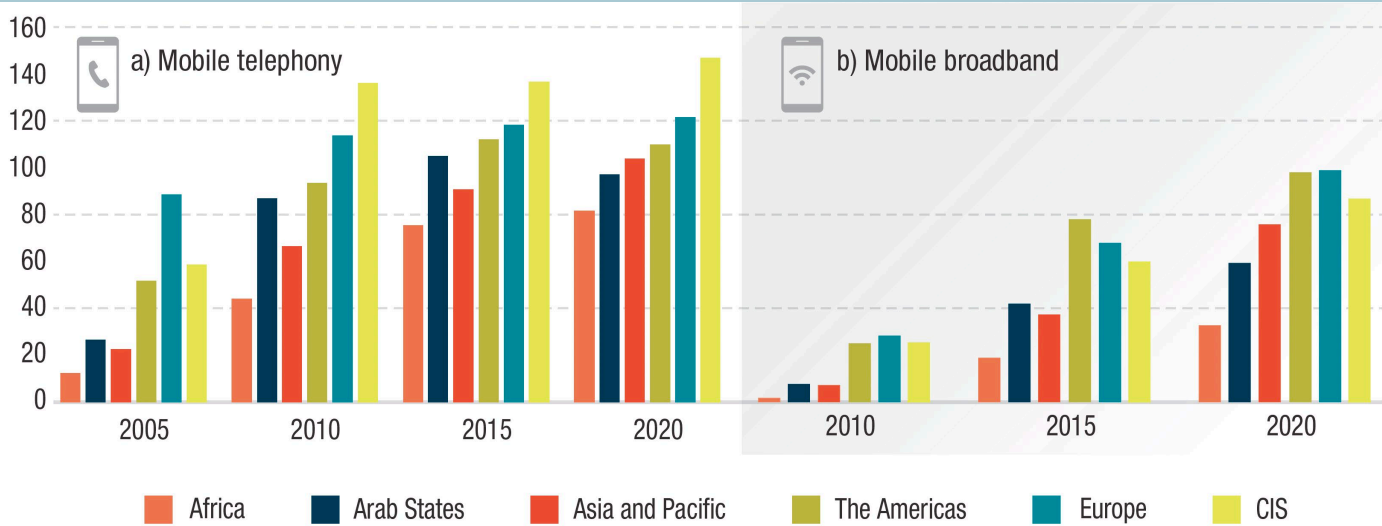
Use of Internet



International bandwidth is geographically concentrated along **two main routes**

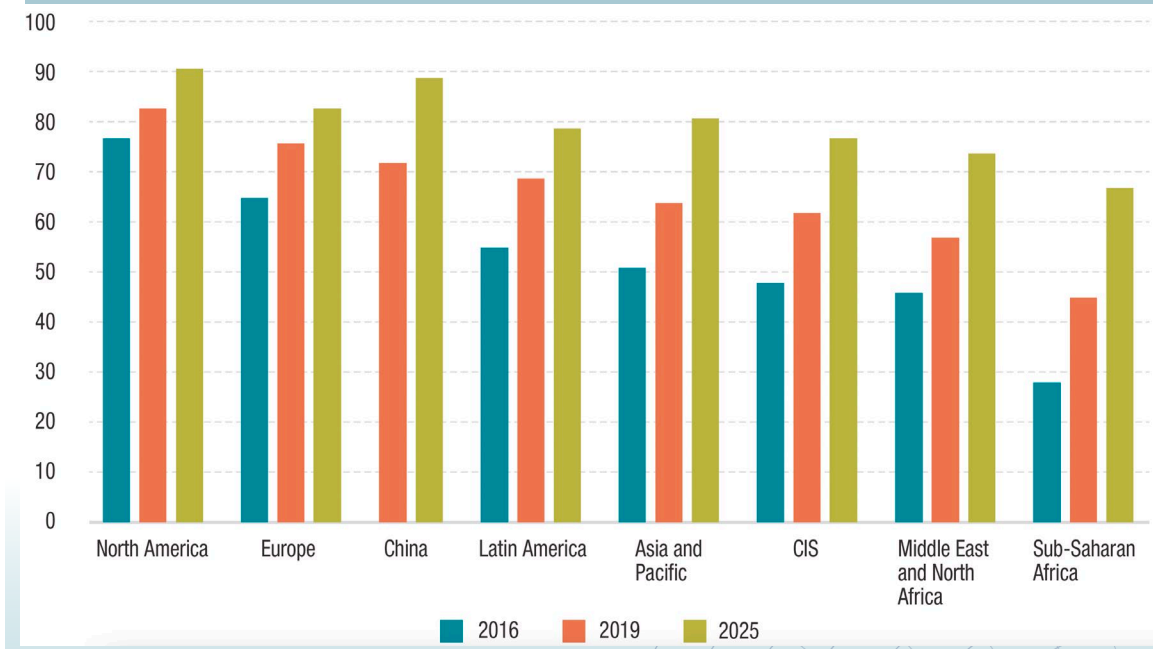


Mobile telephony and broadband subscriptions, by region, selected years (Per 100 people)

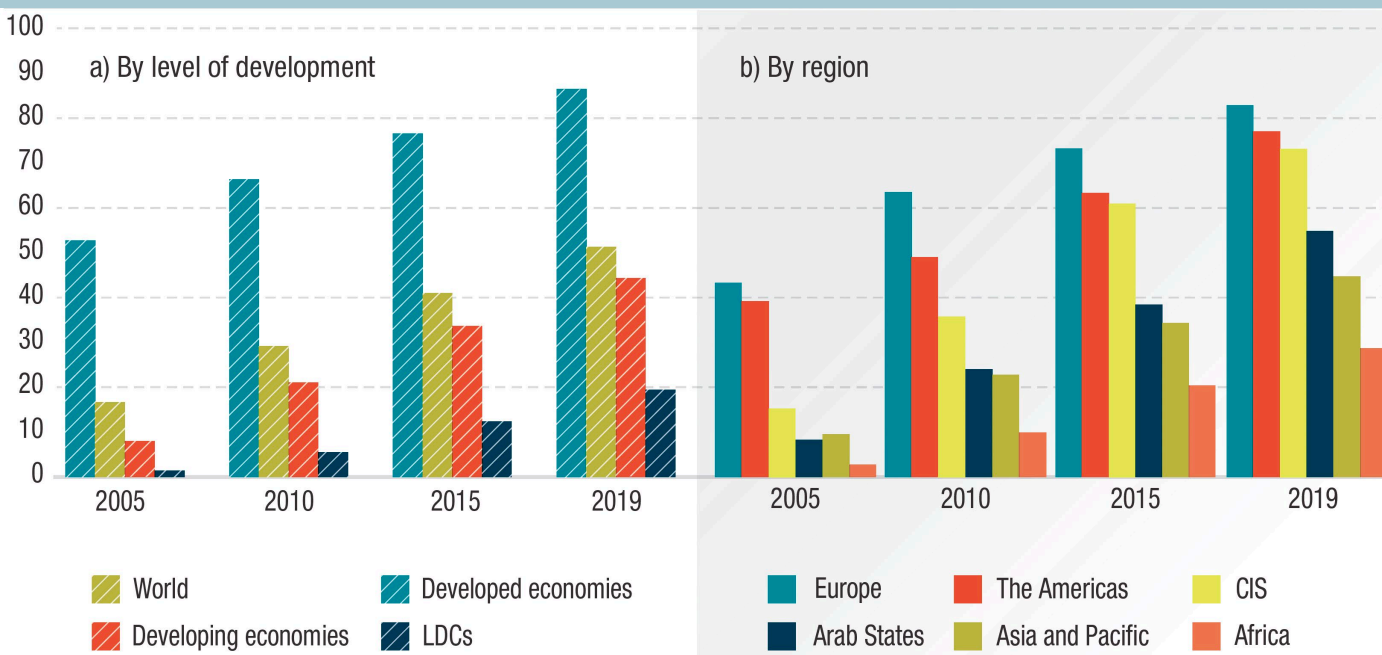


The digital divide

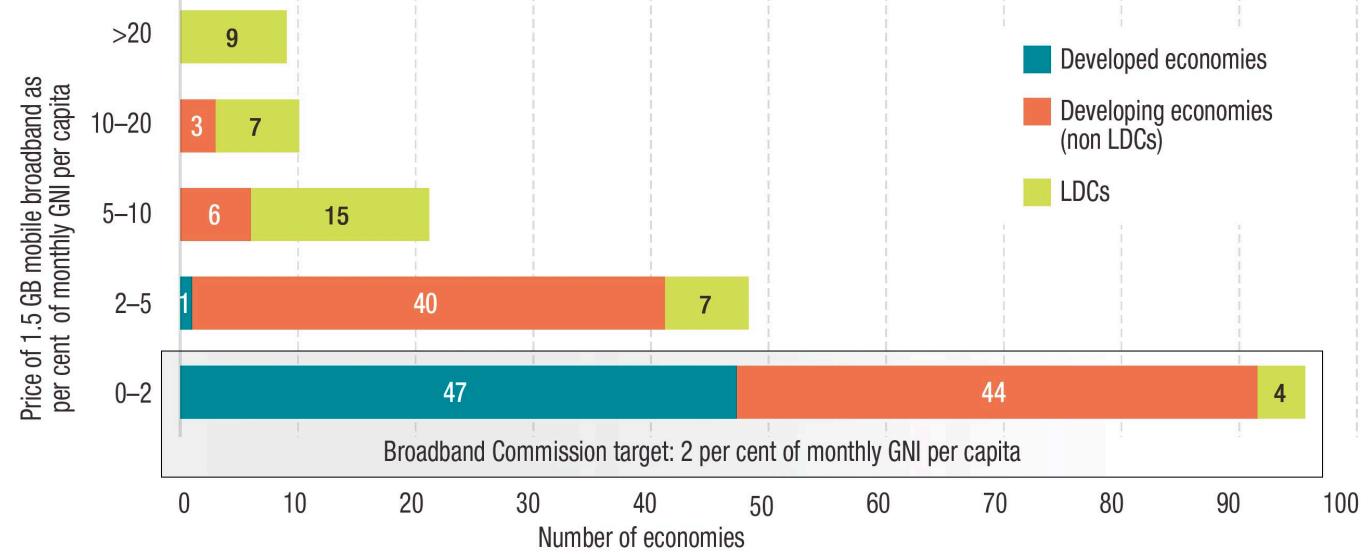
Smartphone adoption, by region, selected years (Per cent)



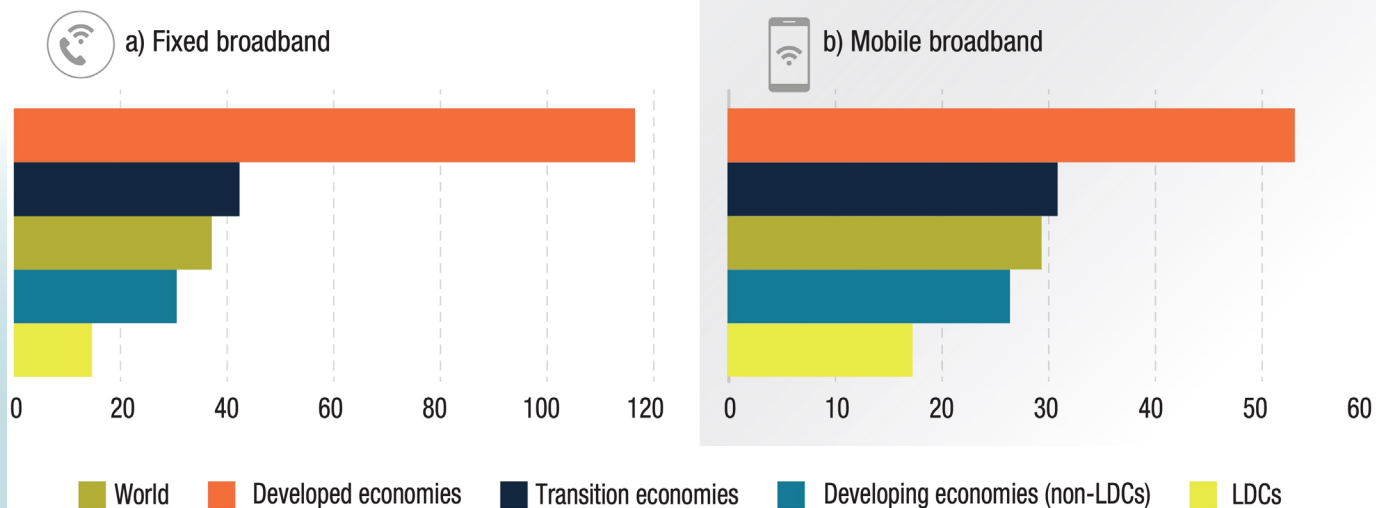
Internet use, global, by level of development and by region, selected years (Per cent)



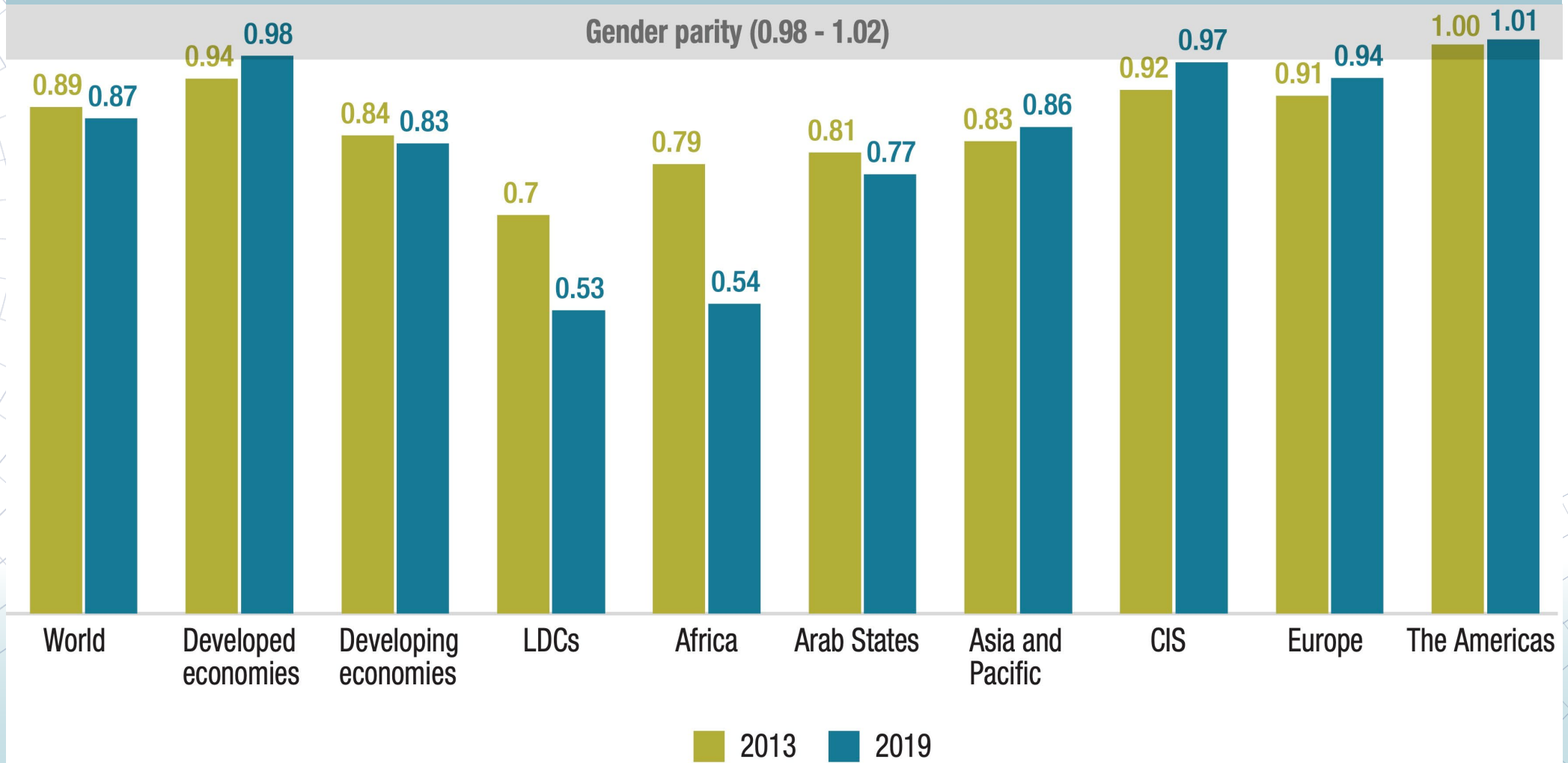
Price of 1.5 GB mobile broadband as a share of GNI per capita, 2019 (Number of economies)



Broadband Internet connection speeds, global and by level of development, 2020 (Megabits per second)



Internet user gender parity score, by level of development and by region, 2013 and 2019

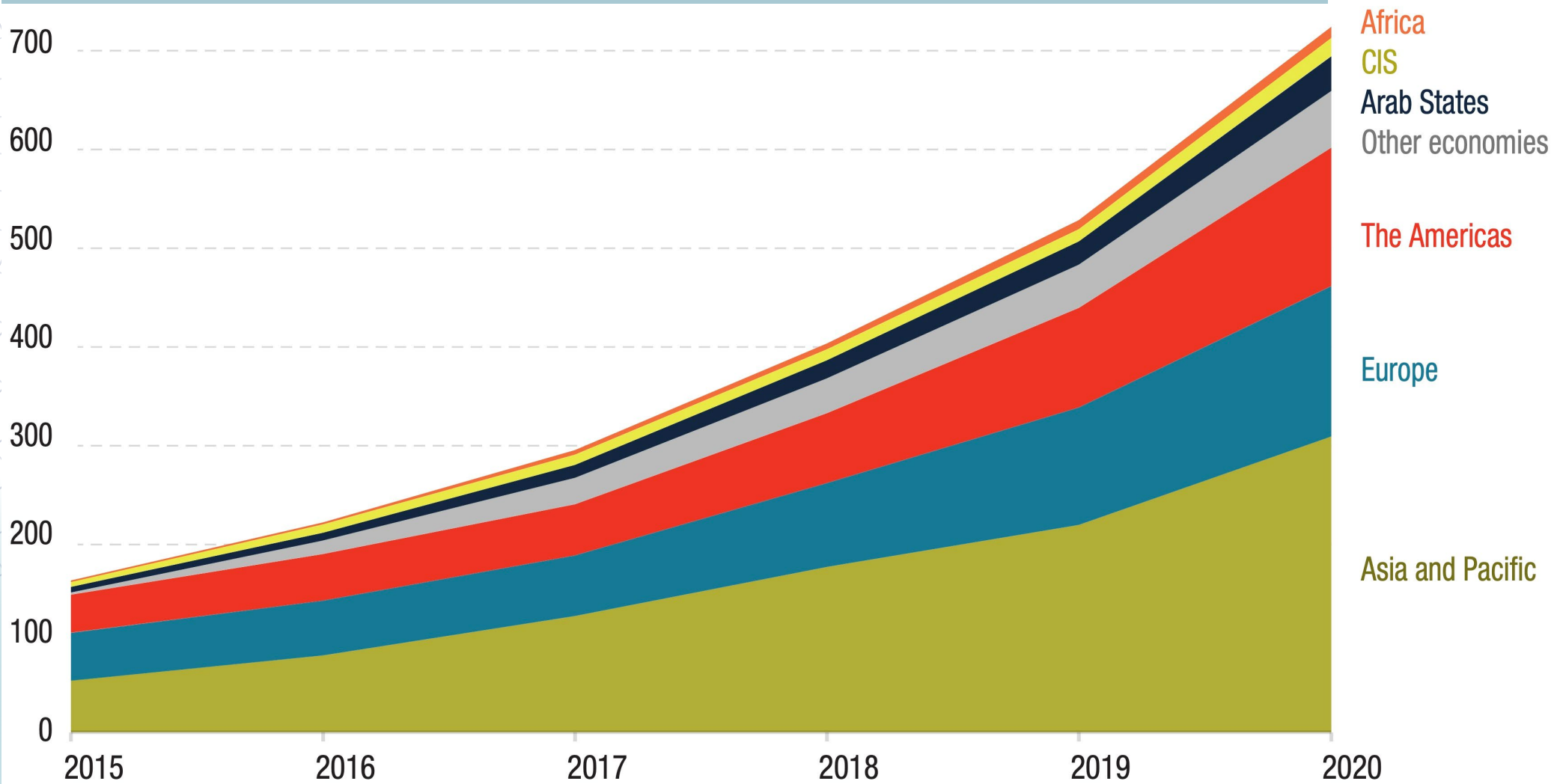


ITU digital development dashboard

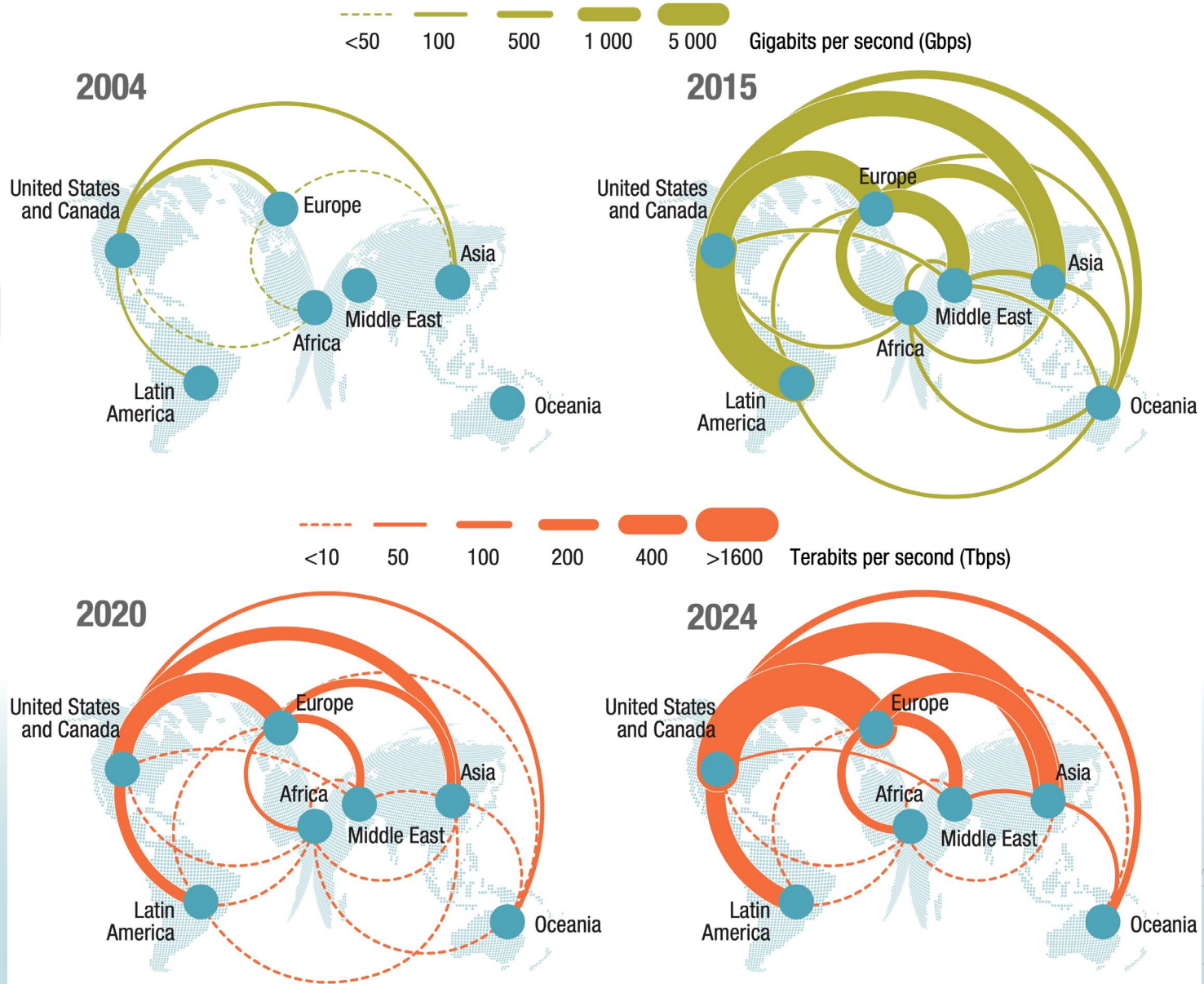
<https://www.itu.int/en/ITU-D/Statistics/Dashboards/Pages/Digital-Development.aspx>

Measuring Cross-border Data Flows

International bandwidth, by region, 2015–2020
(Terabits per second)



Evolution of interregional international bandwidth, selected years



Two frontrunners in terms of harnessing data: the United States and China



50%

of the world's hyperscale data centres



highest rates of **5G** adoption in the world



94%

of all funding of AI start-ups



90%

of the market capitalization of the world's largest digital platforms

The **largest digital platforms** increasingly control all stages of the global data value chain



With the pandemic their dominant positions have strengthened.

Collection



Transmission



Storage



Processing



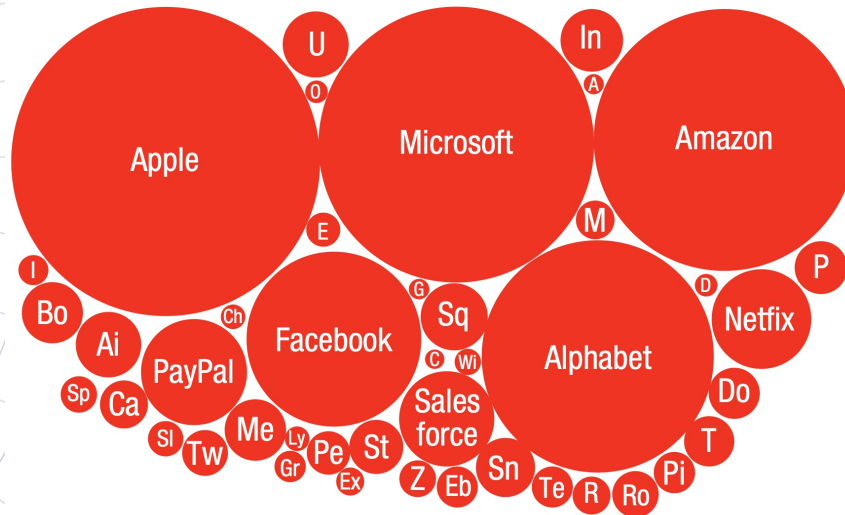
Use



DATA COLLECTION: GLOBAL DIGITAL PLATFORMS

Geographical distribution of the top 100 global digital platforms, by market capitalization 2021

America



- | | | | |
|----------|-----------|--------------|---------|
| Airbnb | Ebay | Lyft | Roblox |
| Alteryx | Etsy | Match | Roku |
| Booking | Expedia | MercadoLibre | Slack |
| Carvana | Grainger | Opendoor | Snap |
| Chegg | Grubhub | Palantir | Splunk |
| Doordash | Instacart | Peloton | Square |
| Dropbox | Intuit | Pinterest | Stripe |
| | | | Teladoc |
| | | | Twilio |
| | | | Twitter |
| | | | Uber |
| | | | Wish |
| | | | Zillow |

32



Share in total value, by region (%)

Europe



- Adyen
- Auto1
- Checkout
- Delivery Hero
- Edenred
- Hellofresh
- Farfetch
- Klarna
- Spotify
- Just Eat T.
- Yandex

Africa

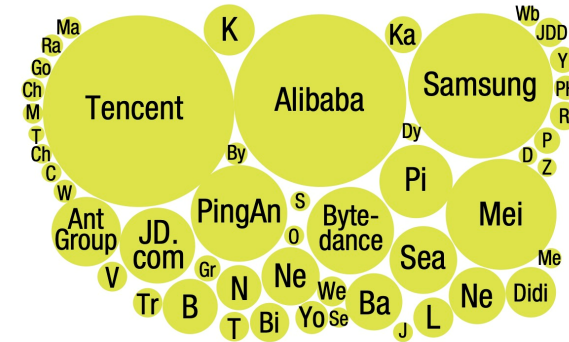


41



Number of top 100 platforms, by region

Asia and Pacific

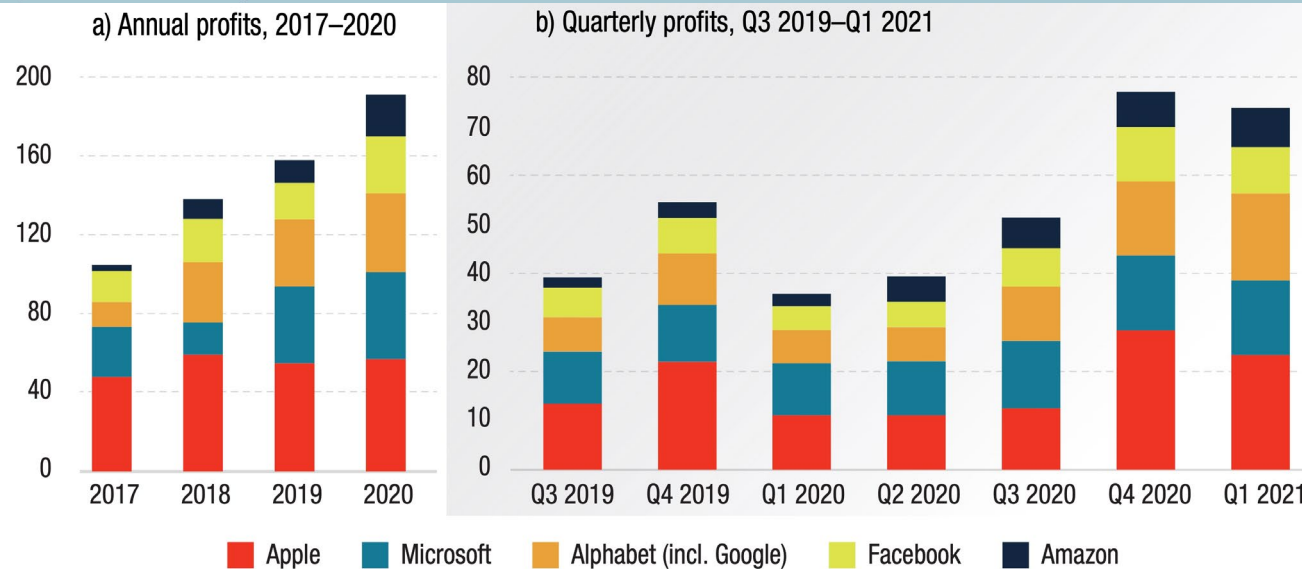


- | | | |
|--------------|---------------|-----------|
| Baidu | Lufax | Rea |
| Beike | Manbang | Sea Group |
| Bilibili | Meicai | Seek |
| BYJU | Meituan | Sensetime |
| Chehaoduo | Mercari | Tokopedia |
| Coupang | Naver | Trip.com |
| Dada Nexus | Netease | VipShop |
| Didi Chuxing | Ola | WeBank |
| Go-Jek | OYO | WeDoctor |
| Grab | Paytm | Weibo |
| JD Digits | Pinduoduo | YonYou |
| Kakao | PindAn Health | Yuanfudao |
| Kuaishou | Rakuten | |

2

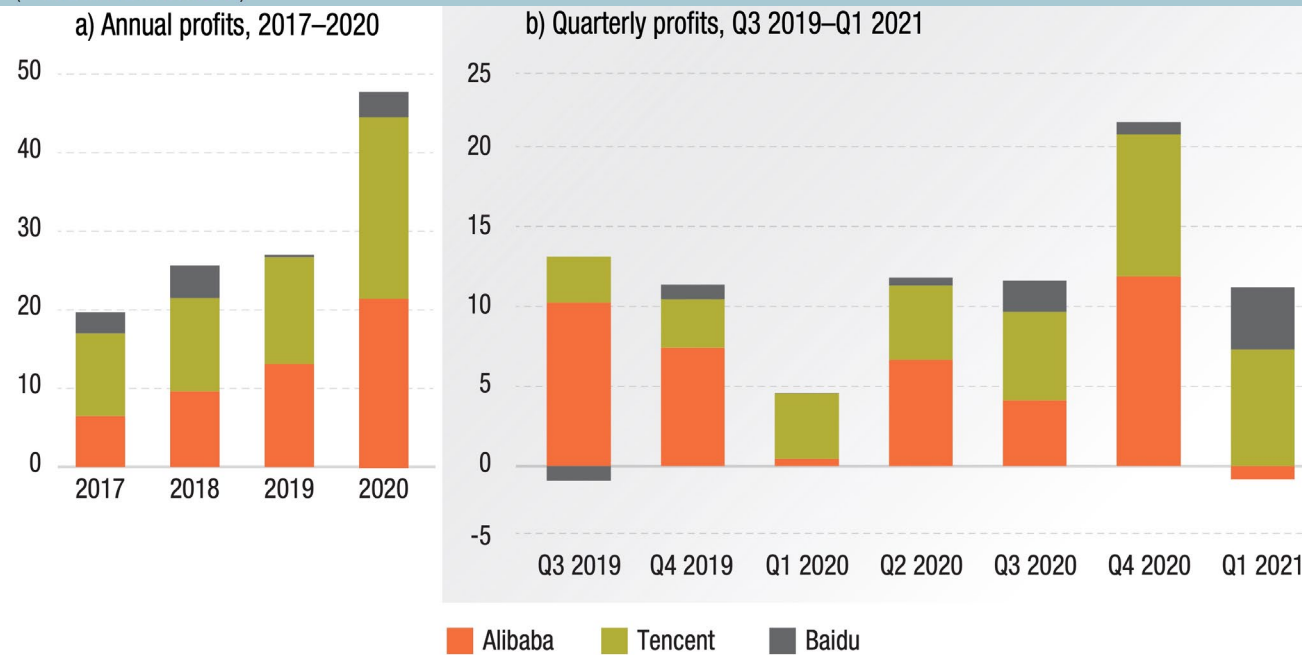
Profits by major digital platforms in the United States

(Billions of dollars)

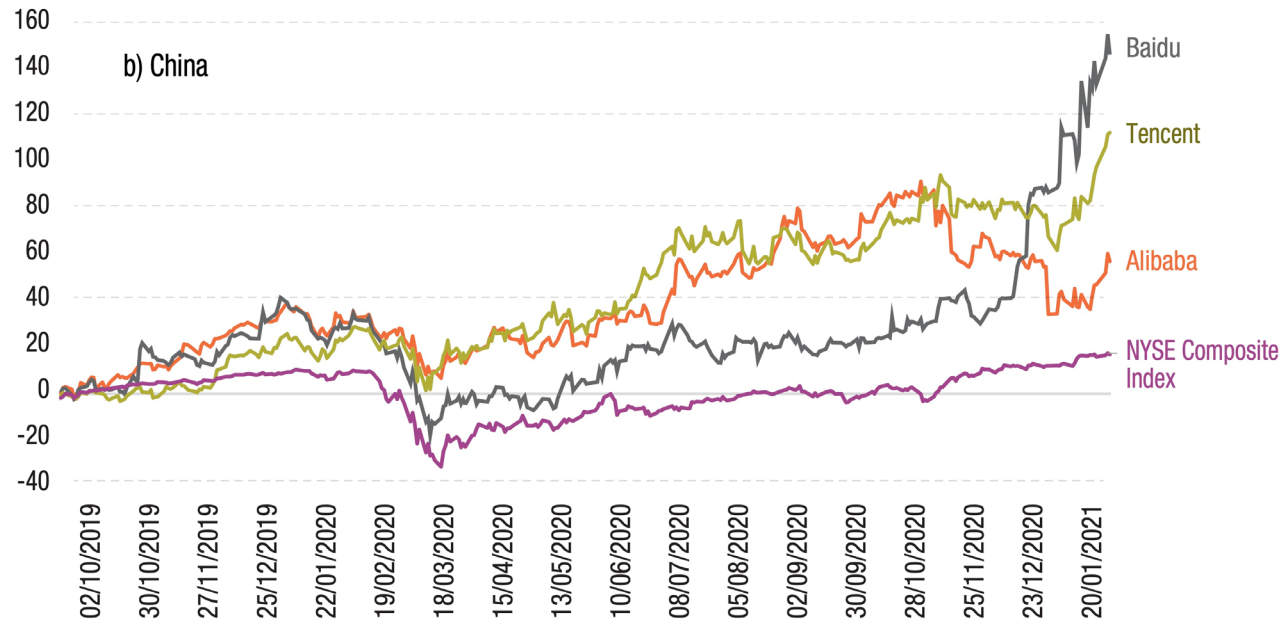
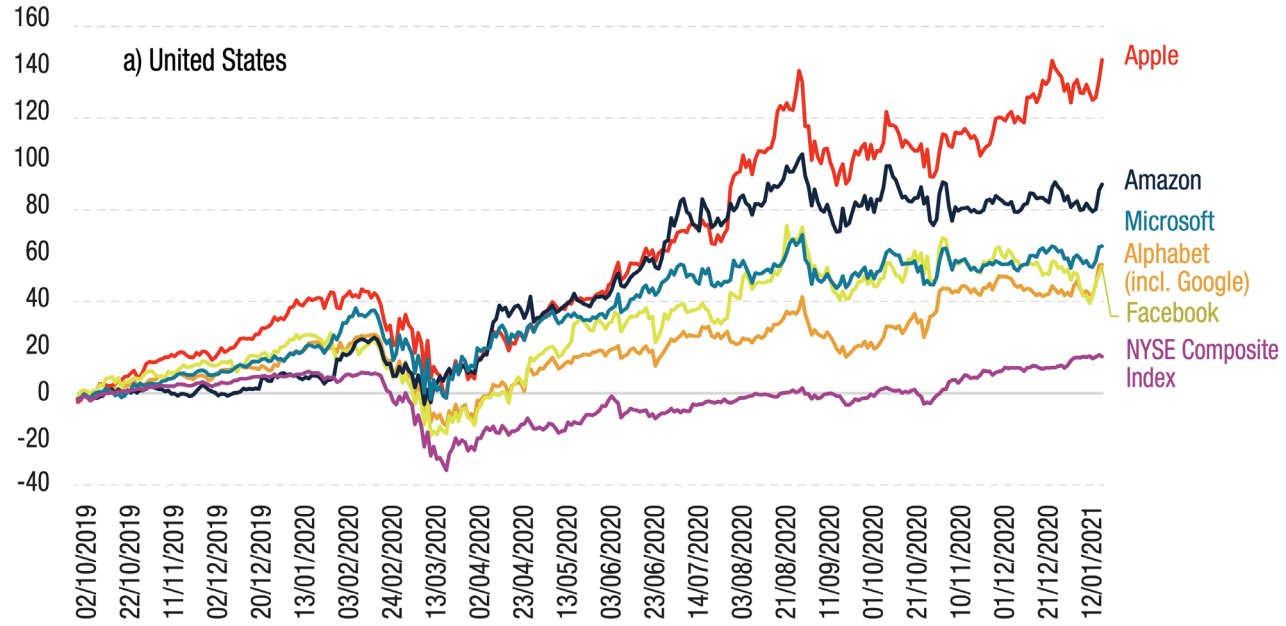


Profits by major digital platforms in China

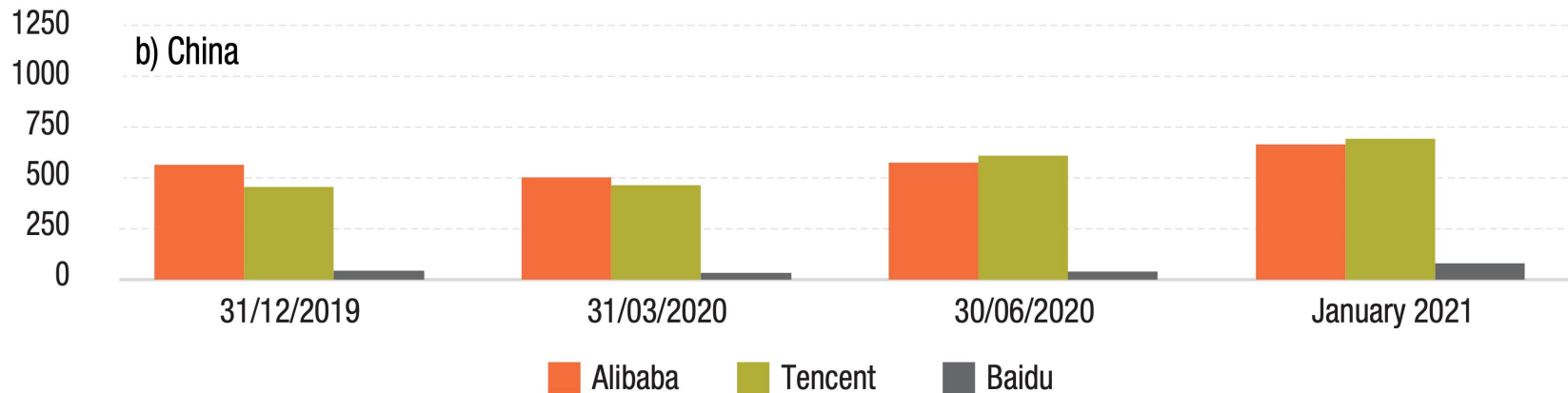
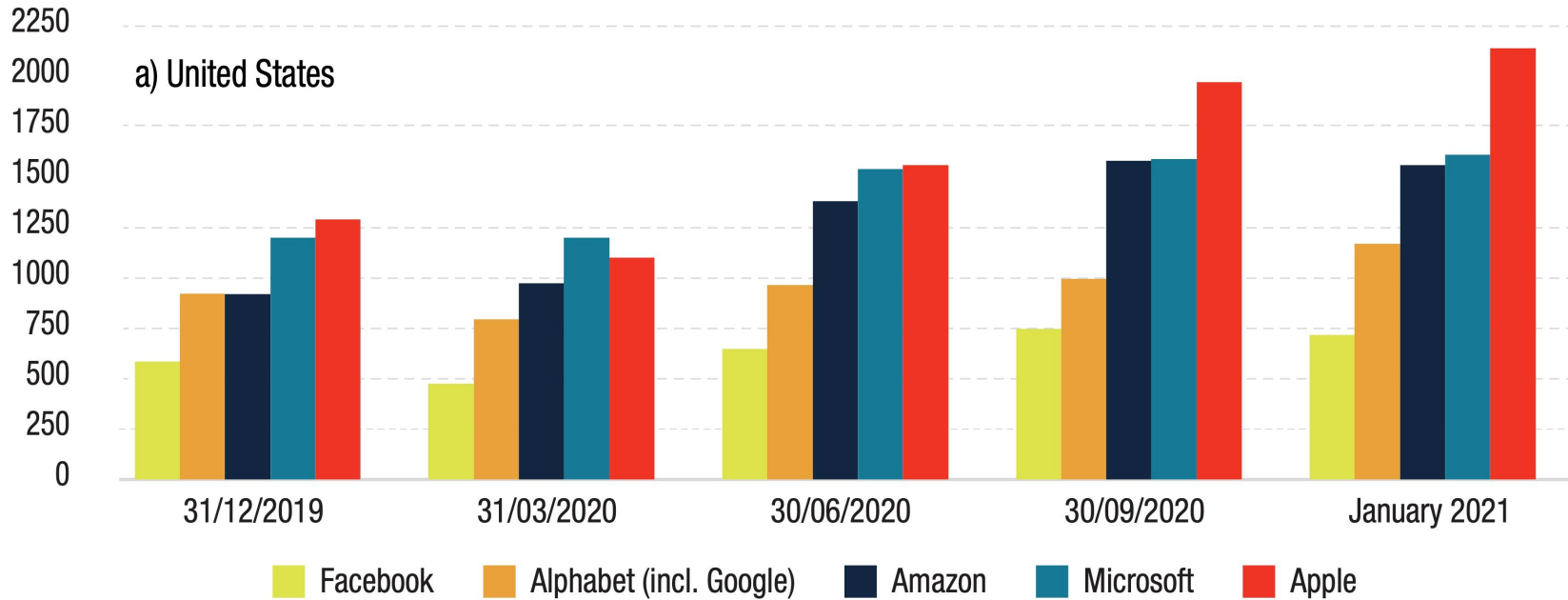
(Billions of dollars)



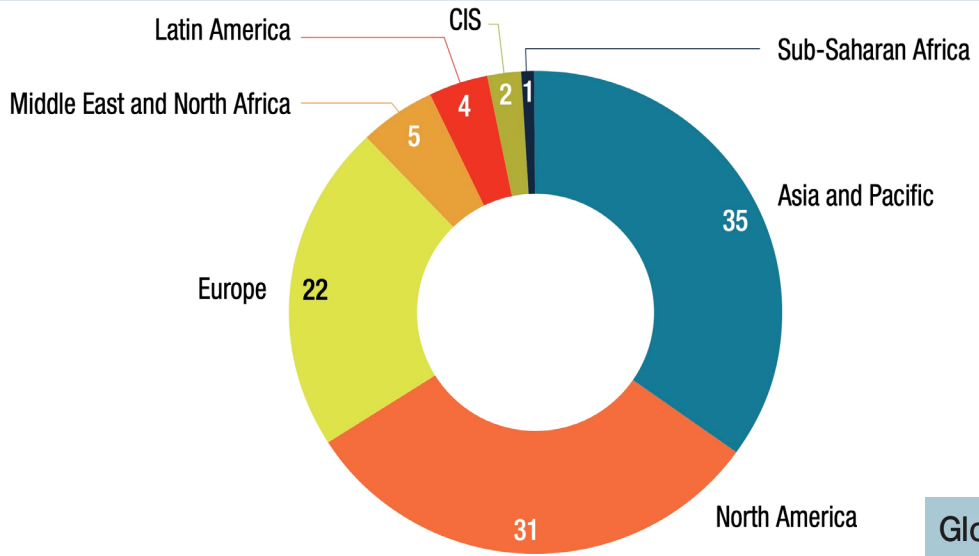
Stock prices of global digital platforms from the United States and China versus the New York Stock Exchange Composite Index (Change in per cent)



Market capitalization of global digital platforms from the United States and China, Q4 2019–January 2021 (Billions of dollars)

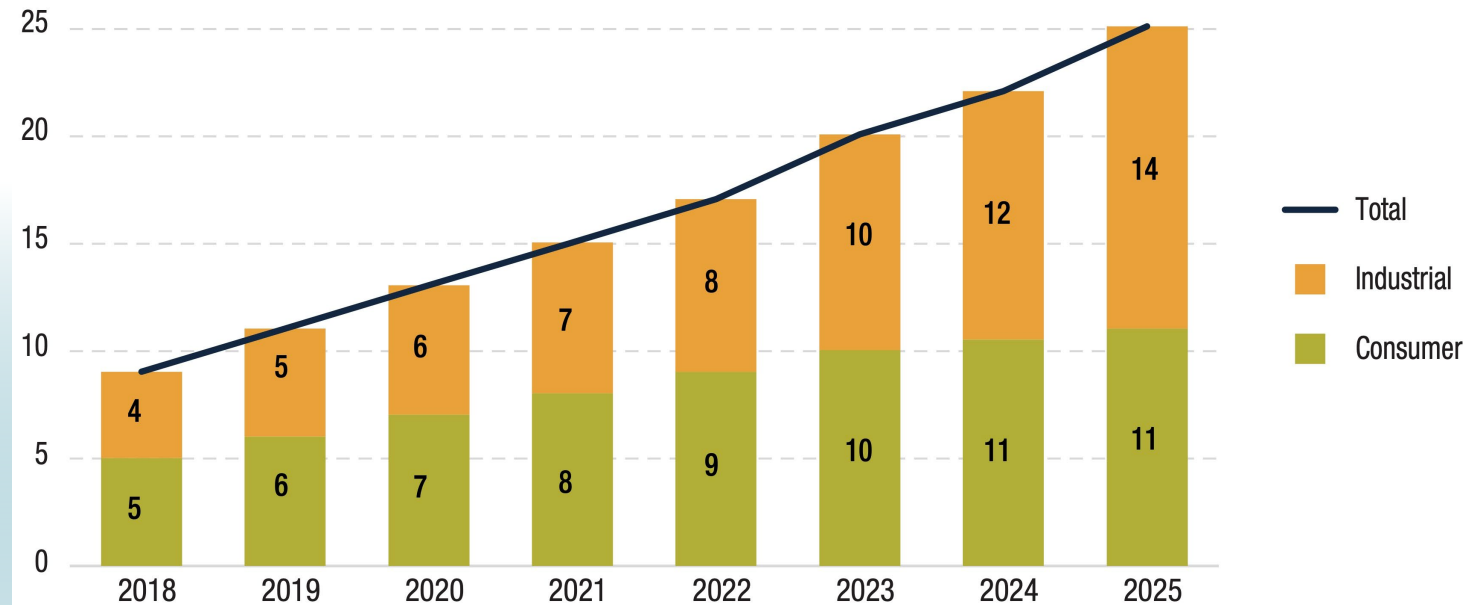


Geographical distribution of Internet of Things revenue by 2025
(Per cent)



DATA COLLECTION: INTERNET OF THINGS

Global number of IoT connections, by sector, 2018–2025



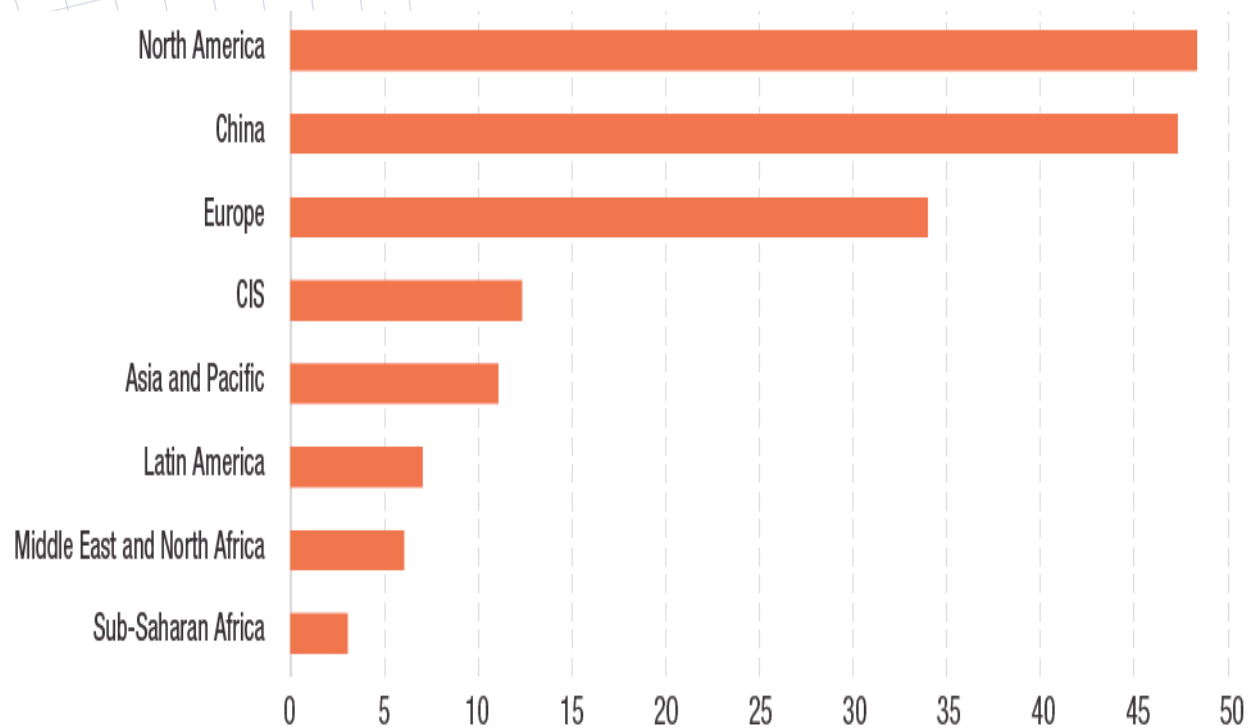
DATA TRANSMISSION AND STORAGE

Internet transmission map

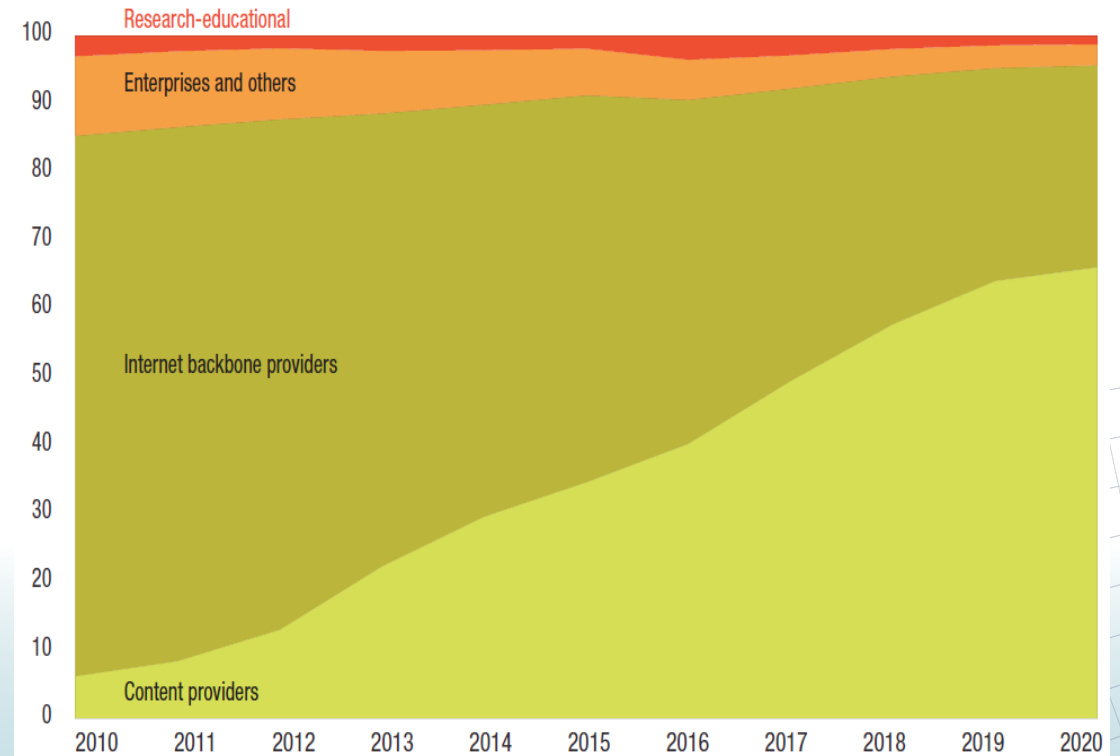


DATA TRANSMISSION AND STORAGE

5G adoption, by region, 2025
(Per cent of total connections)

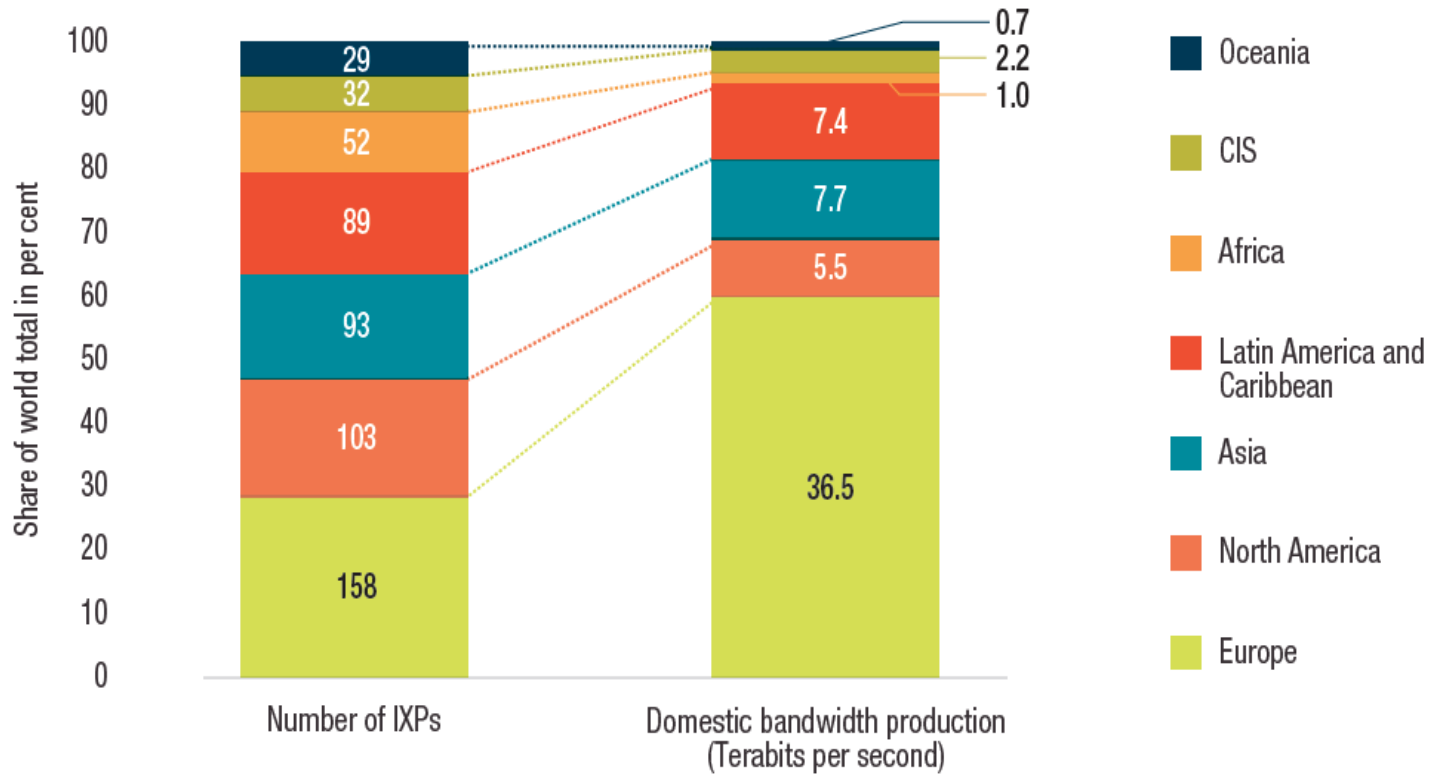


Global used international bandwidth by type of provider, 2010–2020
(Per cent)

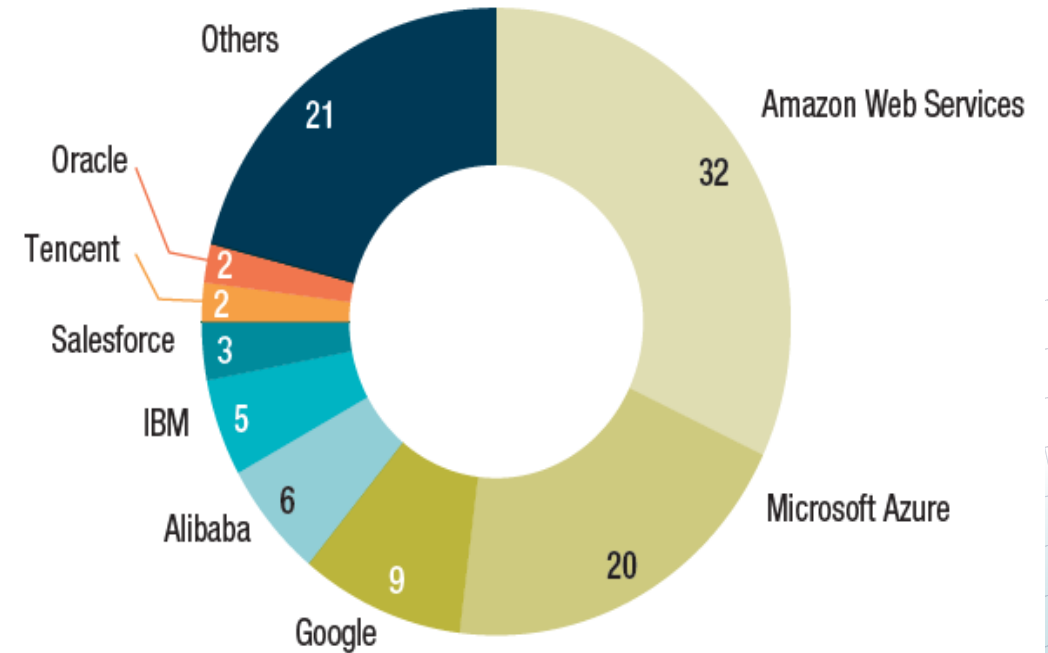


DATA TRANSMISSION AND STORAGE

Internet exchange points, number and bandwidth by IXPs, by region, April 2021

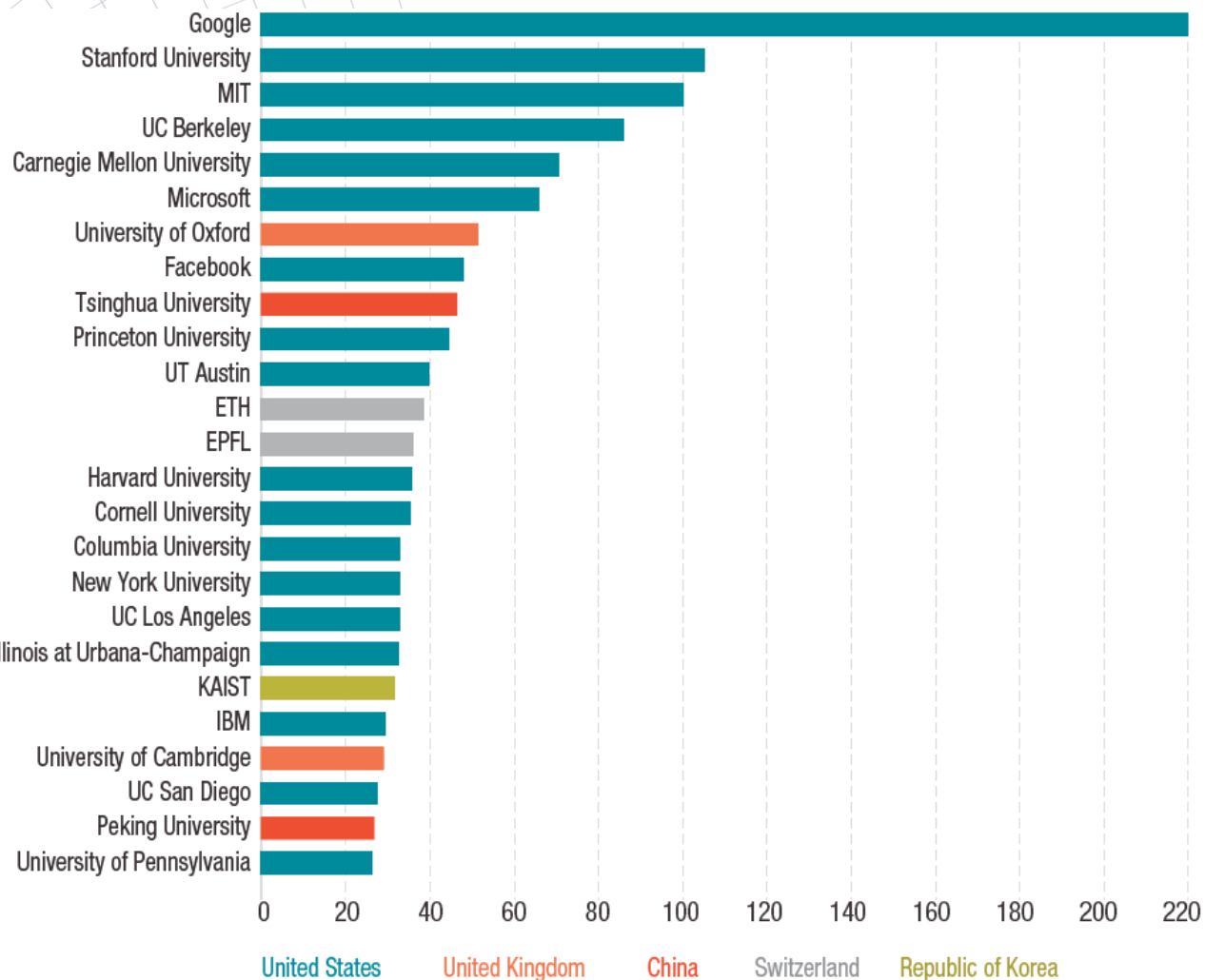


Cloud infrastructure service revenues, by provider, Q4 2020 (Market share in per cent)

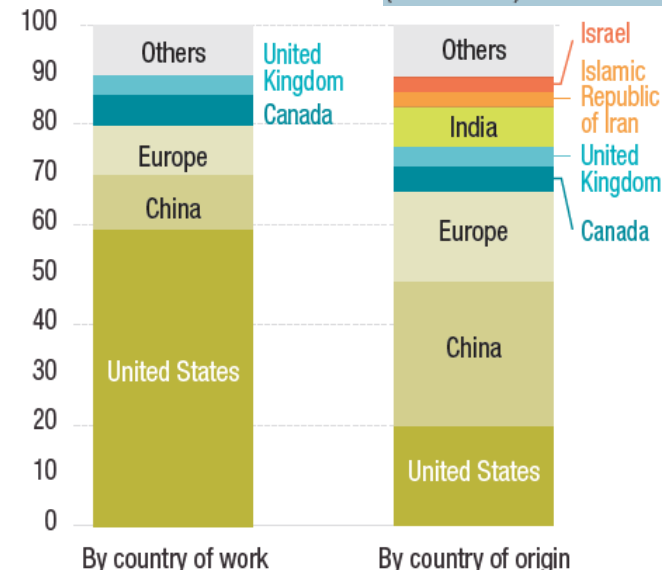


DATA PROCESSING AND USE: ARTIFICIAL INTELLIGENCE

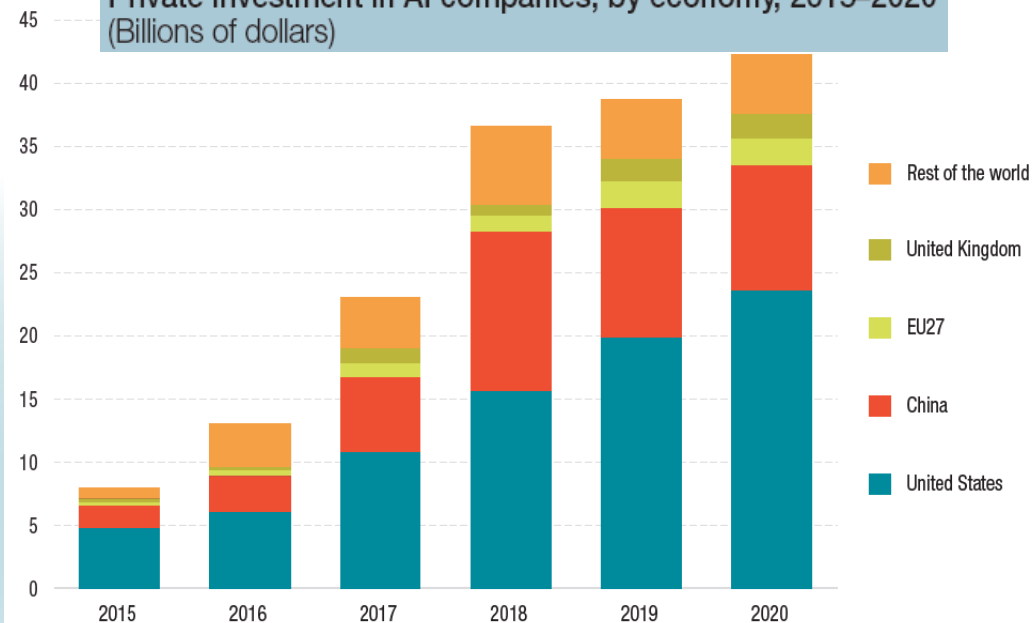
Top 25 institutions for top-tier AI research
(Number of papers published)



Geographical distribution of AI researchers, by country of work and origin, 2019
(Per cent)



Private investment in AI companies, by economy, 2015–2020
(Billions of dollars)



MAIN TAKEAWAYS

- **Data play an increasingly important role as an economic and strategic resource, even more with the COVID-19 pandemic.**
- **Acceleration of digitalization with the pandemic has made digital divides even more evident.**
- **A data-related divide is adding to the long-standing digital divide.**
- **More urgent need to regulate the data-driven digital economy – at national, regional and international levels.**

SESSION 1

C. Cross-border data flows and development: Issues at stake

Understanding data and their implications for development

Data are **MULTIDIMENSIONAL**

Economic dimension

Collect



Store



Analyse



Private value

(e.g. through targeted online advertising, digital platforms, data services)

Social value

(e.g. climate change, health)

Non-economic dimension



Privacy



Other human rights



Security

ISSUES at stake

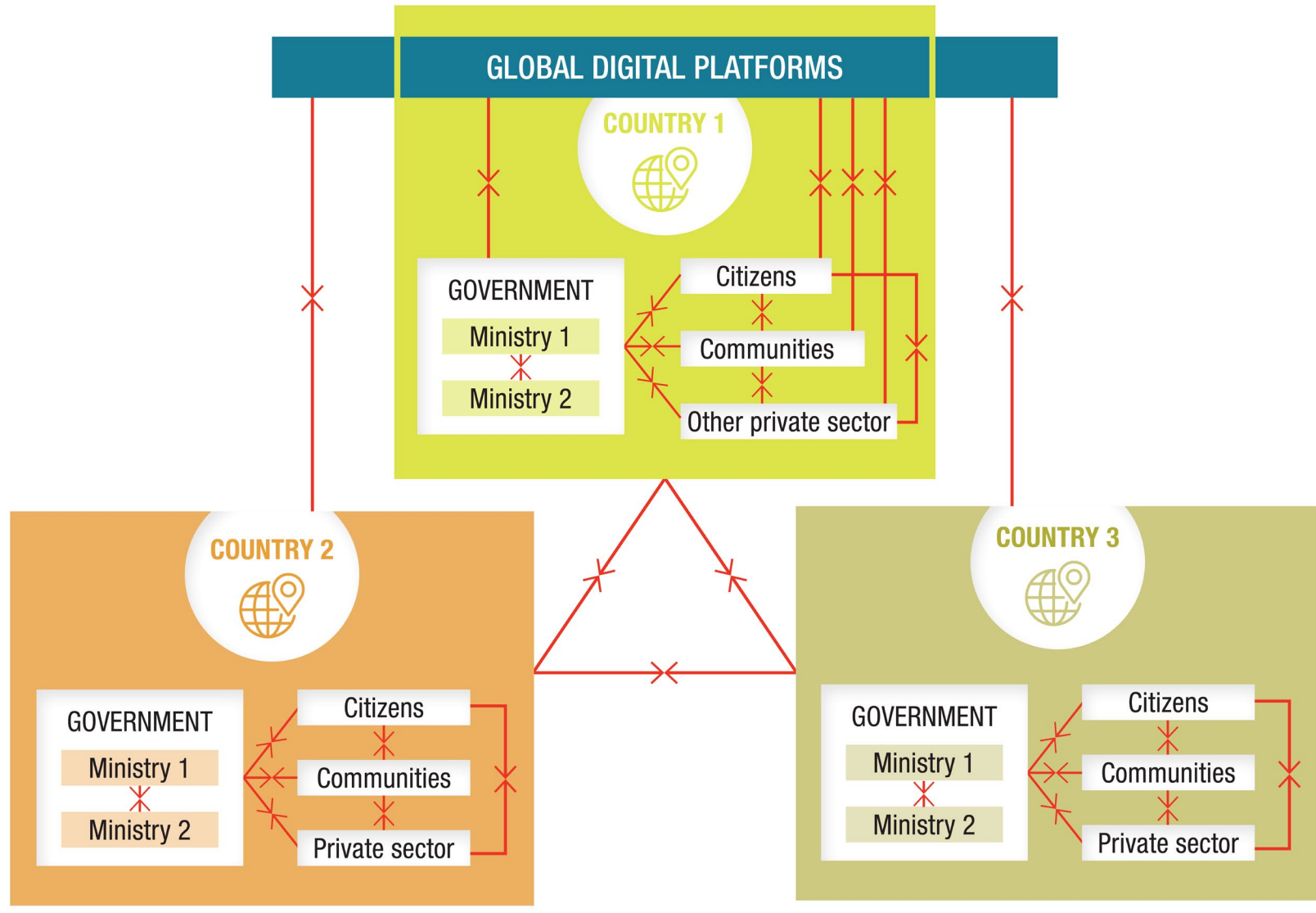
- Data are **different from goods and services**
- Cross-border data flows (CBDFs) are **different to trade**
- Implications of CBDFs vary by **data type**
- Where to **locate data** depends on various factors
- **Data access and use** are key for development
- Rather than **data ownership**, what matters are **rights to access, control and use data**
- **Different levels of readiness** in terms of capacity to harness data for development
- **A few global digital corporations** have privileged access to the data and **unique capabilities to turn the data into digital intelligence**

In terms of economic development, it is important to ensure that developing countries are able to properly capture the value of the data extrated from their citizens and organizations

Classification of countries/country groups according to their data flows across borders, by level of development

	Data inflows	Data outflows
Developed countries	<p>Large countries with dominant international online platforms (DIOPs) and leading high-tech industries, and talent (LHTIs):</p> <ul style="list-style-type: none">- <i>United States</i>	<p>Countries and regions without DIOPs but with LHTIs:</p> <ul style="list-style-type: none">- <i>European Union</i>- <i>Japan</i>- <i>United Kingdom</i>
Developing countries	<p>Large countries with DIOPs and LHTIs:</p> <ul style="list-style-type: none">- <i>China</i>	<p>Large countries without DIOPs but with LHTIs:</p> <ul style="list-style-type: none">- <i>India</i> <p>Large countries without DIOPs or LHTIs:</p> <ul style="list-style-type: none">- <i>Indonesia</i> <p>Small countries without DIOPs or LHTIs:</p> <ul style="list-style-type: none">- <i>Countries in sub-Saharan Africa</i>

Different actors and complexity of relations in the context of cross-border data flows



MAIN TAKEAWAYS

- **CBDFs are a new kind of international economic flow (new form of global interdependence).**
- **CBDFs cannot work for the benefit of people and the planet if only a few global digital corporations from a few countries privately capture most of the gains.**
- **Developing countries risk becoming mere providers of raw data to global digital platforms, while having to pay for digital intelligence from their data.**
- **Access to data is a necessary condition to benefit from data; but having the capacity to convert the data into digital intelligence that can be monetized, or used for purposes of public good is critical.**
- **Oversimplifications in the form of calls for free data flows across the board (or bans on data localization) on one extreme, and outright data localization as a general rule on the other extreme, are unlikely to be of much use.**

Public policies concerning data and data flows increasingly needed



Public policies are needed

Maximize the gain from the data economy, while **minimizing the risks** involved

Ensure an **equitable distribution** of benefits

Complex policy trade-offs need to be considered

Oversimplifications by calling for free data flows or for strict data localization are unlikely to be useful. **Middle-ground solutions** are needed.

Global data governance needs to take a holistic, multidimensional, whole of government and multi-stakeholder approach.

SESSION 2: Policies on cross-border data flows

- A. Data governance in main areas of influence**
- B. Mapping of national policy approaches**
- C. International and regional approaches to data governance**



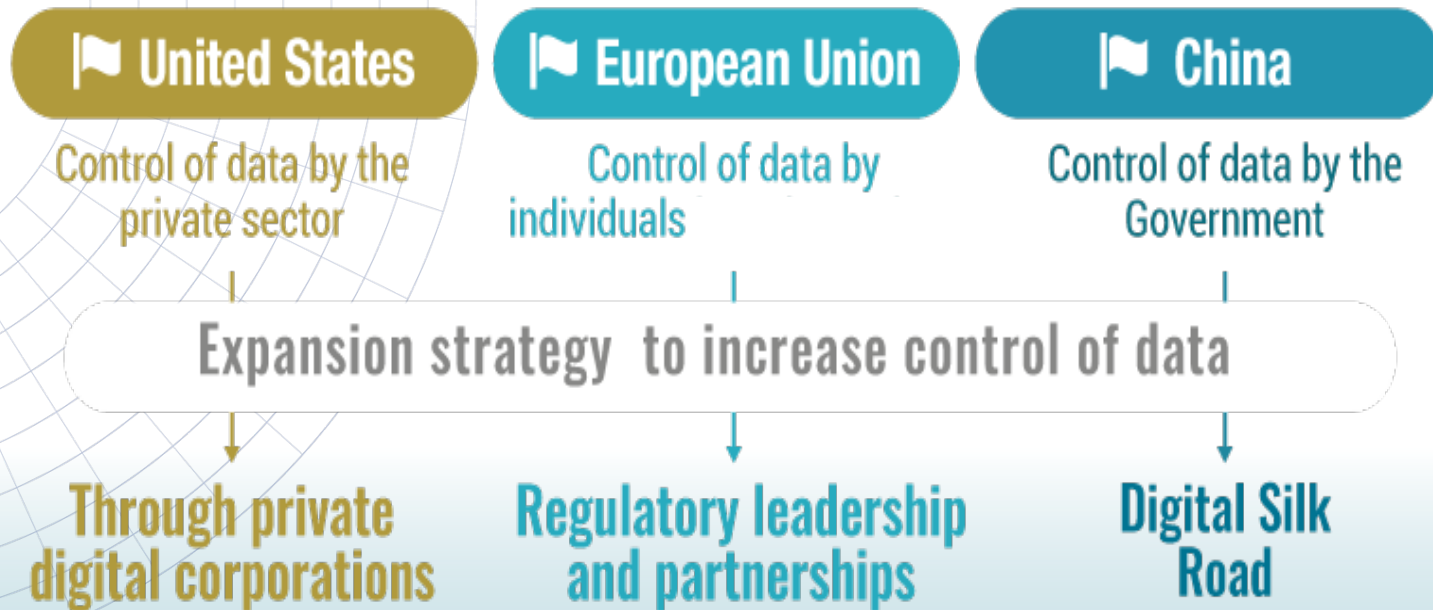
SESSION 2

A. Data governance in main areas of influence



Diverging data governance approaches raise risk of fragmentation

Data governance approach



Risk of fragmentation in the digital space and of the Internet.

Tensions among the major players.

Race for leadership in technological developments to gain economic and strategic advantages.

Global digital platforms are continuing to expand their own data ecosystems.

Main features of data-related policies in the United States, China and the European Union

	United States	China	European Union
Economic growth and development in the data-based digital economy	Mainly market-based	Strong government intervention	Regulation; part of recovery plan after COVID 19 to support development of the digital economy
Data protection and privacy	Not historically prioritized; no comprehensive federal law (but discussions and proposals); state laws in California and Virginia	Rules focusing on business	GDPR, based on fundamental rights
National security	Data for national security are a clear priority	Wide government access and control	Each member responsible; European Union can overrule in certain circumstances
Competition policy	Data not typically seen as a competition issue; but tide turning with important antitrust investigations and court cases	Unclear if data are considered a competition issue; may support domestic and State-owned companies; recent antitrust fine to Alibaba	Data can be considered a competition issue
Cross-border data flows	Promote free data flow	Extensive restrictions to data flows	Free data flow within the European Union and adequate States; trade policy promoting free data flows, but some recent initiatives pointing to restrictions

Fragmentation will hamper development gains from data



A silo-oriented, data-driven digital economy would go against the original spirit of the Internet and is not likely to work for the interest of developing countries.

In economic terms, **interoperability** should generate better outcomes.

Fragmentation would hamper technological progress, reduce competition, enable oligopolistic market structures in different areas and allow for more government influence.

Fragmentation would also mean more obstacles for **collaboration across jurisdictions.**

In the absence of an **international system regulating data flows**, some countries may see no other option than to restrict them with a view to meeting certain policy objectives.



SESSION 2

B. Mapping of national policy approaches



No one-size fits-all way of regulating cross-border data flows

Conditions determining national approaches to governing data and data flows

Technological
Political
Social
Economic
Cultural
Institutional

Public policy reasons for regulating cross-border data flows



Economic development objectives



Protection of privacy and other human rights



Law enforcement



National security

Legal instruments covering cross-border data flows include:

data protection



cybersecurity



hardware and software



government procurement



trade agreements



state secrets



taxation



accounting



Reasons for countries to regulate cross-border data flows

Protection of citizens	National security/sovereignty	Economic development
Data protection and privacy	Address foreign surveillance	Build domestic data champions
Cybersecurity	Protect critical infrastructure	Ensure equitable access to data
Regulatory oversight over sensitive sectors	Increase sovereign control over domestic Internet	Address local demand through local products and services
Access to data for law enforcement	Social/cultural stability	
Data ethics	Political stability	

Objectives and risks of restrictions on cross-border data flows

Objectives	Risks
Ensure data protection and privacy	· Increase business uncertainty
Reduce data security risks and protect critical government data from foreign intrusions	· Increase compliance costs for companies, especially unaffordability for MSMEs
Create one or two local data champions in larger economies (although they may not always be sufficiently competitive)	· May be costly to monitor and implement for regulators
Facilitate easier enforcement of claims against foreign companies in domestic laws, e.g. under data protection laws for breach of user privacy	· May increase consumer prices and/or reduce choice for consumers in less competitive markets, including for domestic companies
Enable stronger regulatory oversight in sensitive sectors	· May facilitate illegal government surveillance and violation of individual privacy rights
Facilitate data access to regulators for law enforcement purposes	· Loss of data in natural disasters, where data localization is mandatory
Reduce dependence on foreign networks and services, and address digital sovereignty concerns	· Make fraud detection difficult, e.g. for electronic payment services
Reduce latency and bandwidth costs of long-distance transmission of data	· May adversely affect the architecture and reduce interoperability of the Internet
	· Premature load bearing for LDCs (e.g. when regulations are too complex)
	· May create a false sense of trust and security in the domestic ecosystem

Mapping of regulations on cross-border data flows

Strict data localization	Partial data localization	Conditional transfer: Hard	Conditional transfer: Intermediate/soft	Free flow of data
Restrictive (R) or guarded (G) approach		Prescriptive approach		Light-touch approach
China (R)		Algeria	Azerbaijan	Australia
India (G)		Argentina	Bahrain	Canada
Indonesia (R/G)		Armenia	Belarus	Mexico
Kazakhstan (R)		Brazil	Ghana	Philippines
Nigeria (R)		Colombia	Japan	Singapore
Pakistan (R/G)		Côte d'Ivoire	Kyrgyzstan	United States
Russian Federation (R)		Egypt	New Zealand	
Rwanda (G)		European Union	Republic of Korea	
Saudi Arabia (R)		Georgia	United Arab Emirates	
Turkey (R)		Israel		
Viet Nam (R)		Kenya		
		Malaysia		
		Morocco		
		Peru		
		South Africa		
		Switzerland		
		Thailand		
		Tunisia		
		Ukraine		
		United Kingdom		

Digital Economy Report 2021: Annex to Chapter V - List of regulations reviewed

https://unctad.org/system/files/official-document/der2021_annex2_en.pdf

MAIN TAKEAWAYS

- **Whole-of-government policy approach for data governance needed.**
- **CBDFs regulations should holistically balance digital development needs, and regulatory and technological capacities, alongside external considerations.**
- **Main reasons for diversity of national policies are absence of international policy framework in key areas of data regulation and concerns about equitable distribution of benefits**
- **The variety of considerations informing CBDFs regulations implies that blindly transplanting regulatory models of data governance from developed to developing countries, and even from one developing country to another, is not likely to produce development outcomes.**
- **Neither widespread strict data localization policies that may be economically, and technologically inefficient, nor unrestricted data flows without sufficient privacy and security safeguards and without paying attention to economic development concerns and equitable distribution of gains in the digital economy, are likely to work for development.**
- **A high-level international policy framework or instrument on CBDFs could be a useful guide to all countries, and facilitate greater alignment between their respective regulatory frameworks, while enhancing trust, interconnectivity and interoperability in the global digital ecosystem.**

SESSION 2

C. International and regional policy approaches to data governance

Cross-border data flows increasingly addressed in international agreements

International and regional agreements dealing with data flows

Trade regime

Multilateral

WTO/Joint Statement Initiative(JSI)

Bilateral

Various bilateral free trade and economic partnership agreements

Other

- Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP)
- The Regional Comprehensive Economic Partnership (RCEP)
- The Trade in Services Agreement (TiSA)
- Pacific Alliance
- United States-Mexico-Canada Agreement (USMCA)

Other agreements and initiatives

OECD Privacy Guidelines

OECD Principles for Internet Policy Making

Council of Europe Convention 108 and 108+

APEC Privacy initiatives

ASEAN data-related frameworks

African Union Malabo Convention

Digital Economy Partnership Agreement

Ibero-American Data Protection Network (RIPD)

Digital Agenda for LAC (eLAC)

G20 Data Free Flow with Trust

Current regional and international regulatory frameworks tend to be either **too narrow in scope or too limited geographically**, failing to enable cross-border data flows with an equitable sharing of economic development gains while properly addressing risks.

Participants in the Joint Statement Initiative 2019 (as of November 2020)


Developed countries	Transition economies	Latin America	Asia	Africa
Australia	Albania	Argentina	Bahrain	Benin*
Canada	Georgia	Brazil	Brunei Darussalam	Burkina Faso*
European Union 27 member countries	Kazakhstan	Chile	China	Cameroon
Iceland	Montenegro	Colombia	Indonesia	Côte d'Ivoire
Israel	Republic of Moldova	Costa Rica	Kuwait	Kenya
Japan	Russian Federation	Ecuador	Lao People's Democratic Republic*	Nigeria
Liechtenstein	North Macedonia	El Salvador	Malaysia	
New Zealand	Ukraine	Guatemala	Mongolia	
Norway		Honduras	Myanmar*	
Switzerland		Mexico	Philippines	
United Kingdom		Nicaragua	Qatar	
United States		Panama	Republic of Korea	
		Paraguay	Saudi Arabia	
		Peru	Singapore	
		Uruguay	Thailand	
			Turkey	
			United Arab Emirates	
			Hong Kong, China	
			Taiwan Province of China	

**Digital Economy
Report 2021: Annex
to Chapter VI -
Provisions on cross-
border data flows,
data localization
and legislations
data protection**
[https://unctad.org/
webflyer/digital-
economy-report-
2021](https://unctad.org/webflyer/digital-economy-report-2021)



SESSION 3

**The way forward:
In search of a balanced approach
for global data governance**



A balanced global approach to data governance needs to work for the people and the planet



To prevent inequalities from being amplified



To enable global data-sharing and develop global digital public goods



To avoid further fragmentation in the digital space



To increase trust in the digital economy and reduce uncertainty



To address policy challenges emerging from the dominant positions of global digital platforms



To account for spillovers of national policies into other countries



With a view to enabling data to flow across borders as freely, as necessary and possible, while addressing various development objectives

Key data-related policy areas

- ✓ Agree on **definitions** and taxonomies
- ✓ Establish terms of **access to data**
- ✓ Strengthen **measurement**
- ✓ Deal with **data as global public good**
- ✓ Explore emerging forms of **data governance**
- ✓ Agree on **rights and principles**
- ✓ Develop **standards**
- ✓ Increase **international cooperation on platform governance**

UN should play a **key role**

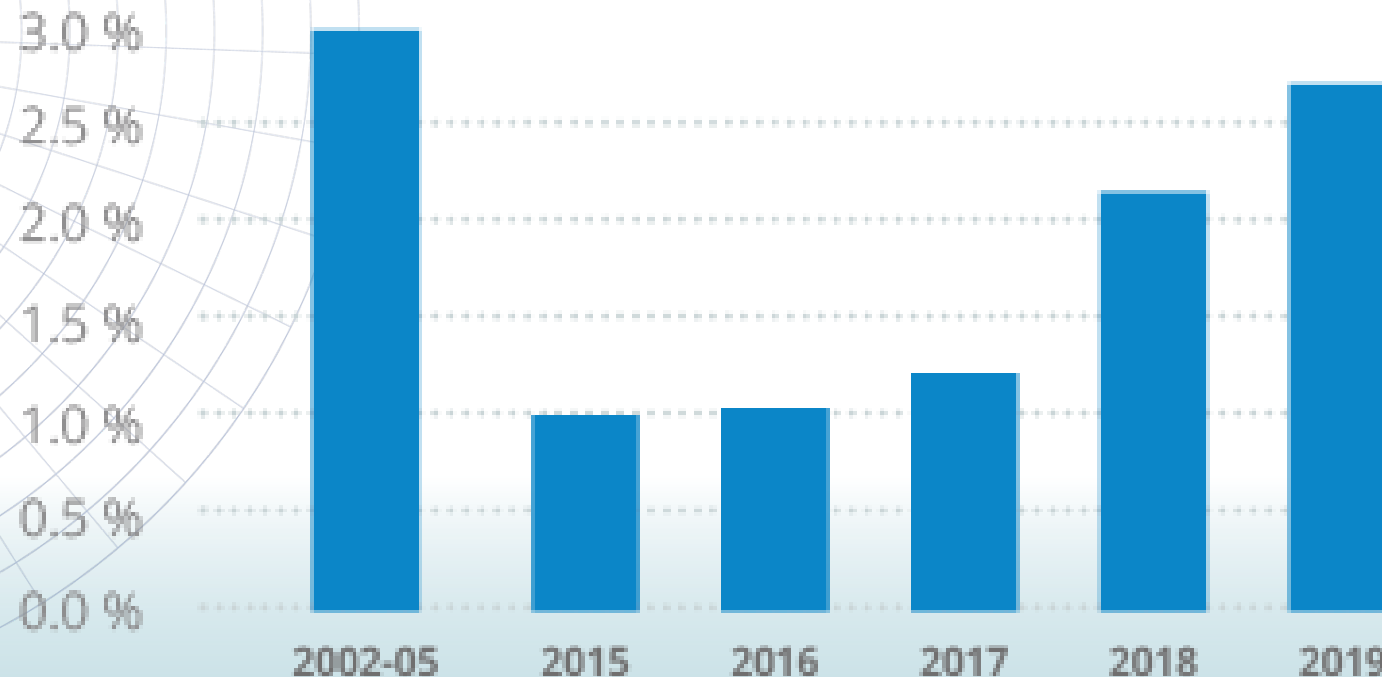
- ❖ **Global debates on the governance of data** and cross-border data flows need to become fully inclusive
- ❖ **Developing countries** tend to be **underrepresented** in global and regional initiatives
- ❖ United Nations **the most inclusive forum** in terms of country representation



- ❖ **A new United Nations coordinating body** would need strong data mandate and the right skills...
- ❖ ... and build on **already existing initiative** in the UN and beyond

International support to ensure full participation of developing countries

Share of Aid for Trade resources for the ICT sector, 2002-2019



Source: UNCTAD analysis, based on data from the OECD.

To enhance the capacities of developing countries to **create and capture value from data domestically**, international support is needed to help:

- Raise awareness of data and their development implications
- Build **national data strategies**
- Formulate relevant **legal and regulatory frameworks**
- Ensure the **effective participation of developing countries in international processes**

THANK YOU!

Download the full report for free here

Link:

<https://unctad.org/webflyer/digital-economy-report-2021>

*Note: Sources of data can be found in the Report.



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