Addressing the Digital Divide in the Joint Statement Initiative on E-Commerce:

From enabling issues to data and source code provisions

December 2020

Leonila Guglya
Marilia Maciel

Published by the International Institute for Sustainable Development

INTERNATIONAL INSTITUTE FOR SUSTAINABLE DEVELOPMENT

The International Institute for Sustainable Development (IISD) is an independent think tank championing sustainable solutions to 21st–century problems. Our mission is to promote human development and environmental sustainability. We do this through research, analysis and knowledge products that support sound policymaking. Our big-picture view allows us to address the root causes of some of the greatest challenges facing our planet today: ecological destruction, social exclusion, unfair laws and economic rules, a changing climate. IISD's staff of over 120 people, plus over 50 associates and 100 consultants, come from across the globe and from many disciplines. Our work affects lives in nearly 100 countries. Part scientist, part strategist—IISD delivers the knowledge to act.

IISD is registered as a charitable organization in Canada and has 501(c)(3) status in the United States. IISD receives core operating support from the Province of Manitoba and project funding from numerous governments inside and outside of Canada, United Nations agencies, foundations, the private sector, and individuals.

CUTS INTERNATIONAL, GENEVA

CUTS International, Geneva is a non-profit NGO that catalyses the pro-trade, pro-equity voices of the Global South in international trade and development debates in Geneva. We and our sister CUTS organizations in India, Kenya, Zambia, Vietnam, Ghana and Washington have made our footprints in the realm of economic governance across the developing world.

CUTS International Geneva's work programme has four pillars: Trading Systems, Functioning Markets; Climate Change & Environment, and Food and Agriculture. Gender, digitalisation, jobs, stakeholder inclusiveness and policy coherence are key horizontal elements in all the pillars. Through its research, advocacy, networking and training activities, CUTS International Geneva strives to inform, connect, support, and empower multiple stakeholders.

TAF2+

The UK Government has established the Trade and Investment Advocacy Fund (TAF2+) to provide demand-driven support to trade policymakers and negotiators in eligible countries, communities and organisations.

TAF2+ assistance provides:

- Impartial information, analysis and advice on the technical and legal aspects of trade negotiations, and on formulating negotiating positions;
- Training, capacity building and internships for relevant officials and organisations;
- Limited logistical support to participate in negotiations and key policy meetings.

TAF2+ is managed on behalf of the UK Government by a dedicated Fund Manager (FM): CowaterSogema and Saana Consulting.

Addressing the Digital Divide in the Joint Statement Initiative on E-Commerce:
From enabling issues to data and source code provisions

December 2020

Written by Leonila Guglya and Marilia Maciel

This paper benefited from peer review, contributions, and editorial support from Yasmin Ismail (who also contributed substantive inputs), Soledad Leal Campos, Sofia Baliño, Susan Joekes, Rashmi Jose, Rashid S. Kaukab, and Julien Grollier, among others. Views expressed in the publication are the authors' own and do not necessarily reflect HM Government's official positions or those of the Trade and Investment Advocacy Fund (TAF2+). .

IISD HEAD OFFICE

111 Lombard Avenue, Suite 325
Winnipeg, Manitoba
Canada R3B 0T4

Tel: +1 (204) 958-7700
Website: www.iisd.org
Twitter: @IISD_news

CUTS INTERNATIONAL, GENEVA

37-39, Rue de Vermont
1202 Geneva, Switzerland

Tel: +41 (0) 22 734 60 80
Fax:+41 (0) 22 734 39 14
Email: geneva@cuts.org
Website: cuts-geneva.org

Abstract

The discussions around the issue of electronic commerce have prompted a range of questions among different stakeholders. Some of the questions raised pertain to the concept of a digital divide. This paper looks into the evolution of this concept, which initially focused on infrastructure but gradually started to include aspects related to information, knowledge, and data. It conveys the views expressed on whether the digital divide has been fully reflected in the discussions on e-commerce at the World Trade Organization (WTO) or those involving a subset of the WTO membership. As an example of this, it reviews the developments within the 1998 Work Programme on E-commerce (WPEC) in this area, noting the limited discussions on the digital divide to date. It also reviews the exploratory discussions and subsequent negotiations among a group of WTO members involved in the Joint Statement Initiative on Electronic Commerce (JSI). It notes the space for discussion of the enabling paradigm that is provided for in the agendas set up by the JSI co-conveners, along with evaluating how much that space has been used to date, and how this is reflected in proposals that are centred on data and provisions on access to the source code of computer programs. In order to improve an understanding of the relevant issues and encourage a discussion that is more inclusive of the breadth and depth of the digital divide and the varied experiences of WTO members, this paper explores the free flow of data, data localization, and source code, as well as the submissions made on these topics in the JSI negotiations, in depth.

Executive Summary

This paper builds on the discussions in a seminar held in January 2020 under the scope of the Trade and Investment Advocacy Fund (TAF2+) project, where participants from developing countries expressed the need for facilitating a greater understanding of some technical issues under consideration in the Joint Statement Initiative (JSI) e-commerce negotiations. It aims to provide an in-depth analysis of the technical issues that participants identified as key to bridging the digital divide, namely: enabling e-commerce, flow of data and data localization, and provisions on access to source code.

Before delving into these issues, Section 1 of the paper unpacks the layered nature of the concept of the digital divide and its evolution since the 1990s in tandem with the acceleration of digitization. The paper refers to the "DIKW hierarchy," a model for representing the relationships between data, information, knowledge, and wisdom. This model demonstrates how digitization and the increasing processing power of computers meant that more information and value could be generated from data. Hence, the digital divide concept evolved from the sole focus on access to hardware and connectivity as preconditions for inclusion in the digital economy in the 1990s (Access to Access [A2A]), to encompass many different divides in the 2000s: access to data, ability to extract information, creating knowledge, and achieving wisdom independently (Access to Knowledge [A2K]).

The paper illustrates how the last decade was a turning point, as data processing and data flows became increasingly important to the functioning of the economy and for trade and development. New data processing technologies, such as artificial intelligence (AI) and the Internet of Things (IoT), are impacting production, advertisement, trade, operations, and services and are allowing their improvement with real-time information and behavioural analysis and prediction. The future of the most dynamic sectors of the economy and trade relations is largely built on cross-border data flows and access to the source code (i.e., the sequence of instructions that make up a data processing computer program). Therefore, the paper emphasizes that provisions on cross-border data flow and access to the source code being discussed in the JSI negotiations on e-commerce could have an impact on the future of global trade, development, and the dissemination of emerging technologies.

Despite this evolution, the paper demonstrates how moving away from A2A to encompassing intangible resources and A2K was not reflected in the ongoing discussions among WTO members under the multilateral Work Programme on Electronic Commerce (WPEC) established since 1998. On the other hand, WTO members who joined the JSI since 2017 have moved to discuss A2K and data issues related to e-commerce. The paper also seeks further clarity on how some of the data-related proposals being advanced in the JSI would affect the policy space of developing and least-developed country (LDC) members and their aspirations to transcend the digital divide that separates them from developed country members.

In Section 2, the paper defines the concept of enabling issues; addresses substantive areas that have been identified as "enabling" by various stakeholders; and outlines the enabling paradigm one can discern in the JSI context while putting it into the broader Sustainable Development Goal (SDG) perspective.

The paper observes that the definition of enabling found in the Oxford English Dictionary, when put in the relevant context, refers to making e-commerce possible, effective, and operational.

The paper finds that e-commerce enabling issues independently identified by different stakeholders, including developing WTO members, LDCs, and the international organizations involved in the provision of technical assistance (the Organisation for Economic Co-operation and Development [OECD], the United Nations Conference on Trade and Development [UNCTAD], and the WTO), show considerable convergence. They address both technical and knowledge-based sides of the digital divide, including information and communication technology (ICT) infrastructure and services; trade logistics; legal and regulatory frameworks; corporate rules and regulations; payment solutions; consumer trust; business trust; competition/access to platforms; access to finance; development of e-commerce skills; technical assistance; and [understanding] the moratorium on customs duties on electronic transmissions.

The paper further mentions that the JSI co-conveners have suggested two possible tracks for discussion of enabling issues: i) as a cross-cutting issue in different focus groups as and when appropriate and (ii) in Focus Group D. The mapping of the enabling issue on the JSI agenda that is conducted in the paper reveals that some of the enabling issues, such as payment solutions or consumer trust, do neatly fall within the agenda of particular focus groups. Certain other enabling issues, like legal and regulatory frameworks or ICT infrastructure and services, appear to be cross-cutting. Also, there are issues that do not seem to substantively connect to any of the groups, except for the Focus Group D, particularly its sub-theme, "technical assistance and capacity building."

The paper notes that the enabling paradigm of the JSI could also be presented in broader terms, incorporating the four other enabling components: enabling the participation of the developing countries and LDCs in the JSI negotiations; enabling stakeholder engagement at the national level; enabling elaboration of balanced rules; and, finally, enabling implementation.

In this respect, the paper remarks that the participation of developing country and LDC members in the JSI could benefit from enabling in at least two ways. First, it could address certain procedural elements: interpretation during the meetings, translation of the documents into all official WTO languages, improvement of meeting scheduling to facilitate the participation of the small delegations, etc. This aspect should not be too difficult, as some of the requests have been met already. The second aspect is systemic. It largely dwells on the relationship between the JSI and the existent multilateral mandates. For instance, the problem is explained in the recent JSI submission of Côte d'Ivoire, which reflects on the concern expressed by low-income developing country members that the plurilateral approach "weakens multilateralism."

The paper observes that the JSI might also benefit from enhanced transparency in its work. This was already suggested by several co-sponsors and could be particularly useful for the private sector and civil society stakeholders from developing country members.

Moreover, the paper observes that wider participation of developing country and LDC members in the JSI could contribute to the elaboration of the disciplines, duly accounting for the development perspective. It notes that, as of now, proposals from the developing co-sponsors are rare and are, predominantly, not text-based. No LDC has yet made a JSI submission.

The paper also points out that somewhat different potential approaches were proposed in the JSI for the future implementation of rules and the eventual market access commitments. The latter features the potential for upholding variable geometry with respect to the extent of the commitments, the speed of liberalization, and the decision-making time frame.

The paper finds that, by ensuring access to technology and the development of digital skills and infrastructure, among others, enabling e-commerce is likely to contribute to the achievement of a wide range of SDG targets, leading, among other outcomes, to enhanced human capital, increased exports, and progress in social inclusion. It reveals how e-commerce can generate benefits and create opportunities to narrow the gender gap in trade. It emphasizes the need to explore within the JSI context how to maximize e-commerce's potential for women while taking into account the special challenges that women face.

Finally, the paper recognizes that e-commerce enabling in developing country and LDC members is a challenging and multifaceted task.

Section 3 of the paper, devoted to the flow of data and data localization, starts by defining the basic relevant notions. It proceeds with mapping the data flow regulations that are adopted nationally and regionally; briefly outlines the main relevant WTO rules; highlights the main points made in the JSI submissions to date; and, finally, sketches the points worth considering in choosing the approach to data regulation.

The paper once again refers to the Oxford English Dictionary, which defines data in terms of quantities, characters, or symbols, on which operations are performed. The paper recognizes that this definition is consistent with the "raw" or unprocessed data approach reflected in the relevant rules and also in the JSI submissions. It also mentions two key characteristics of data—non-rivalry, which means that the data could be used by many handlers simultaneously, and the fact that the economic value of data is determined by processing and use —which play an important role in shaping the approaches to its regulation.

The paper defines the cross-border flow of data as a movement of data across national borders, normally for processing and storage. The paper notes that the paths of data transfers are unpredictable and changing, with data possibly making trans-border moves even in a completely domestic transaction. The paper further clarifies that data flow disciplines, as they stand, are concerned with the final destination of the transferred data and not with intermediary transfer points.

The paper notes that, lately, data transfers are increasing in number and volume. Their regulation has also increased in quantity and complexity. It explains that, substantively, the data flow disciplines are structured around restrictions on the transfer of data of certain identified types. They focus on the obligations of data exporters and vary in restrictiveness, decision-making roles, conditions under which transfers could be allowed, and safeguards.

Moving to the data localization requirements, the paper defines them as obligations to store (or retain) data or its copies locally. It notes the existence of so-called "efficient data localization"—for example, a situation where data localization, even if not mandatory, offers considerable benefits from the economic perspective—and de facto data localization, where data flow restrictions lead to the inevitability of storing data locally even if no explicit legal requirement to this effect exists.

In a survey of guidance on how the issues of data flow and data localization are addressed in recent free trade agreements (FTAs), the paper analyzes 10 such agreements: the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP), the Singapore-Australia Free Trade Agreement (SAFTA), the Association of Southeast Asian Nations (ASEAN) E-commerce Agreement, the United States–Mexico–Canada Agreement (USMCA), the Mexico–Panama FTA (MexPanFTA), the Korea–U.S. FTA, the Pacific Alliance FTA, the Peru-Australia FTA, the Singapore-Sri-Lanka FTA, as well as the latest available draft of the Regional Comprehensive Economic Partnership (RCEP). It reports that disciplines on data flows and data localization are most often approached separately in a two-pronged structure, encompassing a general rule (free flow of data related to commercial activities and prohibition to require localization of such data), followed by the exceptions. The paper remarks that variable approaches are used with respect to certain types of financial data. It also notes that only one of the FTAs included a special and differential treatment provision in the form of a transitional period.

While no FTA with data flow provisions was found in Africa, the paper mentions the two notable regional developments: the plan for the negotiations of a protocol on e-commerce in the third phase of the African Continental Free Trade Area (AfCFTA) and the Malabo Convention (not yet in force as the required number of ratifications has not been achieved), which includes certain issues of relevance to the cross-border transfer of personal data.

The paper explains that, without denying the relevance of the other WTO agreements (for instance, the Agreement on Technical Barriers to Trade) to the different aspects of data transfers, the General Agreement on Trade in Services (GATS) disciplines show the most proximate connection to the subject matter. The paper observes that these disciplines were already applied to the services delivered digitally. It further remarks that the important peculiarity of the GATS is its strong reliance on the scheduled commitments with respect to market access and national treatment obligations. This could also hold true for data transfers. Accordingly, where such commitments are undertaken and relevant services sectors are bound, restrictions on data transfers may not be imposed and data localization may not be required. Nevertheless, the extent of such commitments varies among WTO members, especially since developing countries and LDCs (except for the newly acceded members) have bound only a small share of services sectors.

The GATS general and security exceptions, as well as those in the Annex on Financial Services, do apply but have never been tested in a WTO dispute in this context.

The paper finds that the structure of the proposals made in the JSI is not different from the approaches adopted nationally and regionally, encompassing a general rule and exceptions. The exceptions proposed for both disciplines in the JSI could be roughly divided into three types: protection of personal data, public policy objectives, and security interests. The proposed exceptions largely square with those reflected in the national legal frameworks and FTAs, subject to one notable omission of the measures supporting digital industrializations, that is to say, development/enabling issues of interest to many developing countries and LDCs. It is crucial to note that segregation of data into different types might be complicated, resulting in much broader restrictions than the narrowly phrased exceptions seem to suggest.

The paper notes that three different solutions are proposed for financial data: treating it as any other type of data, excluding it from the scope of the disciplines, or subjecting it to a specific discipline. The specific discipline suggested by a sole co-sponsor dwells on the notion of immediate, direct, complete, and ongoing access to data by financial authorities, which might result in "efficient data localization."

Toward the end of **Section 3**, the paper identifies some of the pros and cons of regulating data flows, each linked to one of the two key characteristics of data: non-rivalry and generation of value through processing and use. It also lists several other important factors that are worth considering when choosing the data regulation approach.

Section 4 of the paper zooms in on the provisions on access to source codes (or algorithms). It starts by unpacking the term *source codes* to simplify the technical complexity for policy-makers. The paper explains that computer programs rely on source code to function and process data. Source codes are the human-readable instructions that a programmer writes in a specific language and gives to the computer so it can produce an output. Currently, most digital services—and an increasing number of digital and non-digital products—are enabled by computer programs. Computer programs underpin the chain of events related to the existence of digital data, from storage in devices or the cloud to data analysis and data transfer. Accordingly, discussions on access to source codes in the JSI can have implications for the dissemination of emerging data technologies among countries.

The originality of a computer program source code is protected both technically and legally. Concerning its legal protection, source code is under copyright protection from the moment that the first line of code is created. But the copyright law covers only the material expression of the idea, not the idea itself, which can be protected through the use of patents. However, the paper highlights that source code is most often protected under the auspices of "trade secrets." Trade secrets fall under the general concept of protection against unfair competition or are based on specific stand-alone provisions on the protection of confidential information. In the case of source code protection, the paper points to provisions in the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS), which states that, if source code is unlawfully copied or a

trade secret is obtained or used in a dishonest manner for commercial gain, WTO members have the option to seek legal action against the offender before the courts of the member concerned. The paper also adds that, in practice, countries have started to offer higher levels of protection at the national level than what is envisaged under the TRIPS Agreement.

The paper highlights several relevant public policies where it could be relevant for governments to request disclosure of, transfer of, or access to the source code. The possible justifications include technology transfer, crisis mitigation, government procurement, and auditing of algorithms. Also, the paper names the following specific regulatory areas in which governments have enacted provisions requesting access to the source code in their national laws: tax oversight; financial regulation; checking compliance with local regulation, especially safety and health; competition; and compliance with court decisions.

The paper also notes that several trade agreements prohibit governments from requiring the disclosure, transfer of, or access to the source code as a condition for market access. Article 14.17 of the CPTPP is one example. It says that: "No Party shall require the transfer of, or access to, source code of software owned by a person of another Party, as a condition for the import, distribution, sale or use of such software, or of products containing such software, in its territory."

The paper adds that some specific exceptions that authorize governments to request access or transfer of source code are also mentioned in the FTAs. These are the most common exceptions: in critical infrastructures, military procurements, following patent law regulations, to ensure compliance with safety and security requirements, and to remedy a violation of competition law.

The paper generally observes that the main goal of the proposals advanced in the JSI on source code is for members to commit to a general prohibition and avoid introducing regulations at the national level that would lead to access and transfer requirements. JSI members can propose exceptions that are very similar to the exceptions that have been discussed or introduced in FTAs in recent years.

Section 4 concludes by highlighting that developed countries have taken the lead in submitting proposals on access to source code. Therefore, relevant issues of importance to developing countries, such as technology transfer, may not have been discussed at length.

The paper concludes by emphasizing the complexity of the issues being discussed in the e-commerce JSI negotiations. Therefore, this paper is an attempt to provide a comprehensive—but by no means exhaustive—and balanced account of the key issues mentioned by participating developing country delegates in an earlier seminar held on January 29, 2020. The information and analysis in this issue paper seek to help developing countries and LDCs better understand the issues and identify their further needs for focused research, analysis, and technical assistance.

Table of Contents

List of Figures

Abbreviations

A2A	access to access
A2K	access to knowledge
AfCFTA	African Continental Free Trade Area
AfT	Aid for Trade
AI	artificial intelligence
ASEAN	Association of Southeast Asian Nations
ATPC	African Trade Policy Centre
CPTPP	Comprehensive and Progressive Agreement for Trans-Pacific Partnership
CTD	Committee on Trade and Development
CTG	Council for Trade in Goods
CTS	Council for Trade in Services
DIKW	data, information, knowledge, wisdom
ECA	E-commerce Agreement
EFTA	European Free Trade Area
EU	European Union
FG	focus group
FTA	Free Trade Agreement
GATS	General Agreement on Trade in Services
GATT	General Agreement on Tariffs and Trade
GDP	gross domestic product
GDPR	General Data Protection Regulation (EU)
GESI	gender equality and social inclusion
IaaS	infrastructure as a service
ICT	information and communication technology
IGF	Internet Governance Forum
IoT	Internet of Things

IP	Internet Protocol
IT	information technology
ITA	Information Technology Agreement (WTO)
ITA-II	Expansion of Information Technology Agreement (WTO)
ITC	International Trade Centre
JSI	Joint Statement Initiative
LDC	least-developed country
MexPanFTA	Mexico-Panama FTA
MFN	most-favoured nation [treatment]
MSME	micro, small, and medium-sized enterprise
OECD	Organisation for Economic Co-operation and Development
OSS	open source software
PaaS	platform as a service
RCEP	Regional Comprehensive Economic Partnership
S&DT	special and differential treatment
SaaS	Singapore–Australia Free Trade Agreement
SAFTA	software as a service
SDG	Sustainable Development Goal
SME	small and medium-sized enterprises
TBT	Agreement on Technical Barriers to Trade
TFA	Trade Facilitation Agreement
TRIMS	Agreement on Trade-Related Investment Measures
TRIPS	Agreement on Trade-Related Aspects of Intellectual Property Rights
UNCTAD	United Nations Conference on Trade and Development
U.S.	United States
USMCA	United States–Mexico–Canada Agreement
WIPO	World Intellectual Property Organization
WPEC	Work Programme on Electronic Commerce
WTO	World Trade Organization

1.0 Introduction

1.1 Overview

This paper aims to facilitate a greater understanding of some technical issues under consideration in the Joint Statement Initiative (JSI) negotiations. It builds on a seminar held in January 2020 under the scope of this Trade and Investment Advocacy Fund (TAF2+) project, where participants identified issues for further research and analysis. On that occasion, participants highlighted the need to further analyze the concept of the digital divide and how it could be addressed in the JSI negotiations, as well as the issues of the free flow of data, data localization, and source code. Participants also discussed the interests and implications for developing countries and least-developed countries (LDCs) in these key areas of the JSI negotiations. In this context, this paper draws from the available research and analysis to explore ways in which digital inclusion could be tackled in the e-commerce discussions to benefit all participants. Given the economic importance of digitalization and emerging technologies, it notes the potential development implications of not integrating strategies for overcoming the digital divide into the JSI e-commerce discussions and negotiations. Against this background, this introduction presents an overview of the different ways in which the digital divide has been framed over time. While recognizing the importance of access to infrastructure as a precondition for e-commerce to flourish, it argues that the notion of the digital divide needs to be expanded in order to encompass access to data, which is a key element for the production of information, knowledge, and wisdom in highly digitized societies.

This issue paper tackles several subtopics that are considered to be critical to bridging the digital divide at its current stage: enabling issues in the JSI on e-commerce (Section 2), the flow of data and data localization (Section 3), and provisions on access to the source code (Section 4).

While the JSI co-conveners have designated spaces for the enabling issues on the JSI agenda, as of now, only a few related submissions have been made by developing country members. Such submissions, mostly in the form of non-papers rather than textual proposals, have identified elements that could assist in clarifying the necessary elements of enabling issues. These elements include enabling e-commerce ecosystems, enabling participation in the JSI negotiations, enabling stakeholder engagement, enabling the development of balanced rules, and enabling the future implementation of the latter. On the basis of the JSI submissions, the relevant work on special and differential treatment (S&DT), and the broader enabling issues conducted elsewhere, **Section 2** further elaborates on the relevant measures, among other things, through positioning them within the broader perspective of the Sustainable Development Goals (SDGs), and gender equality and social inclusion (GESI).

Drawing from the submissions made by JSI participants, the exploratory and research work accomplished by different stakeholders, and contributions made within the framework of the World Trade Organization (WTO) (for instance, under the auspices of the 1998 Work Programme

on E-Commerce [WPEC]), Section 2 also seeks to identify the content, types, and scope of enabling issues that might be subject to consideration under the JSI and explore the status quo of the relevant discussions.

Section 3 focuses on issues related to data. It provides relevant definitions and a taxonomy of terms, including data, data flows, and data localization, followed by emerging coverage of these issues in various regional trade agreements. The section then focuses on the state of discussion on these issues in the JSI, based on proposals and submissions by participating members. Overall, it strives to provide comprehensive and objective information and analysis of these important issues.

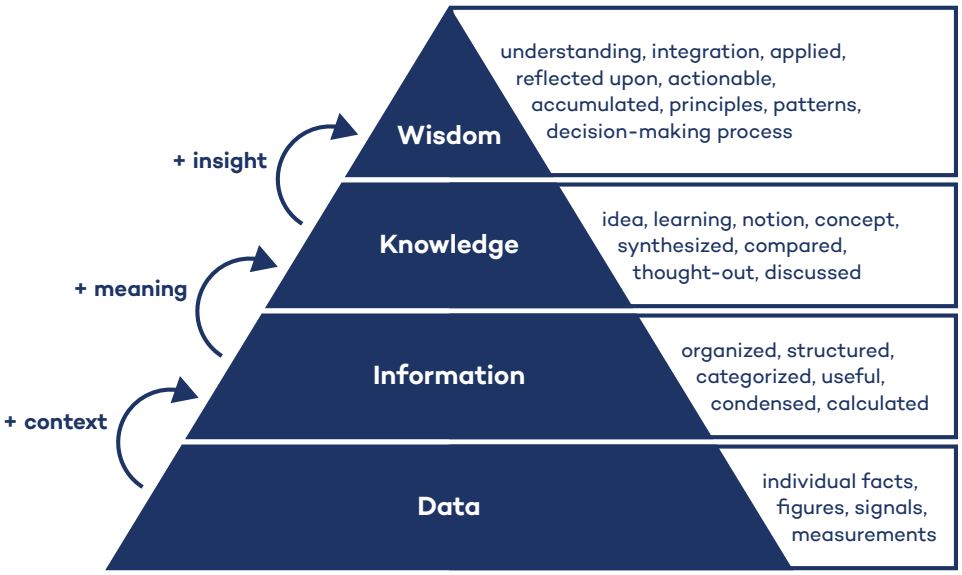
Section 4 discusses provisions that have been proposed under the JSI that aim to limit requests for access to or transfer of the source code for computer programs. In order for data to generate value, it needs to be processed. Computer programs underpin the chain of events related to the processing of digital data—from storage in devices or in the cloud to data analysis and data transfer. The paper also notes that most digital services and an increasing number of digital and non-digital products are enabled by computer programs, which makes this topic extremely important for digital inclusion and development. Moreover, as will be discussed in **Section 4**, governmental access to the source code can be relevant to achieving certain public policy objectives, such as ensuring public safety.

1.2 The Value of Data for E-Commerce

During the last few decades, the digital divide has become a multi-faceted concept. Access to hardware and connectivity are still preconditions for inclusion in the digital economy; however, this means very little without access to information and knowledge and the possibility of creating them independently. Currently, due to the increasing affordability of technology, most information is stored in digital formats and organized in databases. In 2000, approximately 25% of the information available in the world was stored digitally. By 2010, the situation had drastically changed: only 2% of available information was non-digital (Mayer-Schönberger & Cukier, 2014).

Digitization is matched by significant progress in the processing power of computers, which means that more correlations can be made, and more information can be extracted from data than ever before. Data has become the raw material from which new services, business models, and value are created. The value of data can be easily grasped in the "DIKW hierarchy," a model for representing the relationships between data, information, knowledge, and wisdom. While information is inferred from data and makes sense of it, giving it meaning, relevance, and purpose, knowledge is the result of synthesizing and organizing multiple sources of information over time, connecting information in relationships.

Figure 1. The DIKW hierarchy



Source: Cannas et al., 2019.

The collection and processing of vast volumes of data are enabling the emergence of new technologies, such as machine learning and artificial intelligence (AI), which is becoming enmeshed in most economic activities. AI is causing an impact in myriad areas, such as industrial production and trade, and on the operation of data-driven platforms. The platforms use AI to retain users and provide tailored advertising. The potential for widespread use of AI is one of the reasons for it being one of the pillars of the so-called "fourth industrial revolution" (Schwab, 2016). AI's anticipated impact on economic growth and gross domestic product (GDP) is similar to the impacts of other general-purpose technologies that underpinned previous industrial revolutions, such as steam power, electricity, electronics, and information and communication technology (ICT) (International Telecommunications Union ITU, 2018). AI is underpinned by algorithms, a highly complex piece of software code, as explained in Section 4 of this paper. This means that provisions on access to the source code being discussed in e-commerce negotiations could have an impact on the development and dissemination of this emerging technology.

Data is also generated at unprecedented levels by individuals as they go about their daily lives. From online searches to shopping baskets, from conversations that take place in the household to our whereabouts, every piece of data we generate gets collected by a multitude of devices. These devices include our smartphones, TV sets, wearables, and home assistants, for example, with that same data then being stored, processed, and analyzed. Data collection will increase exponentially with the Internet of Things (IoT), a network of connected devices that include smart home appliances—such as lighting, heating, and security systems—health and wearable devices, and the infrastructure of smart cities.

This scenario has three important consequences for e-commerce. First, massive data collection means that data can be used to create new products and services and to improve them

continuously with real-time information. Data also provides a new kind of asset, known as a "behavioural surplus" (Zuboff, 2019). This surplus is composed of a quasi-totality of information about our every thought, word, and deed, which could be traded for profit in new markets based on predicting our needs—and matching them with the online offer of products—or producing them. For instance, when players engaged with the virtual reality game "Pokémon Go," they were rewarded for entering certain buildings in real life, but they were not aware that they were actually visiting the companies that sponsored the game owners. In Japan, 3,000 McDonalds restaurants were turned into Pokémon gyms in the game, and when players visited the hamburger chain, they were rewarded with in-game currency (Gibbs, 2016), a powerful way of influencing the consumption of the restaurant's products. Data has become the key to the prediction and production of future events. When private companies possess the key to prediction, they are always ahead of competitors; when they possess the key to production by modifying behaviour, they develop "wisdom"—the last and most complex element of the DIKW pyramid—and play an important part in shaping the future within their industries and beyond.

The second and third consequences of e-commerce are the centrality of data processing and data flows to the future of trade. Data has value when it is aggregated, processed, and generates information and knowledge that inform decisions. For that to happen, data cannot stay static; it needs to be transferred from devices to data centres and cloud servers and then to centres dedicated to carrying out intelligent analysis, decision making and product development, for example. This means that the value of data can only be fully extracted when it flows seamlessly through these loci, which are frequently not located in the same jurisdiction.

The future of the most dynamic sectors of the economy is largely built on cross-border data flows. Digitization has profoundly affected trade in services, which has become the backbone of the global economy (WT/L/1056). Digital technologies have not only enabled a large part of the services economy to become tradable, but they are also transforming the very nature of services, which are becoming increasingly digital-intensive. In this context, new business models are emerging, such as the offer of infrastructure as a service (IaaS),[1] software as a service (SaaS), platform as a service (PaaS), and AI as a service. Data flows are also key to the trade of goods. Even when ships carry physical products, customers increasingly order and pay for them online. Likewise, the movement of products is tracked online, using radio-frequency identification (RFID) codes, which are tags attached to objects that contain electronically stored information.

Despite the centrality of data to the world economy, there is an increasing concentration of wealth generated by this data in the hands of a select number of companies headquartered in a few countries. As an example, *Forbes*' 2019 ranking of the top 100 digital companies shows that, among the top 25 companies, 12 are from the United States, four are located in China and

[1] The IaaS market has long been dominated by Amazon Web Services (AWS). The IaaS market now appears to be consolidating around a small set of large providers: AWS, Microsoft, Google, IBM, and Alibaba. The current top 10 providers are expected to increase their market share even further by 2021, from 50% to 70%.

Chinese Taipei, three are located in Europe, and three are based in Japan. Mexico, Hong Kong, and South Korea had one company each on the list.[2]

Internet companies concentrate large amounts of data as a result of two parallel dynamics. The first is network effects (also referred to as network externality or demand-side economies of scale). The more users a digital business has, the more its value exponentially grows. For instance, the more users connected to Facebook, the more useful and relevant Facebook becomes to each of its users. The second dynamic is the diversification and convergence of business models, which are two complementary processes. Internet companies try to diversify their business model to make it more robust to economic and policy changes, and by diversifying, they also bring together previously separate business models. For example, Amazon and Alibaba run e-commerce platforms but also offer cloud platforms, leasing their server space to other companies and individuals. Amazon has also entered the streaming business with Amazon Prime and the market for AI-powered smart assistants and devices, with Amazon Alexa. The scenario reveals an increasing divide when it comes to the ownership of and access to data.

Tackling this "data divide" is important to bridging the digital divide. However, discussions on the digital divide under the WPEC to date have been focused on access to infrastructure and connectivity, while the JSI emphasizes the free flow of data without referring in detail to the role played by data on concentration—including in the e-commerce sector—and development. The importance of data to the current digital divide remains unclear. In order to understand the reasons for this gap, a brief overview of the evolution of the concept of the digital divide in other international forums may be useful.

1.3 Digital Divide: From access-to-access to access-to-knowledge and data

In the 1990s, the digital divide mainly meant the division between those with access to a computer and connectivity and those who lacked such access. Policies to address the digital divide were focused on providing access-to-access (A2A), which meant facilitating access to computer devices and lowering the price of Internet connections. On the national level, for example, governments granted loans to individuals and small businesses so they could buy information technology (IT) products, promoted the liberalization of the telecommunications sector in order to increase competition and approved national broadband plans. At the international level, important agreements were concluded at the WTO among some of its members, which had an impact on the price of hardware and connectivity, such as the tariff-cutting Information Technology Agreement (ITA) in 1996 and its revision, known as the ITA-II, in 2015. Across the WTO membership, there are also the agreements and reference documents that have guided the opening of telecommunications services, for example, the General Agreement on

[2] *Forbes*' ranking comprises a series of indicators, such as most recent sales, profits, and asset figures, as well as market capitalizations as of September 27, 2019 (Forbes China, 2019).

Trade in Services (GATS) Annex on Telecommunications, the Fourth Protocol on Basic Telecommunications, and the WTO Reference Paper on Basic Telecommunications.[3]

At the beginning of the 2000s, the concept of the digital divide was expanded. The need to correct gaps in access to the skills and knowledge necessary to take advantage of Internet access was an important dimension added to the discussion. Access-to-knowledge (A2K) and skills would empower Internet users to harness the technology for social and economic growth. This evolution was led by academics and activists working in two main fields: intellectual property (IP) and Internet governance. The World Intellectual Property Organization (WIPO) and the Internet Governance Forum (IGF) were important institutional loci in which a comprehensive view of the digital divide was developed.

The A2K movement encompasses academics and civil society organizations from beyond the digital realm, such as IP lawyers, health policy activists advocating for access to medicines, and subsistence farmers concerned with the patenting of seeds (Kapczynski, 2009). Nevertheless, it was the confluence between these groups and digital practitioners, such as free and open-source software developers, that gave the movement strength in the midst of a process of rapid digitization.

The A2K movement is not just a flipside to the original debate about the digital divide focusing on hardware and connectivity; it represents an important alternative discourse. For A2K advocates, the digital divide should be tackled not at the level of the individual but at the systemic level. Correcting the digital divide was not a matter of merely putting technology in the hands of individuals but empowering them by questioning the power relations between gatekeepers of access to information and knowledge and the many individuals who are increasingly being deprived of them. While technology is an enabler of inclusion, information and knowledge have become the true key resources in the context of the "information society."

From this perspective, experts have found that the digital divide can exacerbate existing inequalities and reinforce discrimination based on class, race, or gender. A revealing example is how the digital divide has been shown to add to the structural challenges women face in engaging in economic activity, including by making it harder for them to bridge the gender gap in trade. The research literature to date has largely found that the digital divide also creates artificial obstacles to the sharing of information and knowledge, which in turn can complicate efforts to empower the disadvantaged and promote change. This effect of the digital divide is even more evident when observed at the larger scale of countries. While developed countries are seeking A2K norms, many developing countries and LDCs are striving to unlock data issues.

---

[3] Some important points about these agreements should be noted. The ITA does not include all WTO members, though the benefits from the tariff cuts agreed by those involved in the ITA are extended to the full WTO membership. The expansion of the ITA (i.e., ITA-II) covers a subset of those WTO members involved in the original ITA, already a subset of the full WTO membership. It is also worth noting that part of the motivation behind the revision was a concern that the products included in the original ITA were becoming obsolete (along with the need to include newer technologies). Similarly, not all WTO members have undertaken commitments for telecommunication services or incorporated the Reference Paper on Basic Telecommunications in their service schedules.

In recent years, various organizations have warned about the potential for the digital divide to exacerbate pre-existing economic and social challenges and inequalities. The World Bank's 2016 report, *World Development Report: Digital Dividends*, notes that the benefits of Internet growth are neither as big nor as evenly distributed as is often claimed. According to the report, the gap between the promises of digital technology and its real impact is widening (World Bank, 2016). The World Economic Forum's *Global Competitiveness Report 2018* recognizes that the fourth industrial revolution makes the pathway to development less certain. The International Telecommunications Union's 2018 report on *Assessing the Economic Impact of Artificial Intelligence* claims that the adoption of AI could widen gaps between countries, companies, and workers. Other reports have also examined the impact of the digital divide on micro, small, and medium-sized enterprises (MSMEs), including reports from the United Nations Conference on Trade and Development (UNCTAD), the International Trade Centre (ITC), and the Internet Society, considering issues that range from access to platforms and compliance with their requirements to data ownership. The relevant literature has also considered the impact on women-dominated and women-led MSMEs.

1.4 The Digital Divide in E-Commerce Discussions at the WTO

At the WTO, discussions taking place under the WPEC have been predominantly dedicated to facilitating access to enabling infrastructure, such as ICT products and telecommunications equipment, rather than the digital divide directly. These topics were tackled by the Council on Trade in Services (CTS) and the Committee on Trade and Development (CTD), two of the WTO bodies tasked with the 1998 Work Programme. Other issues related to the digital divide were also under discussion in the CTS and in the Council on Trade in Goods (CTG), such as technology transfer and capacity building.

According to Ismail (2020), "the lowest level of activity was in the TRIPS Council, which rarely addressed e-commerce issues or included the Work Programme on its agenda." This suggests that the evolution of the concept of the "digital divide"—moving away from a sole focus on A2A to encompassing intangible resources and A2K—was not reflected in discussions among WTO members that took place under the Work Programme. At that time, the A2K movement and its core ideas were present at the WTO but were more focused in other areas, such as access to medicines (Carrapico, 2017).

This relative absence created a gap that is important to keep in mind when considering the current state of the digital divide and its implications, especially amid active negotiation processes on e-commerce like the JSI. From the focus on infrastructure, WTO members involved in the JSI have since moved on to discuss data issues related to e-commerce. Within that process, the proposals to date do not seem to address some of the issues that have emerged in other forums on A2A to A2K, including the underlying conceptual and theoretical framework. Rather, the JSI has mainly treated data issues from the perspective of promoting the free flow of data without a clear reference to the key role that access to data plays for access to information and knowledge, along

with the potential development implications and the risk of market concentration being further perpetuated among major tech players.

To date, the proposals under the JSI have not addressed the pillars that underpin such concentration, though some members have raised concerns over the division of benefits. This could be partially explained by a lack of clarity about how some of the data-related proposals being advanced in the JSI would affect development-related concerns.

While developed countries have only recently started to elaborate positions on complex issues such as data governance (European Union [EU], 2020), developing countries and LDCs are still working on elaborating and putting in place the building blocks of Internet regulation, including on whether and how to regulate many of the issues related to data. According to UNCTAD's Cyberlaw Tracker, 40% of LDCs do not have privacy and data protection laws and 26% do not have cybercrime laws at the domestic level. This has implications for negotiations on such issues at the international level, especially those that relate to liberalization, given that domestic policy decisions on how to approach regulatory issues are still pending. Some developing countries have raised related concerns over what this could mean for their policy space going forward.

2.0 Enabling Issues in the JSI on E-Commerce

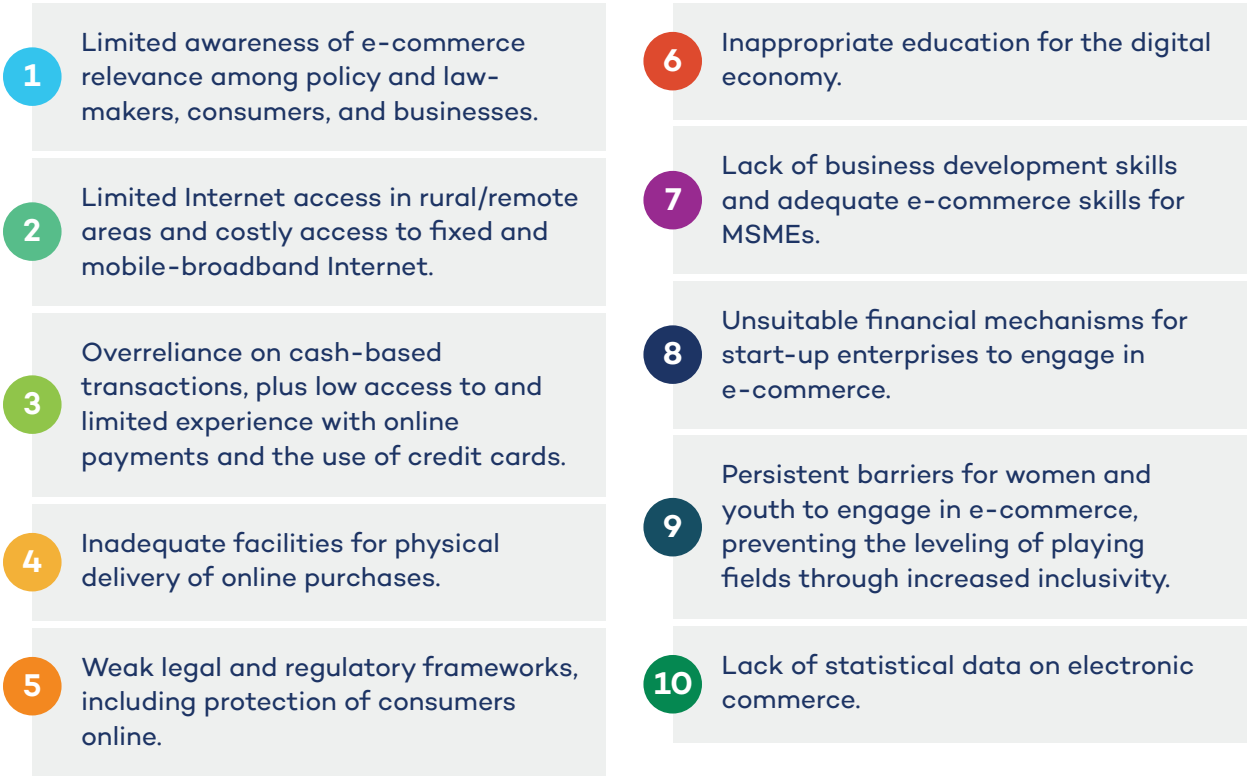
Drawing from the submissions made by JSI participants, the exploratory and research work provided by different stakeholders, and the contributions made within the framework of the WTO (for instance, under the auspices of the WPEC), this section seeks to identify the content, types, and scope of enabling issues, which might be subject to consideration under the JSI. It explores the state of play in the relevant discussions while putting the enabling issues in a broader perspective by approaching them from the perspective of the SDGs.

2.1 The Presumption of E-Commerce Readiness

The work in the JSI appears to be based on the presumption that the necessary e-commerce infrastructure, regulatory framework, and even a certain level of e-commerce consumer culture are already in place in the participants. For instance, one of the submissions, devoted to the issues of facilitation of electronic transactions, explicitly notes that the proposed elements "have been subject to substantial legislative development around the world and are part of many Members' FTA practices" (General Council, 2018, JOB/GC/188). Another submission, devoted to the issues of consumer trust, refers to the commitments that Canada has taken in its regional trade agreements, such as its Comprehensive Economic and Trade Agreement with the EU, as well as the Comprehensive and Progressive Agreement for Trans-Pacific Partnership, suggesting these may be a useful reference (INF/ECOM/29). In line with the prior, exploratory phase of the JSI that took place in 2018, most of the submissions made so far are based on the rules already put to the test in varied national and regional frameworks and improvement in regulation of the relevant practices (Attachment B to the Snapshot Document prepared by the JSI co-conveners).

Meanwhile, in many developing country and LDC members, both e-commerce itself and pertinent regulatory frameworks are desired, according to the language used by several developing country WTO members in their communications joining the JSI. Among those are Burkina Faso (INF/ECOM/53) and Benin (INF/ECOM/18), whose frameworks are currently nascent. For instance, the Rapid eTrade Readiness Assessments conducted by UNCTAD have demonstrated that the countries reviewed face important challenges related to the establishment of their respective e-commerce ecosystems, many of which are common to the majority of them (Figure 2). These difficulties point to both the technological and knowledge-based sides of the digital divide, which might lead to a circular problem, as "a poor enabling environment for the digital economy is unlikely to encourage investments in digital infrastructure, since business are not guaranteed a profitable return on their investment" (Samans & Botwright, 2019).

Figure 2. The 10 most common challenges faced by LDCs in e-commerce development



Source: UNCTAD eTrade, 2019.[4]

The participation of developing countries and LDCs in the FTAs containing e-commerce provisions is also relatively rare.

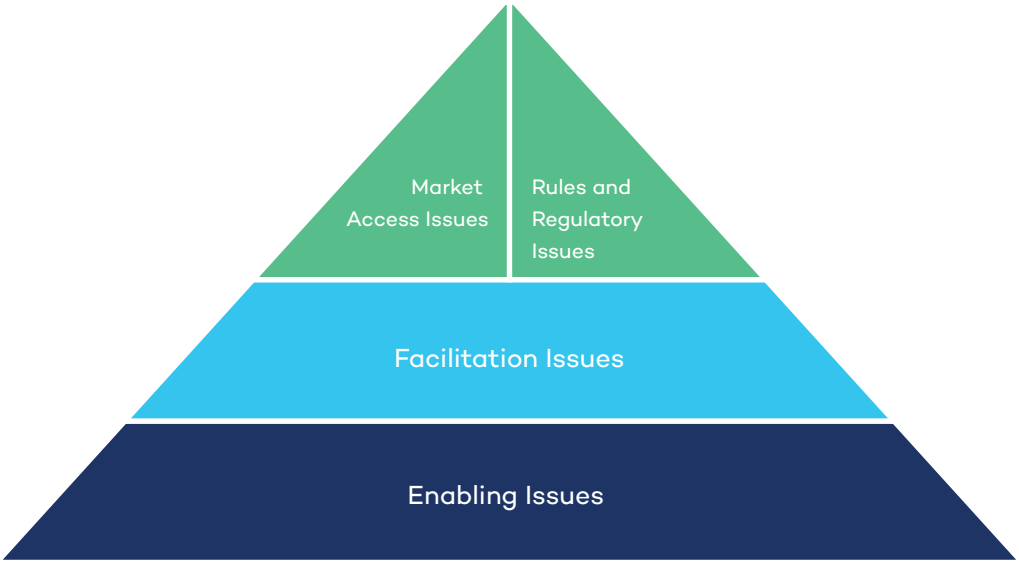
2.2 Enabling Issues: Interaction with S&DT and the place in the JSI discussions

Even before the JSI exploratory process began, Kaukab (2018) suggested that, for developing country WTO members, consideration of the enabling issues would need to precede elaboration of those focusing on digital trade facilitation, rules, and market access (Figure 3).[5]

[4] The findings were made on the basis of the work conducted in the first 16 LDCs assessed.

[5] Drawing from the issues presented by developing countries in the discussions under the e-commerce Work Programme, the author has identified the following issues as enabling: access to infrastructure and technology, capacity building and technical assistance, new technologies and access to technology, e-commerce skills development and technical assistance, e-commerce readiness and strategy, national policies, international collaboration, and role of all relevant international organizations (Kaukab, 2018).

Figure 3. Developing countries' priorities in future e-commerce discussions

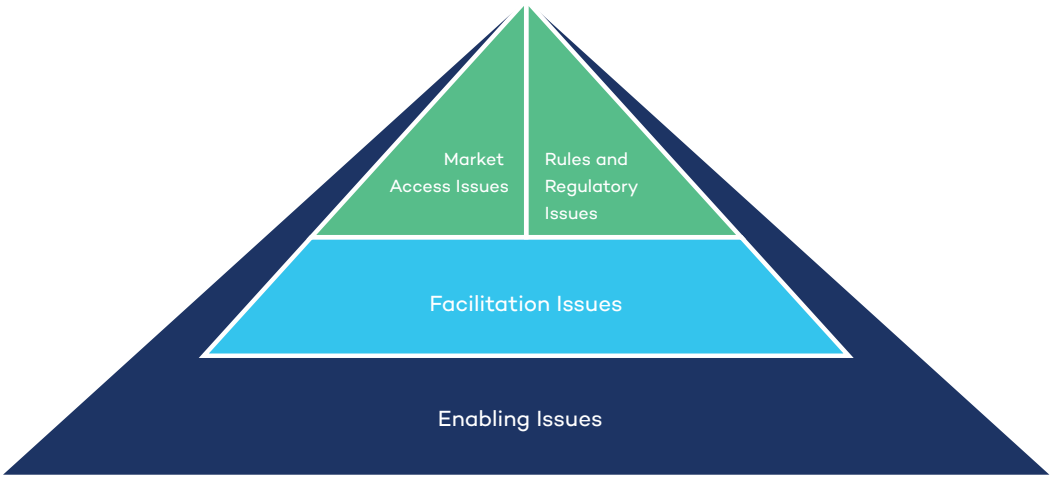


Source: Ebrahimi Darsinouei, 2017.

Meanwhile, the recent proposal from a developing JSI participant has set out the role of technical assistance as "improving, promoting, and protecting the development of electronic commerce to allow them to implement WTO rules on electronic commerce" (INF/ECOM/52). This proposal's wording seems to note that the rapid evolution of digital reality and the pace of the JSI negotiations will need to account for the differing levels of development among WTO members relative to their regulatory frameworks, which could pose difficulties further on.

There appears to be potential for developing the work on enabling issues further and in parallel to the development of the regulatory framework. Similar logic could apply to the ongoing implementation of (digital) trade facilitation measures (some of which, in their turn, could also be subject to enabling) (Figure 5). Such efforts could progressively build the necessary capacity in developing countries and LDCs, and the stakeholders within. This work could eventually be scaled down in scope and extent as sufficient levels of capacities/efficiency are reached.

Figure 4. Consideration and implementation of enabling and facilitation issues with the WTO JSI on e-commerce: A model



Source: Authors

Within the JSI setting, most of the proposed approaches to S&DT have been framed along the lines of the phased implementation of the rules (yet not involving permanent exceptions).

Box 1. Development concerns and the JSI agenda

The framework designed by the co-conveners, as it stands, seemed to have allocated two tracks to consider the concerns related to development: 1) a cross-sectional one, where such issues could be raised in any of the focus groups in relation with the discussions on specific substantive issues (the meeting schedule of February to May 2020 seen by the authors, in this respect, notes: "The unique opportunities and challenges faced by Members, including developing countries and LDCs …, will be taken into account across each of the Focus Groups. This document may be subject to change and additional trade-related issues may be added.") and 2) a special sub-theme of "technical assistance and capacity building" placed among the several cross-cutting issues discussed by the Focus Group D.

Figure 5. Enabling e-commerce ecosystem as mapped on the JSI agenda

Focus Group A: Enabling Digital Trade/ E-commerce • Trade Logistics • Payment Solutions	**Focus Group B: Openness and Digital Trade/E-commerce** • *Legal and Regulatory Frameworks* • Competition/Access to Platforms
Focus Group C: Trust and Digital Trade/E-commerce • *Legal and Regulatory Frameworks* • Consumer Trust • Business Trust	**Focus Group D: Cross-cutting issues** • *ICT Infrastructure and Services* • E-commerce Skills Development/Technical Assistance • Access to Finance • Corporate Law Rules and Regulations • *Legal and Regulatory Frameworks*
Focus Group E: Telecommunications • *ICT Infrastructure and Services* • *Legal and Regulatory Frameworks*	**Focus Group F: Market Access and Customs Duties on Electronic Transmissions** • [Understanding] Moratorium on customs duties on electronic transmissions • *ICT Infrastructure and Services*

*Note: italics indicates that a topic is referred to in multiple focus groups.

Discussions in various focus groups

The submissions addressing substantive issues refer to the development concerns occasionally and, up to now, not conclusively. Nevertheless, some WTO members, both JSI co-sponsors and not, participate as active listeners, occasionally raising particular concerns. For example, during the most recent discussions on data flow and data localization (5th cluster of the JSI negotiations in October 2019), several developing country members—both JSI co-sponsors and those outside—engaged actively with the JSI participants, noting their concerns on the proposed rules' effects on their emerging data processing industries and suggesting a "middle ground" be reached that would address their need to preserve their available policy space.

The dedicated Focus Group D

A specific place for development is allocated in Focus Group D, among other cross-cutting aspects. So far, it was marked by the three relevant submissions made by developing country members—two by Côte d'Ivoire and one by Indonesia. Costa Rica, individually as well as in a group with Argentina and Colombia, also contributed to the discussion at the earlier stages of the JSI.

The scope of the discussion under this sub-theme, now framed around "Options for Technical Assistance and Capacity Building," has evolved from the emphasis on "Infrastructure Gaps/Digital Divide" made in the first JSI thematic framework, circulated by the co-conveners in April 2018. Later in December 2018, the co-conveners circulated a snapshot document and attachments. In the document "Attachment A: Snapshot of issues explored," the description of the same subtheme "Infrastructure gaps/Digital divide" included: "Relevant market access commitments, telecommunications (including the WTO Telecommunications Reference Paper), Aid for Trade and cooperation between international organizations." The phrasing appeared to be addressing the broader scope of concerns by referring to the submissions mentioning varied development implications made by both developed and developing members.

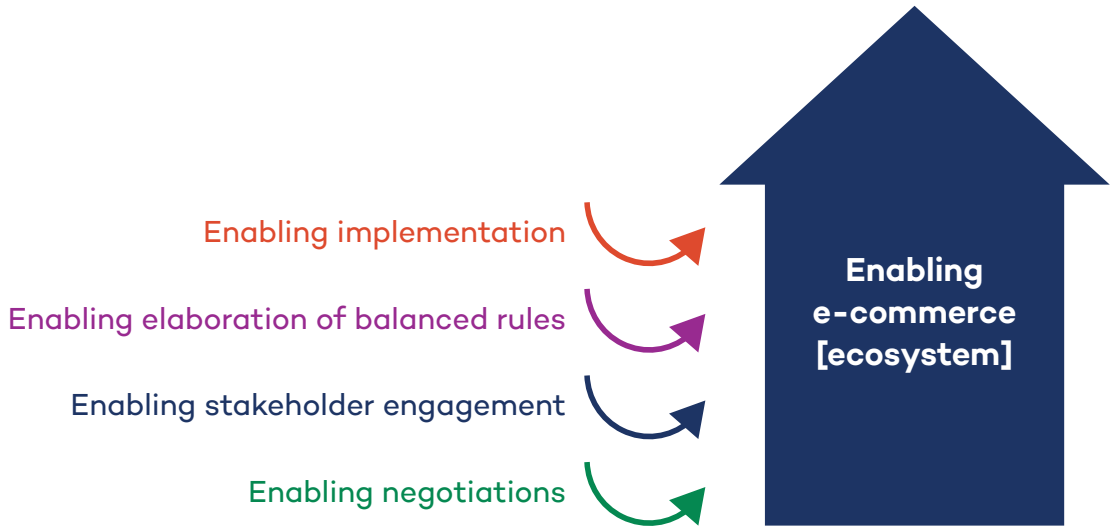
2.3 Types of Enabling Issues

The broadly defined e-commerce enabling strategy referred to above has several integral components (Figure 6):

- Enabling e-commerce [ecosystem] (the narrow definition of the "*enabling issues*" of relevance to the JSI)
- Enabling the participation of developing country members and LDCs in e-commerce negotiations
- Enabling the elaboration of balanced rules
- Enabling the engagement of all stakeholders (including the private sector and civil society)
- Enabling implementation.

Each of those will be discussed below with reference to the relevant submissions made in the JSI, where available and appropriate.

Figure 6. The holistic enabling perspective of the WTO JSI Negotiations: The elements



Source: Authors

2.3.1 Enabling an E-Commerce Ecosystem

In simplest terms, enabling issues focus on the areas in which advancement could be of particular assistance to developing country members and LDCs in launching their digital markets or obtaining the necessary boost to do so. Among other implications, some research suggests that this advancement could allow such countries to duly participate in the policy-making in the global digital regime, still dominated by the private sector and governments of advanced countries (Dahlman et al., 2016), converting them from "digital rule takers" into the "digital rules makers."

In fact, all the issues included in the JSI agenda incorporate enabling elements within them. This seems to be the vision embraced by the JSI co-conveners, who have suggested a predominantly issue-specific approach to addressing the development concerns. Below, we summarize those proposals and discussions within the JSI to date that have addressed, directly or indirectly, the direction of digital reality and the creation of an e-commerce ecosystem. These are also summarized in Table 1.

- An indicative list of enabling areas, counting six entries, could be found in the WTO E-Commerce for Development Agenda, proposed by Costa Rica shortly before the Eleventh Ministerial Conference (JOB/GC/139) (Column I in Table 1).
- The approach suggested by Costa Rica was supported by the other members, for instance, Brazil (JOB/GC/176), and is practically mirrored in the UNCTAD eTrade Readiness Assessments (Column III). Four of the six areas identified by Costa Rica were also assessed as e-commerce enablers by Dahlamn et al. (2016) (Column II).
- The same list is also consistent overall with findings with respect to the main difficulties in the e-commerce domain faced by developing countries, as analyzed by the WTO Secretariat in its recent report on the trade impacts of COVID-19 (WTO, 2020) (Column IV). The WTO Secretariat has supplemented the list with an extra concern, referring to "Competition/Access to Platforms."
- Having offered more detail with respect to the areas noted by Costa Rica, the LDC Group, in its 2019 submission made under the auspices of the WPEC, supplemented the portfolio with three more issues. It invoked specific challenges with respect to building consumer and business trust; the absence of the corporate law rules permitting the establishment of the "e-commerce enterprises"; and a lack of information allowing the LDCs to evaluate alternatives in the discussions addressing the moratorium on customs duties on electronic transmissions (Column V).[6]
- Some of the enabling issues appear integral to the agenda of the JSI focus groups. As a consequence, members are expected to discuss them in such groups following the cross-sectional approach to the development concerns, adopted by the co-conveners. Meanwhile, the other areas—such as ICT infrastructure and services, e-commerce skills, access to finance, and corporate law rules and regulations—despite maintaining certain linkages with many substantive aspects, do not seem to belong to any particular focus areas and so appear to be self-standing. Considering their nature, these issues could have also fallen within Focus Group A – Enabling e-commerce. However, their place in the JSI thematic framework, as it stands, is rather with the sub-theme, "Technical Assistance and Capacity Building" in Focus Group D.

[6] It should be clarified that the designation of certain issues as enabling within the meaning explained above is not meant to establish these as more or less important than other e-commerce-related issues considered by the JSI or in the other forums in relation to development concerns.

- An additional, applied component of the enabling discussions addresses the means of reaching the particular ends identified above, namely the designation of a framework for technical assistance and capacity building, amounting to a synergetic effort of different technical assistance providers (for more details, see Section 2.4).

Table 1. E-commerce ecosystem enabling issues as appearing in different frameworks

I	II	III	IV	V	VI
Costa Rica (WTO, JOB/GC/139)	OECD, 2016	UNCTAD eTrade for all policy areas	WTO COVID-19 and e-commerce report (WTO, 2020)	LDC Group's submission to WPEC (General Council, 2019, WT/GC/W/787)	Thematic framework of the JSI (as of February 2020)[7]
ICT Infrastructure and Services	Yes ("Infrastructure")	Yes	Yes ("reliable internet and electricity connections")	Yes ("Limited existence of and affordable information technology (ICT) infrastructure, e.g., Internet, broadband coverage, electricity, telecommunications infrastructure and services")	**N/A** / Focus Group (FG) D: Technical Assistance and Capacity Building[8]
Trade Logistics	No	Yes	Yes ("the prohibitive cost of trading across borders")	Yes ("Adequate facilities for physical delivery of purchases online")	FG A: Digital Trade Facilitation and Logistics
Payment Solutions	No	Yes	Yes ("access to online payment solutions")	Yes ("Access to credit cards [the main vehicle for on-line payments] and high incidence of unbanked consumers or limited experience with on-line payments; Inadequate online payment facilities")	FG A: Facilitation of Electronic Transactions
Legal and Regulatory Frameworks (in particular, concerning data flows, consumer protection, privacy)	Yes ("Regulation")	Yes (separately speaks of "E-commerce strategies")	Yes ("difficulties gaining consumer trust")	Yes ("Weak legal and regulatory frameworks where needed for example consumer protection laws")	FG B: Flow of data; FG C: Consumer protection; FG C: Privacy; etc. Also FG D: Technical Assistance and Capacity Building (with respect to the regulation and strategies in more general terms)

[7] Based on the Joint Statement on Electronic Commerce Meeting Schedule February – May 2020, according to the version seen by the authors.

[8] The enabling issues not falling into any of the Focus Groups and so allocated to the Focus Group D (in particular, sub-theme "Technical Assistance and Capacity Building) are in grey.

I	II	III	IV	V	VI
E-Commerce Skills Development and Technical Assistance	Yes ("Skills")	Yes		Yes ("Limited knowledge among enterprises, government players, and regulators of e-commerce; Limited skills among enterprises desiring to use e-commerce and ICTs strategically for B2B, B2C, or B2G buying and selling goods and services; Lack of statistical data on electronic commerce in LDCs")	**N/A** / FG D: Technical Assistance and Capacity Building
Access to Finance	Yes ("Finance")	Yes	N/A	Yes ("[Lack of] Trade finance for LDC e-commerce enterprises")	**N/A** / FG D: Technical Assistance and Capacity Building
	N/A	N/A	Competition/Access to Platforms	N/A	FG B: Access to Internet and Data
	N/A	N/A	N/A	Consumer/Business Trust ("User mistrust of quality and effectiveness; Concerns about possible adverse effects of e-commerce and how to mitigate them")	FG C: Consumer Protection; FG C: Business Trust
	N/A	N/A	N/A	Corporate law rules and regulations ("Lack of mechanisms to start up enterprises in e-commerce business")	**N/A** / FG D: Technical Assistance and Capacity Building
	N/A	N/A	N/A	Moratorium on customs duties on electronic transmissions ("Lack of clarity on the nature of electronic transmissions and the ability of LDCs to apply internal taxes versus customs duties, where appropriate")	FG F: Customs Duties on Electronic Transmissions

Source: Authors

2.3.2 Enabling the Participation of Developing Countries and LDCs in the JSI Negotiations

The submission made by Côte d'Ivoire (INF/ECOM/49) identifies an additional group of enabling concerns, which includes two different aspects. Those are not clearly linked to the fruition of e-commerce nationally; rather, they deal with enabling developing country members' participation in the JSI negotiations.

On the organizational side, the co-sponsors of the JSI need a number of adjustments aimed at facilitating the engagement of developing country and LDC members, including interpretation during the meetings; translation of the submissions, predominantly made in English, as well as of the facilitators' reports and other instruments originating from the co-conveners, into French and Spanish; improvement of the meeting scheduling so small delegations can participate more easily; and financial assistance supporting the participation of capital-based officials in the JSI meetings. These concerns are being gradually addressed, with some of them having already been met as the JSI proceeds.

The other important aspect that might be preventing wider participation of developing country members and LDCs in the work of the JSI is systemic, with some members asking how the outcome of these negotiations will eventually fit within the WTO framework, along with related questions on the JSI mandate. The concern is summarized in the submission made by Côte d'Ivoire (INF/ECOM/49) as follows: "The fear that an outcome in the e-commerce negotiations could undermine matters of key interest to low-income developing countries is therefore not unfounded. An isolated agreement on e-commerce without progress on multilateral issues of importance could compromise the inclusive multilateral system." Several participants have also noted their expectation that the final JSI outcome should be multilateral rather than just among the current participants (INF/ECOM/19; INF/ECOM/49).

Box 2. The WTO Work Programme on Electronic Commerce (WPEC), 1998

The work of the WPEC is proceeding in parallel to that undertaken under the JSI. It was recently "reinvigorated" by the decision of the General Council in December 2019 (WT/L/1079). Most of the latest WPEC submissions focus on the moratorium on customs duties on electronic transmissions (WT/GC/W/799; WT/GC/W/798; WT/GC/W/792/Rev.2). Conversely, the Work Programme has not been active in TRIPS Council discussions over the past two years (WT/GC/W/780).

According to one of the proponents, its WPEC submission (S/C/W/382), discussed in the CTS, "was designed to complement the on-going JSI negotiations and encouraged Members to support a high-ambition outcome" (S/C/58). An opposite view, seeing the JSI negotiations as "complementary to the electronic commerce discussion in relevant subsidiary bodies of the WTO," was expressed by another participant (INF/ECOM/19). WPEC also sees submissions from non-JSI participants, for instance, India and South Africa (WT/GC/W/798 and WT/GC/774).

Another WPEC submission from the LDC Group, where only a few members are also in the JSI, has listed concerns related to e-commerce (WT/GC/W/787).

2.3.3 Enabling the Engagement of all the Stakeholders Concerned

Some JSI participants have also suggested making the process more transparent to ensure that all WTO members are informed and aware of its evolution, given that the eventual outcome may have significant implications for all members. This could also facilitate engagement from the private sector and civil society, where extensive work is also underway in these areas (INF/ECOM/42, including Rev.1 and Rev. 2). Some WTO members have already made their submissions public, though other documents remain restricted.

Box 3. Transparency: JSI E-commerce negotiations

Attention to the transparency over the work of the JSI was brought by the New Zealand's Non-Paper on Transparency (INF/ECOM/42), later co-sponsored by Canada and Ukraine. The paper makes several concrete proposals with respect to opening up the progress of the JSI negotiations and their interim results to the public. It suggests:

- Publishing consolidated negotiating text without member attributions periodically as the work advances (the delegate noted, as a matter of an example, that the Trade Facilitation Agreement [TFA] negotiated text was published some 18 times). Such publication is expected to satisfy the broad interests of stakeholders and prevent incorrect assumptions/circulation of incorrect information.
- Considering briefings to non-governmental organizations and the media on the progress of the negotiations, structured along the practice adopted in the context of the Doha Round negotiations.
- Considering publishing the reports of both co-conveners and focus group facilitators that are currently posted on the WTO web page in member-restricted access (IDEAS Centre, 2020).

While during the 7th cluster of the negotiations the JSI participants concluded that the publication of the streamlined text was premature, a consolidated text was later circulated to WTO Members in December 2020.

2.3.4 Enabling the Elaboration of Balanced Rules

Upon joining the JSI, several developing country WTO members indicated their expectations that digital divide and development concerns would be accounted for in a future e-commerce agreement. For instance, Cameroon expressed its readiness "to constructively work with all parties to reach a comprehensive agreement that takes into account the digital divide and the developmental interests of developing countries" (INF/ECOM/48), while the Philippines emphasized "taking into account the unique opportunities and challenges faced by Members, especially developing and least-developed countries" (INF/ECOM/50).

In its recent JSI submission, Côte d'Ivoire made a proposal to the effect that the rules themselves have to integrate development interests ("rules will have to be drafted from a development and cooperation perspective to ensure that e-commerce is a real instrument for inclusive development and a useful complement to physical transactions in goods and services" (INF/ECOM/46).

While the participation of developing country members and LDCs in the JSI has been gradually increasing, submissions originating from them are infrequent. In addition, most of the proposals made so far have taken the form of non-papers, with concrete texts remaining a rarity.

An example of the latter could be found in the recent submission on the facilitation of e-payments (INF/ECOM/52), where a developing JSI participant suggested the following language:

> each [Party/Member] recognizes the importance of safe and secure, efficient, and interoperable e-payment systems, as appropriate, **while taking into account the readiness of each Party/Member in terms of capacity, infrastructure, and regulation of e-payment systems**. (emphasis added)

Even though the provision acknowledges that the e-payment readiness of different members could vary and puts forth criteria for its evaluation, it remains ambiguous with respect to how these criteria should be utilized and what the proposed best endeavours-based rule aims to achieve.

2.3.5 Enabling Implementation

Other issues that have emerged involving the JSI discussions is how such an agreement might be implemented and how to develop rules accordingly, given the efforts that various members are making to elaborate their e-commerce ecosystems and reinforce national frameworks. Among the points raised are the establishment or updating of the national legal/regulatory frameworks, conception of coordination mechanisms within the government, consultations with and engagement of the private sector and civil society, etc.

Box 4. Getting ready for implementation: A practical example

Many textual proposals discussed lately refer to national laws for the exceptional cases where disciplines would not apply. For instance, several versions of the text related to electronic authentication and signatures, in part, provide: "**[Except in circumstances otherwise provided for under its laws or regulations,]** a [Party/Member] shall not deny the legal [validity / effect and admissibility as evidence in legal proceedings] of a signature [and electronic authentication service] solely on the basis that the signature [or service] is in electronic form" (emphasis added).

While such solutions are still under consideration, with some JSI participants suggesting the approach should not rely on members/parties to self-designate, should this approach be retained, adoption or revision of the relevant laws might become a priority in order to ensure policy space.

Some JSI participants have noted the potential of adopting an implementation approach inspired by the WTO's Trade Facilitation Agreement (TFA), with this suggestion drawing the support of some developing country members, such as Argentina, Colombia, and Costa Rica (INF/ECOM/1) and Côte d'Ivoire. The latter has proposed two separate and more concrete frameworks for rules and market access, respectively:

Facilitating the participation of developing countries in the agreement:

> i. Regulatory aspect:
>
> Developing countries […] should undertake to accept all the normative rules according to a schedule that they will submit, with the following two categories:
>
> - rules that they are willing and able to abide by through their own means, and the schedule according to which they will apply them;
> - rules they are able to honour only with assistance from WTO Members or from international or regional institutions.
>
> ii. Rules on market access:
>
> Developing countries […] should define three categories of liberalization:
>
> - market access that they are willing and will be able to grant once the agreement enters into force;
> - market opening that they are willing and will be able to provide according to a gradually established schedule;
> - market access that they are not currently in a position to provide. They should nonetheless commit to proposing a schedule of liberalization within 10 years. (INF/ECOM/49)

With respect to market access, Côte d'Ivoire has also submitted that "developing countries should adopt on opening up their markets, while **allowing them the freedom to choose the level of access they are prepared to grant**. Their **market access offer will define the conditions of access, as well as the timetable for progressive liberalization**, and will be recorded in their schedules of concessions" (INF/ECOM/49, emphasis added).

To recall, at the early stage of the relevant discussions at the CTS and under the framework of the WPEC, the common understanding was that "the participation of developing countries in electronic commerce should be enhanced inter alia by the implementation of Article IV of the GATS through the liberalization of market access **in areas of export interest to them**" (S/L/74, emphasis added). Meanwhile, several developed country JSI participants have indicated their preference for quick market access liberalization, including by developing country members (see, for instance, INF/ECOM/22, INF/ECOM/23, INF/ECOM/30, INF/ECOM/34, and INF/ECOM/40).

2.4 Technical Assistance

The JSI negotiations have also referred to the need for developing countries and LDCs to have access to technical assistance and capacity-building support. It is clear that the challenges related to enabling issues cannot be managed by developing countries and LDCs alone and that they would need assistance and capacity building. Even though the JSI discusses only trade-related aspects of e-commerce, the aspects related to e-commerce ecosystem are much broader. This justifies the coordinated involvement of multiple technical assistance providers and synergy in their work. Some providers have already contributed to the enhancement of the e-commerce readiness via financial support, as well as technical and analytical efforts. An overview of such projects was made in the *Initiatives on E-commerce* background paper prepared in the early stages of work of the JSI by the WTO Secretariat in 2018. An update of this comprehensive document might be beneficial for tracing the evolution since then.

Aid for Trade (AfT) was mentioned as an important player in the technical assistance field in several documents.[9] In recent JSI submissions, various developing countries also called for better coordination of the supporting efforts and their better linkage to the ongoing negotiations (INF/ECOM/52). They suggested the establishment of an e-commerce for development program within the WTO or a fund to support the integration of developing country members and LDCs into the digital economy and e-commerce and the establishment of a multilateral forum for inter-institutional cooperation and experience sharing (INF/ECOM/46).[10]

2.5 Enabling E-Commerce Assessed From the Perspective of the 2030 Agenda for Sustainable Development

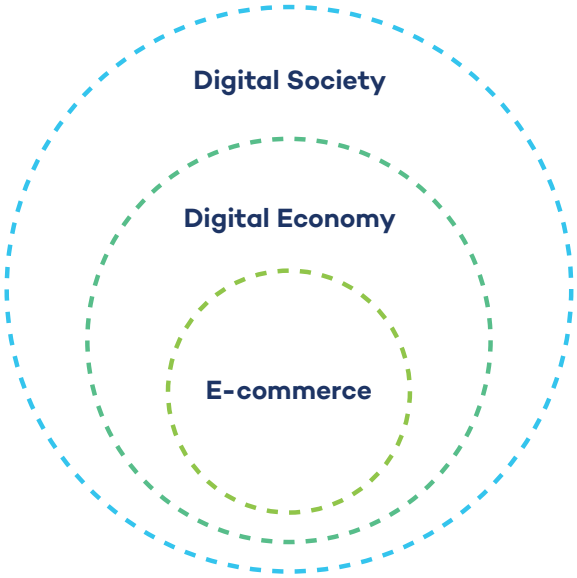
Some submissions have also raised the potential contribution of e-commerce enabling issues to sustainable development in developing countries and LDCs and beyond them. In the literature, this is often considered in relation to the SDGs and their underlying targets, which research suggests can both be supportive of such enabling and also be supported by it (Kituyi, 2017), given the relationship between e-commerce, digital economy, and digital society (Figure 7). This wider impact was recognized by the Philippines, which, upon joining the JSI, recognized "the

[9] The AfT 2020-2022 Work Programme, entitled Empowering Connected, Sustainable Trade, is set to inquire "how to ensure that digital connectivity supports economic and export diversification objectives, in both goods and services trade," in particular, through identifying opportunities that digital connectivity and e-commerce policies offer for economic and export diversification and determining how AfT can help empower different actors (e.g., youth, women, and MSMEs) to realize these opportunities (WT/COMTD/AFT/W/81, para 10.1). The new AfT Work Programme aims to address the findings made in the 2017 AfT report, according to which "AfT stakeholders (donors, South-South partners, beneficiary governments and regional organizations) face important challenges in integrating a digital dimension into their trade and development strategies, notably as regards promoting economic and export diversification" (WT/COMTD/AFT/W/72, para 3).

[10] This would include institutions involved in this area with broad accessory responsibilities, such as encouraging exchanges of experience, helping to secure e-transactions, promoting national MSMEs and national frameworks for data use, and facilitating technology transfer.

importance of electronic commerce not only for business and trade but also for job creation and development, especially for MSMEs and our related initiatives on trade and investment facilitation development" (INF/ECOM/50); by Burkina Faso, which linked its participation in the initiative with its "socioeconomic development policy" (INF/ECOM/53); by Kenya, which acknowledged "the potential e-commerce has for economic and social development" (INF/ECOM/37); and by Brazil, which noted "the potential of digital trade as a social and economic development tool" (INF/ECOM/27). Canada sees a future agreement as a chance for "[f]ostering improved economic opportunities and access to information and communications technologies for micro, small and medium-sized enterprises, as well as disadvantaged and under-represented groups, such as women, indigenous persons, youth, and persons with disabilities" (INF/ECOM/34). New Zealand has expressed a similar approach (INF/ECOM/2).

Figure 7. The context of e-commerce



Source: Kaukab, 2018 (reprinted with permission).

The interrelation between e-commerce enabling issues and sustainable development could be described as circular. While also covered by certain SDGs, e-commerce enabling measures contribute to the emergence of the e-commerce ecosystem, which is firmly embedded in the broader digital economy/society context. Strengthening the latter setting has a positive impact on the attainment of a broad range of SDGs. An analysis of the particular SDG targets and their relationship to these issues is available in Annex 1.

2.6 E-commerce and Closing the Gender Gap in Trade: Toward gender-inclusive e-commerce

As mentioned above, new business models are emerging due to the fast digitalization of the economy and the rise of e-commerce. Some of the recent literature has found that e-commerce

and the nascent platform-based business models can be an opportunity to help remedy social and economic inequalities, including those linked to trade (Joekes et al., 2020). This is particularly relevant when it comes to bridging the gender gap in global trade. According to Thystrup (2018), existing business models and trade patterns continue to generate structural challenges, standing against the fair and equal participation of women in economy and trade.[11] ITC (2017) also notes that women face greater barriers to trade at the border.

In such a context, e-commerce and online platform-based businesses offer unique opportunities to women to overcome those structural constraints. For instance, online-based jobs enable women to access new sectors, have flexible working hours, and continue to provide the care needed by their families. They also allow women to transcend the constraints and risks of face-to-face interactions (i.e., gender-based violence). Online financial services, considered as a result of platform applications and as key drivers for e-commerce, can help empower women with access to finance and financial independence. E-commerce platforms and their related ecosystems can facilitate the establishment of businesses by women and their ability to access local and international markets (OECD, 2018), as well as improve their sales and profits (Thystrup, 2018). Supporting small and medium-sized enterprises' (SMEs') ability to tap into opportunities offered by e-commerce platforms can also promote gender-inclusive trade. According to former ITC Executive Director Arancha González, cited by Al-saleh (2020), "four out of five small businesses engaged in cross-border e-commerce are women-owned, while just one in five firms engaged in offline trade is headed by women." Also, SMEs account for approximately 50% of GDP and 60–70% of total employment worldwide, and they tend to employ the vulnerable segments of society, such as the poor, young people, and women (ITC, 2017). This can be more relevant in developing countries and LDCs, where MSMEs' share in the economy exceeds 50% and the gender gap is larger (UNCTAD, 2019a).

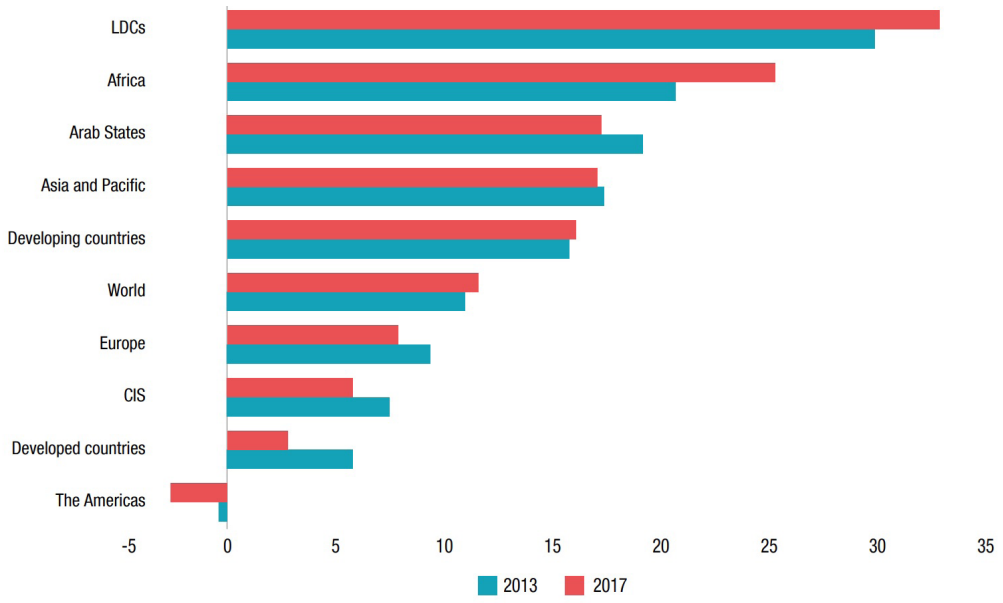
However, so far, the development of e-commerce has also been shown to have the potential to worsen other divides that directly or indirectly intersect with the gender gap—namely the divide between SMEs and multinational enterprises, the divides between development levels among countries, and the digital divide (Thystrup, 2018). One key challenge that can stand against women being able to reap the fruits of e-commerce is the gender digital divide, which Thystrup (2018) defines as the "**impaired access to IT infrastructure or IT skills education based on gender**" (emphasis added).[12]

---

[11] Those structured challenges are enumerated by Thystrup (2018) as follows: "(i) Women tend to be concentrated in fewer sectors, and face gendered job segregation, (ii) women's response to potential opportunities in new economic activities is dampened by time constraints with poor infrastructure and services heightening these challenges for women in developing countries, and (iii) women face greater disadvantage in responding to new economic incentives because of gender differences in access to productive resources, including land, credit, education, skills, infrastructure, utilities, and services."

[12] UNCTAD (2019a) finds that "the difference between male and female user penetration rates – is almost 11.6 per cent for the world, marginally up from 11 per cent in 2013. It is, on average, about 16.1 per cent in developing countries and only 2.8 per cent in developed countries. The highest gaps are observed for LDCs (32.9 per cent) and sub-Saharan Africa (25.3 per cent), where the gap actually widened between 2013 and 2017."

Figure 8. The gender gap in Internet use by level of development and region, 2013 and 2017 (%)



Source: UNCTAD, 2019a.

So, while e-commerce offers opportunities for closing the gender gap in trade, those opportunities are not entirely automatic and will require policies and regulations that ensure moving toward gender-inclusive e-commerce. According to Thystrup (2018), "there is much potential for incorporating gender equality into this initiative's regulatory space (E-commerce JSI), especially as it revolves around components for an enabling environment. … Furthermore, SDG 5 on gender equality provides a strong argument… as (it) specifically references the use of digital technologies for women empowerment."

E-commerce discussions on enabling issues can aim to promote gender equality, transparency, access to needed infrastructure, and the infusion of required skills while ensuring protection from discriminatory practices. Such an infusion of gender inclusion into e-commerce negotiations can help further emphasize the need for more international cooperation and coordination to address gender gaps in trade.

These negotiations are also taking place in parallel to the work emerging from the Joint Declaration on Trade and Women's Economic Empowerment, endorsed in Buenos Aires by 118 WTO members and observers in December 2017 (Buenos Aires Declaration on Women and Trade). This declaration calls for addressing knowledge gaps in the field, among other areas. Understanding how these efforts could relate to each other and better support women in trade may be useful for determining options to address the gender gap in this field, especially in developing countries and LDCs.

Some scholars note, for instance, that digital training and capacity-building programs targeting women can be explicitly included within "cooperation provisions" (Remy, 2019). Another

example would be ensuring that challenges and risks to which women are more vulnerable (i.e., sexual harassment) are addressed among customer and user protection provisions. It is worth mentioning that the only JSI submission that explicitly mentioned gender was made by Canada with relevance to digital users' protection. The following is the author's translation of Canada's suggested text (INF/ECOM/3):

> No Party/Member shall use the personal information of users of digital trade to persecute or discriminate against a natural person on the basis of race, colour, sex, sexual orientation, gender, language, religion, political or other opinion, national or social origin, property, birth or other status, or disability.
>
> Notwithstanding Article 16 (Exceptions) [of Canada's text proposal] the Parties agree that there are no grounds for exception to this commitment to justify a Party discriminating or persecuting against a natural person.

2.7 Concluding Remarks on Enabling Issues

Many developing countries and LDCs face difficulties in establishing their e-commerce ecosystems and bridging the digital divide. The areas where progress could be important have been identified by different stakeholders. These include, among others: insufficient ICT and general infrastructure; logistical difficulties and costs; a lack of use of electronic payment solutions; significant gaps in legal and policy frameworks (including with respect to consumer trust); barriers to MSME involvement due to the absence or rigidity of relevant corporate law rules and a lack of access to finance; etc. Coordinated and synergistic efforts by many stakeholders are necessary to provide an enabling environment for a well-functioning e-commerce ecosystem. Enabling issues can be discussed either cross-sectionally in the JSI or within Focus Group D, which is specifically dedicated to technical assistance and capacity building. In their JSI submissions, developing countries have also listed concrete factors impeding their participation in the work of the JSI, which remains relatively insignificant even despite the recent increase. Finally, e-commerce enabling issues have a circular relationship with the SDGs, as some of the SDG targets overlap with e-commerce enabling measures. Attainment of some other SDG targets could benefit from mature e-commerce ecosystems while also mutually reinforcing the latter further. These SDGs and related targets are explored further in Annex 1. In the case of SDG 5, enabling e-commerce can help remedy the structural gender gap in trade. The potential of e-commerce in promoting gender equality can be maximized if e-commerce negotiations consider specific gender challenges and lead to gender-sensitive provisions.

3.0 The Flow of Data and Data Localization

This section starts by explaining the notions of data and data flows and the reasons and approaches behind the regulation of cross-border data transfers and data localization, considering regulations adopted both nationally and regionally. It also outlines the applicable rules originating from the legal framework of the WTO and their interpretation in WTO dispute settlement. This will help in better understanding the textual proposals related to data flows under the JSI.

3.1 Definitions and Relevant Types of Data

The Oxford English Dictionary defines the [mass] noun "data" as "facts and statistics collected together for reference or analysis," and more specifically as "the quantities, characters, or symbols on which operations are performed by a computer, which may be stored and transmitted in the form of electrical signals and recorded on magnetic, optical, or mechanical recording media."

In the international legal instruments related to e-commerce (e.g., the FTAs) and respective negotiations, "data" refers to raw data before being processed and/or edited on the format, such as a database. In some of the relevant texts, the term "data" is used interchangeably with the term "information," though the latter might also refer to a product of a somewhat more advanced phase of the data processing cycle, where raw data has already undergone certain basic systematization (e.g., was put into context, yet was not synthesized, analyzed, or conceptualized) (see Figure 1).

Whereas data used to serve as a measure of trade in goods and services, it increasingly becomes a sui generis asset traded on its own, arguably requiring adaptation in some of the existent rules. Among other elements, unlike many traded commodities, data is not scarce, non-rival, and non-proprietary. Also, its economic value is determined not by the easy measurable economic indicators but by its processing and use (Pauer et al., 2018).

First of all, most of the e-commerce rules, including those related to cross-border data flows, exclude from their scope the following types of data:

- Governmental data, except for open government data, which, by its nature, is expected to be freely accessible and easily searchable with the help of metadata[13]
- Data related to government procurement
- Often, financial data.

The restrictions on cross-border data transfers/data localization requirements are predominantly linked to:

[13] According to the Oxford Dictionary of English, metadata [mass noun] is a set of data that describes and gives information about other data.

- Personal data (which might be further classified, for instance, by segregating "critical personal data")
- Sector-specific data (for instance, insurance data, banking data, data related to health)
- Otherwise "important data."

Cross-border data transfers can also be conditionally restricted should legitimate public policy objectives so justify.

Box 5. Indicative definitions of certain types of data[14]

Critical personal data refers to the data of heightened national interest, such as genetic data, biometric data, and health data.

Financial data is defined as data necessary for the conduct of the ordinary business of a (covered) financial service supplier.

Government data is data held or processed by or on behalf of a government.

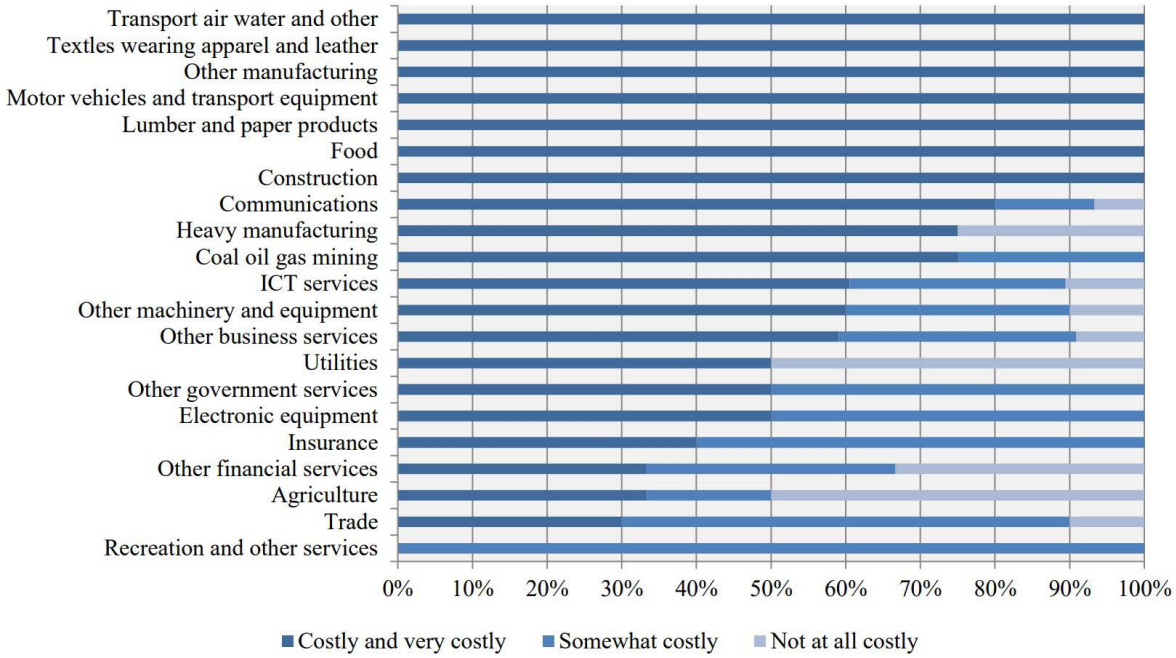
Open governmental data refers to non-proprietary information, including data held by the central government, except personal data.

Personal data is data relating to an identified or identifiable natural person.

It is, however, important to note that the segregation of data into different types might be difficult and very costly (Figure 9), or even non-manageable for the entities concerned—particularly for MSMEs. In such a case, measures applied to particular types of data (for instance, personal data) essentially amount to measures affecting all types of data. This might result in economic inefficiencies, as data, a non-rival input, is not being used at an appropriate scale (Jones & Tonetti, 2020).

[14] The definitions do not necessarily reflect the understanding of all JSI participants.

Figure 9. Cost of separating personal data from other data



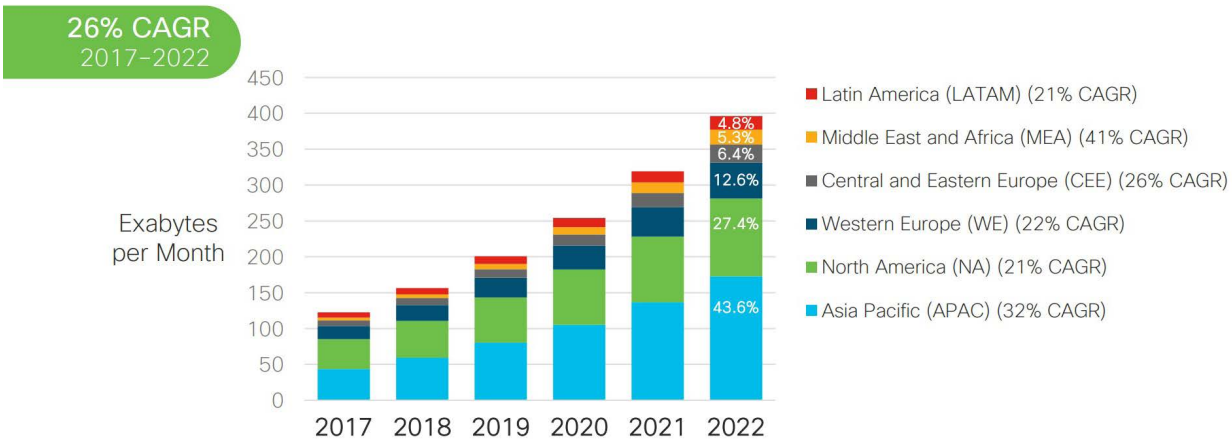
Source: Casalini & González, 2019.

To add to the complexity of the topic, the 2018 Data Security Confidence Index Study, which has surveyed 1,050 IT decision-makers and 10,500 consumers worldwide, found that only 35% of the respondents were able to categorize or analyze the data they collect, and only 54% of companies knew where their sensitive data is stored (Gemalto, 2018).

3.2 Cross-Border Data Flows/Transfer of Data

Between 1992 and 2017, global IP traffic, often used as a proxy for the flow of data, increased from 100 gigabytes per day to 45,000 gigabytes per second (UNCTAD, 2019a). The traffic is forecasted to increase by 26% globally between 2017 and 2022 (Figure 10). The speed of data flows is also increasing.

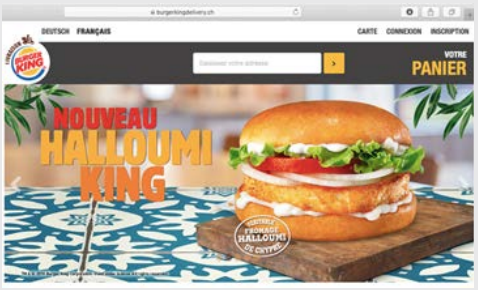
Figure 10. Cisco Visual Networking Index Global IP traffic forecast, 2017–2022



Source: Barnett, Thomas Jr. et al, 2018 (Used with the permission of https://thenetwork.cisco.com/).

The transfer of data is a technical phenomenon. Files sent from one machine to another do not reach their destination directly. Instead, they are broken down into smaller "packets," each passing through different routers and crossing different networks, occasionally in different countries, to reach their destination, where they are reassembled into the original file (Casalini & López González, 2019; López González, 2019). While the route taken by such packets could be subsequently traced, it is less clear at the starting point of the journey. Moreover, it might vary even for files sent within a matter of seconds, despite both the originator and the addressee being the same. Thus, data might well cross borders even if the respective transaction appears to be taking place domestically. In addition, the unpredictability of the itinerary to be taken by data in each given case limits the options available to regulate the flows of data, at least at present. It also raises cybersecurity concerns, which are difficult to anticipate and so also to prevent.

Box 6. The oddities of data flows: A case study from Switzerland

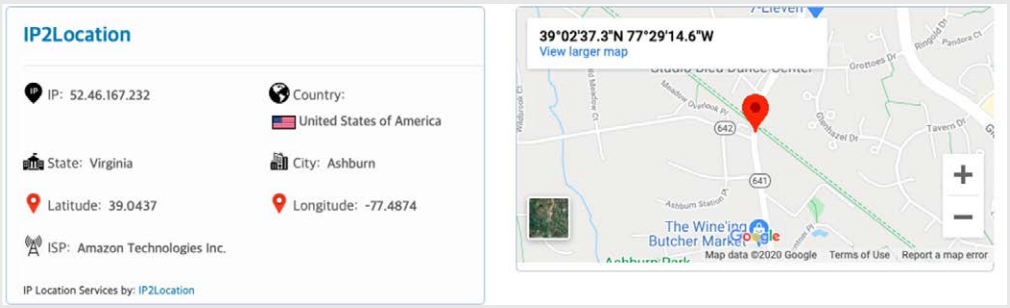


Some of the peculiarities of the transfer of data, which are described above, could be demonstrated by tracing the route of data pertaining to the order of a Burger King Whopper from a local restaurant by a customer located in Geneva, Switzerland, via the website featuring the Swiss domain address: www.burgerkingdelivery.ch.

While the transaction appears to be domestic, tracing of the data itinerary, performed with the help of the Mac Terminal application, indicates the involvement of segments located outside of Switzerland, in the United States, on as many as nine occasions.

```
macbook-pro-de-admin:~ Macbook$ traceroute burgerkingdelivery.ch
traceroute: Warning: burgerkingdelivery.ch has multiple addresses; using 13.224.103.
80
traceroute to burgerkingdelivery.ch (13.224.103.80), 64 hops max, 52 byte packets
 1  internetbox (192.168.1.1)  3.854 ms  3.255 ms  2.640 ms
 2  100.91.96.1 (100.91.96.1)  9.065 ms  10.085 ms  9.918 ms
 3  ae22-1150.ipc-zhb790-m-pe-48.bluewin.ch (213.3.220.125)  21.460 ms  14.619 ms  1
6.524 ms
 4  etht22-1150.zhbic20p-cgn001.bluewin.ch (213.3.220.126)  13.459 ms  13.116 ms  12
.223 ms
 5  ae22-1140.ipc-zhb790-m-pe-48.bluewin.ch (213.3.220.41)  14.455 ms  14.544 ms  13
.847 ms
 6  i79zhb-005-bun10.bb.ip-plus.net (193.134.95.70)  14.037 ms
    i79zhh-015-ae11.bb.ip-plus.net (193.134.95.72)  15.087 ms
    i79zhb-005-bun10.bb.ip-plus.net (193.134.95.70)  18.389 ms
 7  * * *
 8  52.46.167.232 (52.46.167.232)  15.950 ms
    52.46.167.230 (52.46.167.230)  13.199 ms
    52.46.167.232 (52.46.167.232)  19.866 ms
 9  52.93.42.72 (52.93.42.72)  21.654 ms
    52.93.42.74 (52.93.42.74)  14.761 ms
    52.93.42.58 (52.93.42.58)  14.814 ms
10  52.93.242.39 (52.93.242.39)  13.803 ms
    52.93.242.61 (52.93.242.61)  18.482 ms
    52.93.242.59 (52.93.242.59)  34.741 ms
11  * * *
12  * * *
13  * * *
14  * * *
15  * * *
16  server-13-224-103-80.zrh50.r.cloudfront.net (13.224.103.80)  13.052 ms  13.206 m
s  12.237 ms
macbook-pro-de-admin:~ Macbook$
```

For instance, the IP address highlighted above points to the city of Ashburn, located in Virginia, United States.



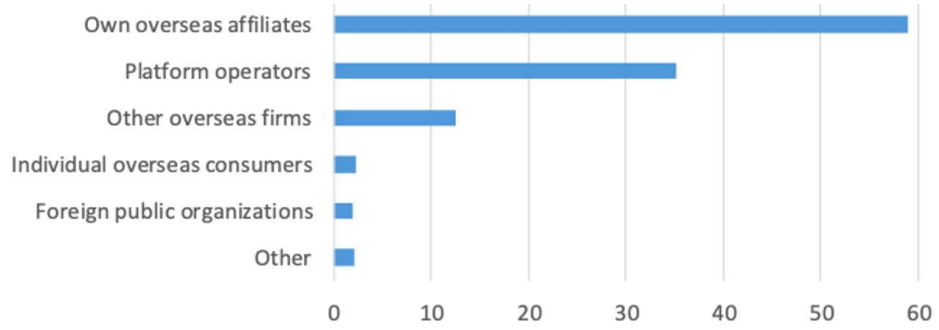
Moreover, the identical order repeated within 10 minutes shows variations in the segments of the data journey, in particular, 8, 9 and 10.

```
macbook-pro-de-admin:~ Macbook$ traceroute burgerkingdelivery.ch
traceroute: Warning: burgerkingdelivery.ch has multiple addresses; using 13.224.103.80
traceroute to burgerkingdelivery.ch (13.224.103.80), 64 hops max, 52 byte packets
 1  internetbox (192.168.1.1)  3.896 ms  2.288 ms  1.773 ms
 2  100.91.96.1 (100.91.96.1)  10.496 ms  13.942 ms  12.260 ms
 3  ae22-1150.ipc-zhb790-m-pe-48.bluewin.ch (213.3.220.125)  26.923 ms  26.086 ms  14.56
4 ms
 4  etht22-1150.zhbic20p-cgn001.bluewin.ch (213.3.220.126)  13.703 ms  13.934 ms  14.179
 ms
 5  ae22-1140.ipc-zhb790-m-pe-48.bluewin.ch (213.3.220.41)  15.567 ms  15.395 ms  13.797
 ms
 6  i79zhb-005-bun10.bb.ip-plus.net (193.134.95.70)  14.722 ms  14.325 ms
    i79zhh-015-ae11.bb.ip-plus.net (193.134.95.72)  18.512 ms
 7  * * *
 8  52.46.167.232 (52.46.167.232)  15.502 ms  14.386 ms
    52.46.167.230 (52.46.167.230)  15.216 ms
 9  52.93.42.40 (52.93.42.40)  15.500 ms
    52.93.42.24 (52.93.42.24)  15.941 ms
    52.93.42.104 (52.93.42.104)  27.775 ms
10  52.93.242.1 (52.93.242.1)  15.267 ms
    52.93.242.57 (52.93.242.57)  14.422 ms
    52.93.242.35 (52.93.242.35)  14.350 ms
11  * * *
12  * * *
13  * * *
14  * * *
15  * * *
16  server-13-224-103-80.zrh50.r.cloudfront.net (13.224.103.80)  14.313 ms  14.398 ms  2
0.177 ms
```

3.3 The Nature of Data Flows

The largest share of cross-border data flows appears to take place inside of firms, including the multinationals and even "micro-multinational" MSMEs. These data transfers mostly relate to the supervision, control, and organization of affiliates within the same enterprise—the services bringing a small value-added, but meanwhile being instrumental (Van Der Marel, 2015). The data is also exchanged with Internet platforms, other business entities, consumers, and foreign authorities, albeit in more modest shares for the latter categories. For example, the quantitative relationship between different types of data transfers conducted by selected mid-sized and large entities in Japan is demonstrated in Figure 11. It is, however, clear that the respective shares might vary, depending on the economic profile of the given country, the extent of involvement in digital trade by its stakeholders, etc.

Figure 11. Shares of cross-border data transfers by 4,227 large and mid-sized Japanese firms



Source: Tomiura et al. © voxEU.org, 2019.

The information reflected in Figure 11 does not seem to account for, or at least does not clearly reflect, data transfers related to the collection of data through the IoT. However, this phenomenon is growing in significance and should be given due regard in assessing the relevant policy choices, in particular, with respect to reinforcing the regulatory frameworks related to the protection of personal data (U.S. Federal Trade Commission, 2015; Internet Society, 2019). This is because the collection of continuously increasing quantities of personal data, in particular through the IoT, followed by its subsequent use for marketing, product customization, or similar purposes, could have a serious influence on consumers' decision making.

Box 7. The flow of data helps improve hearing

Hearing aid manufacturers rely on data for pre- and post-purchase customization. They scan the customers' ear channels to produce a precise 3D model of the inner ear, which they then use to 3D print a hearing aid in-house and send it to the customer. Once shipped to the customer, data flows support remote technical calibration for better performance of the hearing aid (Casalini & López González, 2019).[15]

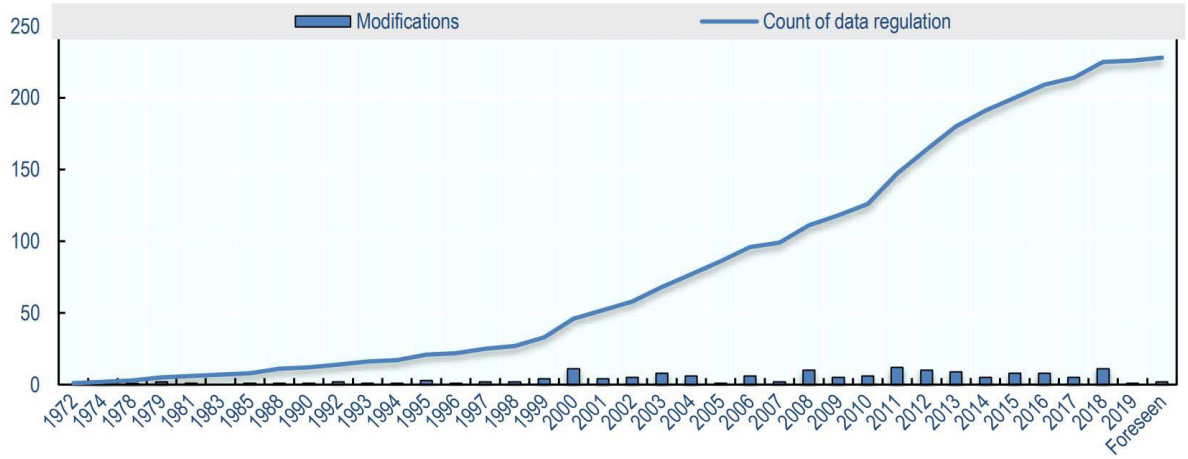
[15] The other important omitted/not duly distinguished phenomenon is cloud computing.

The variable nature of data transfers raises the question of whether they should all be equally addressed in the work of the JSI, which, according to the mandate reflected in the [Second] 2019 Joint Statement, will focus on "trade-related aspects of electronic commerce" (WT/L/1056). Indeed, certain differentiation has already taken place, with some types of data excluded from the scope of the work (see Section 3.1). The rules under JSI consideration are also limited to data transfers for the purposes of business and/or commercial activities (see Section 3.7). Nevertheless, it is difficult to evaluate the scope and possible impact of the above limitation, since the business and/or commercial activities referred to were never clearly defined. For example, it remains unclear if human resources (HR) data, data related to the status of the equipment, or data related to implementation/troubleshooting with respect to digital corporate solutions transferred within the company group and eventually crossing borders would fall within the broad definition of business and/or commercial activities or not.

3.4 Increasing Regulation of Data Flows: Reasons, disciplines, and approaches

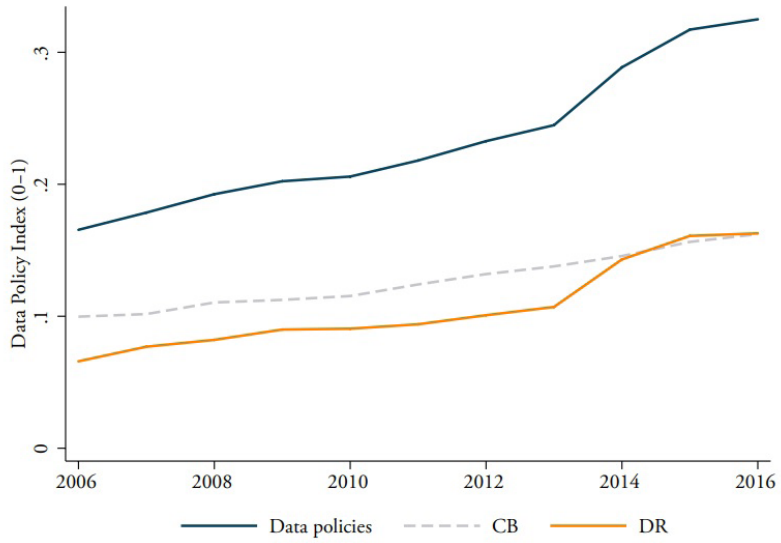
Defying the concept of "data exceptionalism," which treats data as a phenomenon incompatible with limits of territorial jurisdiction, cross-border data flows are increasingly regulated (Figures 12 and 13), with countries maintaining already active and robust digital economies holding the lead (Figure 14). The regulation of data flows is a manifestation of a so-called "information sovereignty": a sovereign right of a state to manage the data falling within the limits of its jurisdiction, defined by the territorial limits (Labour, 2018) or otherwise (Chelliah, 2016).

Figure 12. Growth in the cumulative number of data regulations globally



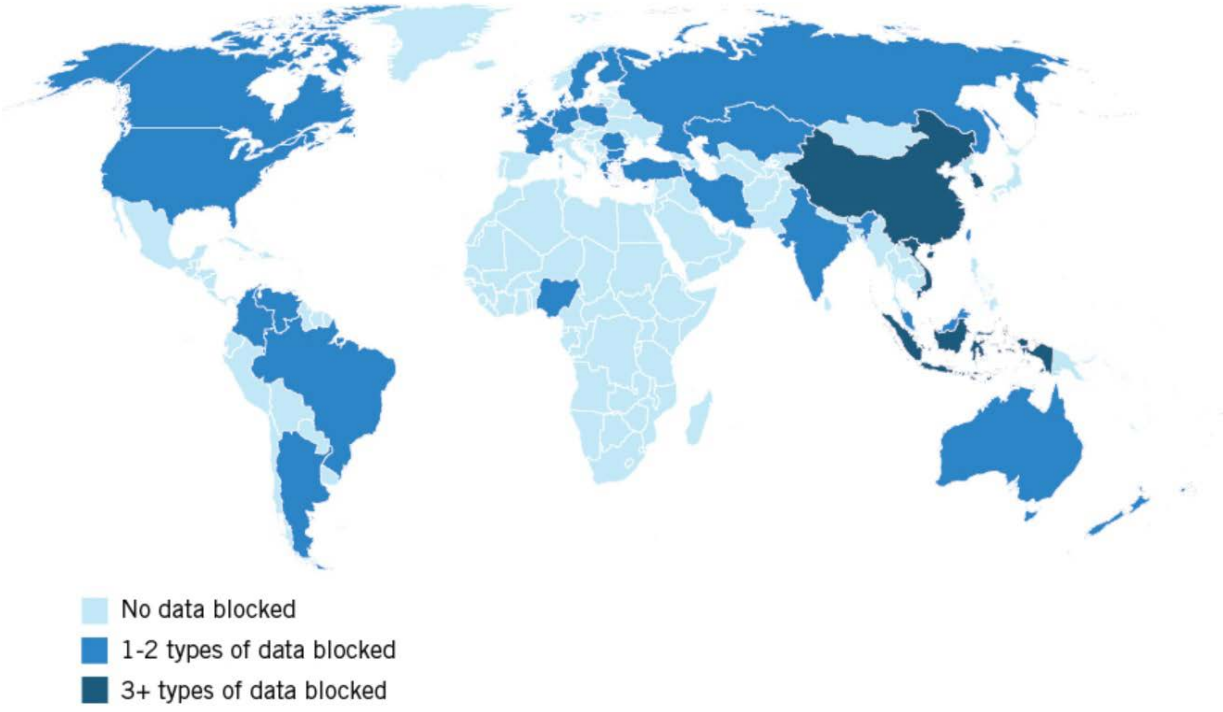
Source: Casalini & González, 2019.

Figure 13. Global data policy evolution (2006–2016)



Source: Ferracane & van der Marel, 2018.

Figure 14. Restrictions imposed on the free flow of data globally



Source: Cory, 2017.

3.4.1 Taxonomy of Reasons for Data Flow Restrictions

Most of the existing relevant regulatory frameworks are structured as restrictions on the transfer of data of certain identified types. These solutions either explicitly state that transfers of other data should not be subjected to restrictions (e.g., they are subject to free flow, as in the EU), or are built on the underlying presumption to the same effect. By and large, they appear to reinstate the status quo that existed at the very inception of digital trade and recognize the necessity of cross-border data movements for the fruition of e-commerce and the digital economy. To this extent, countries that have not yet enacted laws regulating data transfers will initially appear to be in line with the predominating trend.

However, even though exceptional restrictions imposed on data transfers are specific and narrowed down by their proper design, technical limitations with respect to segregation of data make them much more widely applicable. Essentially, they are de facto defeating the presumption of free data transfers and, occasionally, inducing the localization of computer facilities (for economic reasons) without formally imposing it. For instance, 30% of large and mid-sized firms recently surveyed in Japan reported a change in the location of their data processing and storage to affiliates located in the EU within multinational enterprise groups following the General Data Protection Regulation (GDPR) (Tomiura et al., 2019).

Box 8. A crash course on the flow of data disciplines

Cross-border flow/transfer of data refers to the movement of data across national borders, often for the purposes of further processing and/or storage.

Data localization requirement is an obligation to store data (or at least copies of data) or process it locally. Such obligation might be established in the legal framework explicitly or arise out of the other measures related to the flow of data (Meltzer, 2013).

Data processing refers to performing pretty much any operation with respect to data, starting from its collection, continuing through varied forms of its structuring/uses, and ending with its dissemination.

Data flow and data localization disciplines could be put in place and function separately or in conjunction. In essence, data localization is a type of restriction on the cross-border flow of data.

Even still, the language of most of the FTAs containing data provisions refers to "free transfer of data" in general terms, which is to say, without in itself allocating responsibilities to data exporters and/or recipients of such transfers (otherwise also referred to as "originators" and "addressees"). The rules as adopted and/or proposed so far focus on the responsibilities of the data exporters (originators).

Due to technical complexities, the rules take into consideration only the "final destination" of data, where it is subject to processing and/or storage. Passing through the interim points on the way to the final destination is not accounted for in the elaboration of data flow disciplines.

The portfolio of reasons justifying restrictions on cross-border transfers of data is growing. The main reasons currently invoked are listed and briefly discussed below. They are of particular relevance to the specific exceptions suggested for the data flow disciplines within the JSI (see Section 3.7).

3.4.1.1 PRIVACY/PROTECTION OF PERSONAL DATA

The main reason invoked in justifying data flow restrictions is the protection of privacy, which results in measures applicable to personal data, including its cross-border movement.[16]

Four main policy objectives are identified in this domain: (i) preventing the circumvention of national data protection and privacy laws; (ii) guarding against data processing risks in other countries; (iii) addressing difficulties in asserting data protection and privacy rights abroad; and (iv) enhancing the confidence of consumers and individuals (Kuner, 2012).

While the EU's GDPR is the most widely known instrument in pursuing these ends, identical measures are applied by the European Free Trade Area (EFTA) members, for instance, in Switzerland. Somewhat different measures serving the same ends are construed by Argentina, Australia, China, Chinese Taipei, Indonesia, Kazakhstan, Malaysia, Russian Federation, Senegal (Ngoné, 2020), South Korea, Turkey, and the United States, to name a few (Cory, 2017).

In spite of a broad consensus that personal data deserves special treatment, the core approaches to the notion of privacy (e.g., if privacy is a fundamental right) and particular details of national privacy regulations differ, with no convergence expected in the near future (Graf et al., 2016). Consequently, a certain degree of unpredictability in the situation is bound to persist. Interoperability and other private remedying measures are practised as temporary solutions. This situation might put many developing countries and LDCs in a difficult position. On the one hand, their suppliers might find themselves unable to trade with their counterparts from the countries with strict data protection frameworks, which could be reluctant or unable to share data, or with consumers originating from such jurisdictions. On the other hand, due to the weak or non-existent regulation of collection and management of personal data, the populations of certain developing countries and LDCs might be excessively targeted for data collection used for varied purposes, not all of which are known to them. For instance, such data might have a positive impact, by better tailoring products and services offered to the needs of their consumers, or a negative impact on the economic terms of the transactions—for instance, price—disadvantaging the poorest social groups.

[16] Having recognized important linkages between the privacy/protection of personal data and data flow disciplines, both in the national laws of a number of states and in the JSI discussion, this paper will only focus on the data flow issues.

3.4.1.2 SECTORAL REGULATORY OBJECTIVES

Data flow restrictions are also often justified by sectoral regulatory objectives. Those involve guaranteeing access to data by regulators for audits, verifications, and investigations, closely following the relevant practices adopted in the paper world, which is still largely in existence in many jurisdictions. The relevant restrictions are mostly imposed in finance/banking, telecommunications, and similar, highly regulated sectors.

Many of the issues related to access to sectoral data located abroad could be solved otherwise than through transfer restrictions, for instance, through mutual legal assistance arrangements. Nonetheless, this route is also difficult and time-consuming, both with respect to the conclusion of the necessary mutual legal assistance agreements and their implementation (Committee of Experts under the Chairmanship of Justice B.N. Srikrishna, n.d.). The work on streamlining the relevant rules is undertaken regionally (within the EU [EU E-evidence, 2020]), bilaterally (UK/USA Agreement on Access to Electronic Data for the Purpose of Countering Serious Crime [CS USA No.6/2019]), as well as internationally (negotiations of the 2nd Protocol of the Council of Europe Convention on Cyber-crime [CETS-185]). Such efforts could be encouraged via reference to them in domestic law, as done, for instance, in The Clarifying Lawful Overseas Use of Data Act (CLOUD Act (H.R. 4943)) in the United States or the United Kingdom Crime (Overseas Production Orders) Act 2019, Chapter 5.

3.4.1.3 SECURITY CONCERNS

Security concerns serve as another possible justification for data flow restrictions. While such restrictions are not defined in the instruments introducing them, they appear to be put in place for the following reasons:

- To guarantee unrestricted access to data to law enforcement authorities
- To reduce the risk of cybersecurity attacks (often aggravated by the design of the adopted infrastructural solutions, such as undersea cable networks)
- To prevent "foreign surveillance" (Basu et al., 2019).

On the other hand, there are concerns that data localization might lead to mass surveillance or abuse of individuals, dissidents, and minority communities, which would become easier to trace by the surveillance agencies (Muzafar, 2020). A proposal recently made by Canada, a JSI participant, on Preventing the Use of Personal Information from being used for the Discrimination or Persecution of Natural Persons (INF/ECOM/39), appears to be pre-emptively addressing these concerns.

3.4.1.4 MEASURES SUPPORTING DIGITAL INDUSTRIALIZATION

The data flow limitations in the framework of new digital industrial policies are also not uncommon, particularly in developing countries. The explanation often given is the need to grow the lacking national data processing capacity and to put the information obtained within their own and other pertinent markets, rather than leaving it to already better-equipped foreign competitors. These strategies, both general and sector-specific, have drawn questions in the past from some developed countries.

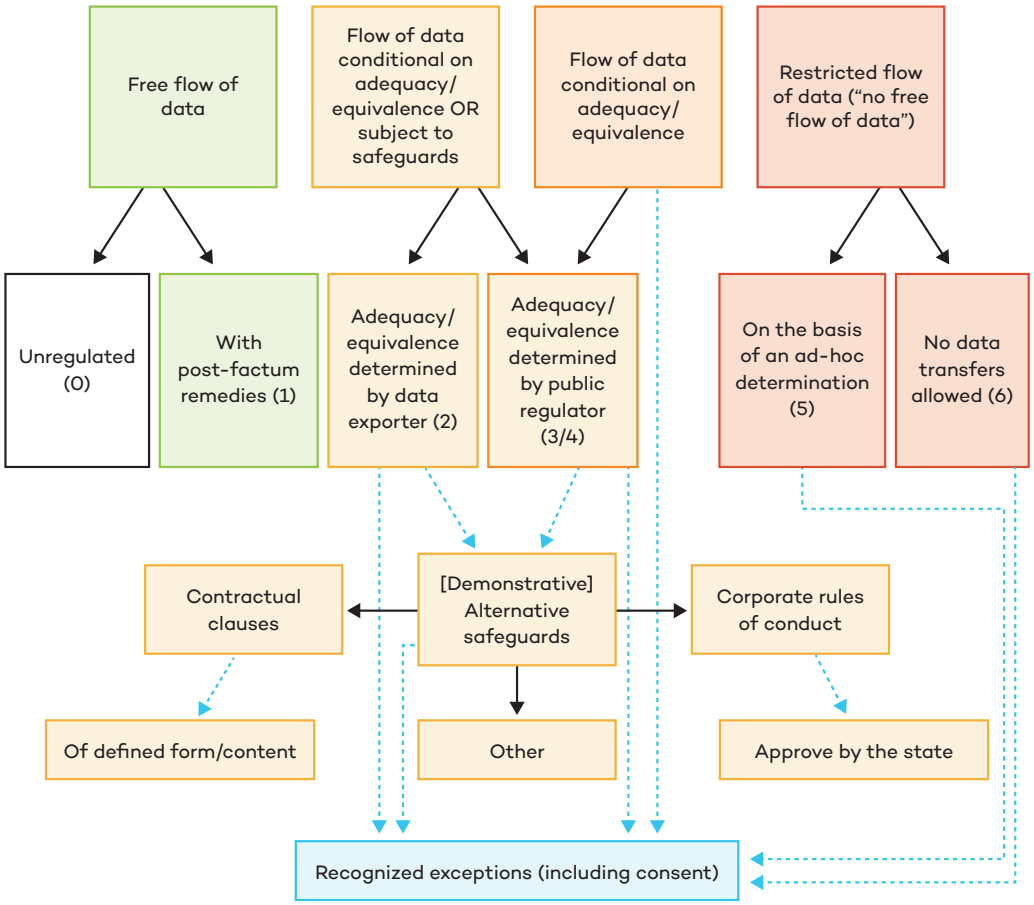
3.4.1.5 OTHER REASONS

Concerns related to the protection of IP rights, as well as those pertaining to the expansion of the tax base to account for the companies conducting business within a jurisdiction without establishing a legal presence within it, are also occasionally invoked to justify restrictions on cross-border data transfers.

3.4.2 Regulation of Cross-Border Data Flows: Typology

Figure 15 details the types of cross-border data flow regulations, which could be made applicable to a particular type/segment of data. While the chart is based on an analysis of regulatory solutions adopted nationally in regional trade agreements and/or discussed in the literature, the categories below should not be seen as associated with any particular jurisdiction or preferential trade arrangements. Rather, the intention is to present a map of the main available regulatory options, laying the groundwork for an assessment of the disciplines proposed within the framework of the JSI.

Figure 15. Regulation of cross-border data flows: Typology



Source: Author, inspired by Casalini & González, 2019.

Data flow regulations are initially allocated in between the four categories indicated in Figure 15, following the restrictiveness of the adopted approach. Categories range from the free flow of data to the restricted flow of data (or an absence of free flow). Dealing with conditional flow, the two intermediate categories are positioned in order of the restrictiveness of the conditions that are espoused. Each of the seven more precisely identified regulatory solutions, which fall under the broader categories, are attributed a number (ranging from zero to six).

The regulatory solution zero, falling under the free flow of data, does not anticipate any data flow restrictions, or any regulation related to data. This is the situation most typically arising in developing countries that have not yet established data disciplines.

The first regulatory solution also does not impose data flow limits; nevertheless, it provides for the responsibility of data exporters in case the data is mishandled at the transfer destination. It is important to note that such responsibility has an extraterritorial element: the entity within a particular jurisdiction could be subject to liability for violations taking place abroad.

The second, third, and fourth regulatory solutions share an important parameter: they restrict the flow of data, subjecting it to certain conditions. These conditions usually centre on equivalence or the adequacy requirements of the national regime that would be applicable to the data if transferred. **Equivalence** appears to be more restrictive and refers to an analysis of all measures, objectives, and outcomes of the data protection regime of the destination for the sake of establishing the level of their similarity with those in place in the data exporter's country. **Adequacy** refers to a more general assessment, with the test being satisfied if similar outcomes are in place despite differences in the means that are adopted to achieve them.

For the purposes of the second solution, the assessment of equivalence or adequacy is conducted by the data exporter. In the cases of third and fourth solutions, a public regulator (a government agency in charge) would make this determination. Alternative safeguards—such as a contractual arrangement specifying how the transferred data will be handled, pertinent corporate rules, or another similar arrangement—could be relied on in case equivalence or adequacy was not found for the purposes of solutions 2 and 3. The fourth solution is less flexible: the determination made by the public regulator leaves no other alternative if such a regulator decides to prohibit data transfer.

Growing in restrictiveness, the fifth regulatory solution establishes no general conditions under which the transfer of data could be authorized. Instead, it provides for an ad hoc assessment of data transfer requests by the competent authorities, which significantly reduces the predictability of the outcome.

Finally, the sixth regulatory solution prohibits any and all cross-border data transfers.

National laws might provide for exceptions, under which data transfer could still be authorized, even if:

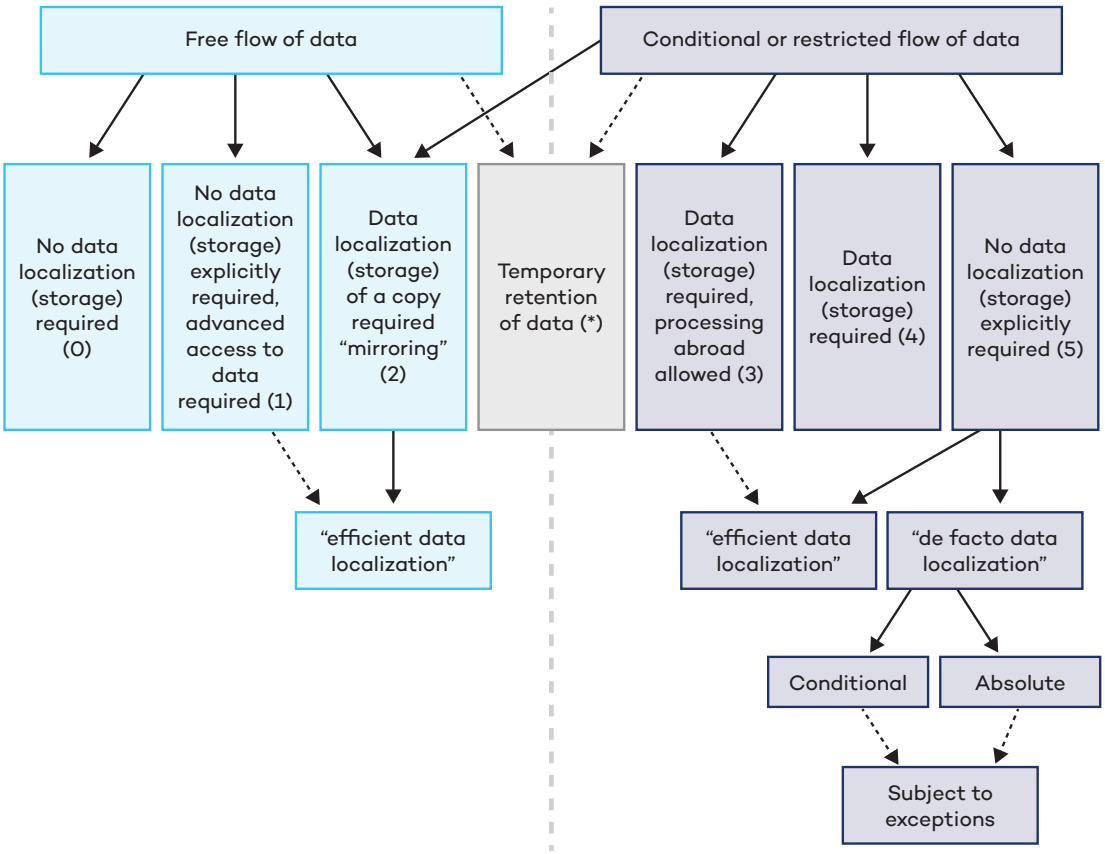
- the necessary conditions are not met/safeguards not available (solutions 2, 3 and 4);
- the ad hoc assessment resulted in findings unfavourable for the data exporter (solution 5); and even, occasionally,
- where the transfer would normally not be authorized (solution 6).

3.4.3 Data Localization Requirements: Typology

Data localization requirements limit the freedom of cross-border flows of data. As noted above, they focus on the retention of certain types of data within a member's territory for storage and/or processing. These measures can be introduced both de jure and de facto.

Figure 16 offers a typology of data localization measures in the two different settings: a regime not resorting to restrictions on the free flow of data and a regime restricting such flow to varying extents. Each of the six more precisely identified regulatory solutions, which fall under the broader categories, are allocated to a number (ranging from zero to five). In addition, a somewhat atypical solution of a short-term (for instance, 24–96-hour-long) retention of data, which has a potential to be integrated into any of the two settings, is identified by "*".

Figure 16. Indicative taxonomy of data localization requirements



Source: Author, inspired by Casalini & González, 2019.

Starting from exploring the free transfer of data setting, regulatory solution zero refers to the absence of localization requirements, which, as in the case of the free flow itself, is likely a result of an overall lack of disciplines related to data.

The first regulatory solution addresses the situation in which, despite the absence of an explicit legal obligation to keep data locally, specific data access requirements are imposed. Among those, for instance, are requirements of "immediate," "direct," "complete," "ongoing," etc. access to data by a regulator, which are difficult to comply with. Since compliance with such requirements could prove to be technically complicated and costly if the relevant data is located abroad, they are likely to result in "efficient data localization," for example, a situation where a data exporter chooses to store data locally for convenience or economic reasons, even though an explicit legal obligation to do so does not exist.

The second regulatory solution, which could exist both in free and conditional cross-border data transfer settings, refers to the requirement to keep a copy of data in the jurisdiction from which it originates. Mostly due to high costs, the likelihood of resorting to efficient data localization, like under regulatory solution one above, is high.

Belonging to the conditional or restricted data flow setting, the third regulatory solution imposes a requirement to store data locally, albeit allowing its processing abroad. While this combination might prove practical for developing countries and LDCs lacking domestic data processing capacities, it might still result in efficient data localization, especially should domestic data processing become available.

The fourth regulatory solution addresses a straightforward situation where a certain type of data is bound to remain with the jurisdiction of origin for storage and processing. This solution could have a significant impact if it clashes with a core business model adopted by a company. For instance, PayPal suspended its service in Turkey after its business licence was denied because of new legislation requiring all IT systems to be localized. This cost PayPal USD 22 million in revenue and access to 20 million Turkish customers (Ketels et al., 2019).

Finally, the fifth solution explains the collision between the data flow and data localization regimes by suggesting that, even when no data localization is explicitly imposed by national law, restrictions on data transfers might well result in a situation very much akin to it for several reasons:

a. Complicated or unpredictable solutions applicable to the regulation of data flows (see 2–5 in Figure 13 above) could discourage data exporters from even attempting them, resulting, once again, in "efficient data localization."

b. Refusal of a data exporter or a regulatory authority to recognize equivalence/adequacy might result in de facto data localization due to the inability to transfer data abroad (which might, in the end, still be possible if due safeguards are present); the outcome is similar where data transfers across borders are not authorized at all.

Data localization policies should be designed with care and take into account the size of the domestic market, as they might appear to be problematic for smaller states. As noted by Loufield and Vashisht (2020):

> For one thing, data centers require reliable infrastructure to keep the data physically in a country that many developing countries may not yet be able to adequately ensure. And even where they could, the market context in smaller developing countries may not present sufficient incentives for leading cloud providers like Amazon Web Services, Microsoft Azure and Google Cloud to invest in building local data centers, as they have, for instance, done in India.

Furthermore, data localization could prevent MSMEs from using affordable technologies, like AI or cloud-based software, which may not be present in their jurisdiction (Mok, 2020). Finally, by increasing the overall cost of doing digital business, data localization policies could negatively impact consumer groups by pushing the excess of costs down to them.

3.5 Existing WTO Rules Relevant to Flow of Data

Without denying a certain degree of relevance of the disciplines contained in different WTO agreements, such as the General Agreement on Tariffs and Trade (GATT), the Technical Barriers to Trade Agreement (TBT), the Agreement on Trade-Related Investment Measures (TRIMS), and the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS), for data transfers, it is clear that these have the closest link to the GATS.[17]

Before moving to the substance of such linkages, it is important to note that the core of the discussion touches upon a broader issue—that of interaction between the new agreement and the existent legal framework of the WTO (i.e., the WTO Agreement), the covered agreements (WTO Annex 1), the WTO Dispute Settlement Understanding (WTO Annex 2); the WTO Trade Policy Review Mechanism (WTO Annex 3), and the two plurilateral (WTO Annex 4) agreements (the Agreement on Government Procurement and the Agreement on Trade in Civil Aircraft) and market access liberalization initiatives in goods (in particular, the ITA and ITA-II) and in services (such as the Reference Paper on Basis Telecommunications). Accordingly, this interplay is discussed first, followed by a more in-depth assessment of the relevant GATS rules and commitments.

3.5.1 Place of the JSI Within the Existing Legal Framework of the WTO

A total of six submissions made in the JSI explicitly address the systemic issue of the proposed e-commerce agreement's potential compatibility[18] with the legal framework of the WTO or its

[17] An overview of the relevant provisions could be found in the non-paper, *WTO Agreements and E-commerce*, prepared by the WTO Secretariat at the request of the JSI Participants in 2018.

[18] These proposals were made without prejudice to the future form of the e-commerce agreement, which is not yet defined but would have a decisive influence on the approach to be adopted.

particular elements (e.g., the GATS and market access and national treatment commitments made thereunder).

According to one of the proponents, the new agreement should be "based on the existing WTO agreements and frameworks" (INF/ECOM/19). The same proponent later provided a more elaborated version of the same:

> This Agreement shall build on existing WTO agreements and frameworks. Where this Agreement is inconsistent with the provisions of the agreements in Annex 1 to the Marrakesh Agreement Establishing the World Trade Organization, the Annex 1 to the Marrakesh Agreement Establishing the World Trade Organization shall prevail. 2. For greater certainty, this Agreement shall not be construed to have changed or modified Members' market access commitments made under the General Agreement on Tariffs and Trade 1994 and the General Agreement on Trade in Services respectively. (INF/ECOM/32)

To note, neither of these submissions addresses the interplay of the e-commerce agreement with the plurilateral agreements.

Two proponents have suggested the language "Nothing in this Agreement shall be construed as diminishing the [rights and] obligations of Members under any other agreement in Annexes 1A to 1C and Annex 4 to the WTO Agreement" (INF/ECOM/20 and INF/ECOM/34).

One proponent put a placeholder in their submission, indicating that the relationship between the obligations arising out of the GATS and its own proposal would have to be defined (INF/ECOM/31).

Finally, a quite different approach was suggested by another JSI participant, who proposed to detach the measures affecting the supply of a service delivered or performed electronically through the mode of supply referred to in subparagraph 2(a) of the GATS [Mode 1] from any commitments or limitations inscribed in the Schedules of Specific Commitments and the lists of most-favoured nation (MFN) exemptions, subject to specific scheduled exceptions and excluding "any inconsistent measures in the Annex which affect the supply of computer-related services identified in Chapter 84 of the Central Product Classification" (INF/ECOM/24).

The relationship between the potential e-commerce agreement and market access liberalization initiatives were not addressed in any of the JSI submissions conceptually. However, several proponents appear to attempt their outreach to prospective new participants through suggesting their integration into the new deal (for the Reference Paper on Basic Telecommunications, in the modified version) (INF/ECOM/22, INF/ECOM/30, and INF/ECOM/34).

3.5.2 Data Transfers in the Framework of the GATS

Important linkages between e-commerce and the GATS were identified soon after the relevant discussions started at the WTO pursuant to the WPEC, initiated in 1998. In the report, they

found reflections of the CTS to the WTO General Council already in 1999 (subject to a disclaimer that "Some delegations expressed a view that these issues were complex and needed further examination"). The report provided that:

> the electronic delivery of services falls within the scope of the GATS, since the Agreement applies to all services regardless of the means by which they are delivered, and that electronic delivery can take place under any of the four modes of supply. Measures affecting the electronic delivery of services are measures affecting trade in services in the sense of Article I of the GATS and are therefore covered by GATS obligations.... the GATS is technologically neutral in the sense that it does not contain any provisions that distinguish between the different technological means through which a service may be supplied. (S/L/74)

Indeed, GATS Article I:2 speaks of cross-border "trade in services" as the supply of a service (WTO, 1995) (which, in its turn, according to GATT Article XXVIII(b), includes "production, distribution, marketing, sale and delivery of a service" [WTO, 1994]) from the territory of one member into the territory of any other member.

Several WTO panels and the Appellate Body have recognized the applicability of pre-digital rules to the new realities of digital service deliveries (see the Appellate Body Reports in *United States - Gambling*, WT/DS285/AB/R, para 252, and in *China – Publications and Audiovisual Products*, WT/DS363/AB/R, para. 296, among others). However, these are not meant to set precedents.

Out of the four GATS modes of supply, the first mode, cross-border supply of services ("Service delivered **within** the territory of the Member, from the territory of another Member" [*Guidelines for the Scheduling of Specific Commitments Under GATS* (S/L/92), emphasis added]), is the most relevant. Note that it might be argued that, at least in some cases, the second mode, consumption abroad ("Service delivered **outside** the territory of the Member, in the territory of another Member, to a service consumer of the Member" [emphasis added]) could be relevant as well (Ahmed et al., 2015). Also, for the establishment of foreign data storage facilities within the territory of a member, which might appear to be required by some of the data localization policies, the third mode of supply, commercial presence, is of particular relevance ("Service delivered **within** the territory of the Member, through the **commercial presence of the supplier**" [emphasis added]).

The architecture of the GATS heavily relies on member-specific schedules in framing the obligations of members, in particular, as far as market access and national treatment are concerned.[19] As a result, in the case of members scheduling data-relevant commitments, for instance, in computer-related services, telecommunication services, and financial services sectors,

[19] To recall, the WTO GATS market access commitment is a commitment not to maintain restrictive measures listed in GATS Article XVI; in its turn, the national treatment commitment means that no discriminatory measures are maintained against foreign services or their suppliers as compared to the like domestic services and their suppliers.

etc., those members might be prevented from imposing restrictions on cross-border data flows and/or from resorting to data localization measures.

In addition, the GATS Understanding on Commitments in Financial Services and the Reference Paper on Basic Telecommunications each only become relevant if commitments in the respective sectors are undertaken (and, for the latter, if an additional commitment to be bound by its rules is also made). They both establish explicit disciplines governing data transfers.

The GATS MFN (subject to exemptions, if any), transparency, and domestic regulation disciplines apply independently from the scheduled commitments.

Exceptions incorporated into the GATS Articles XIV and XIV bis, as well as in paragraph 2.b of the Annex on Financial Services, could be available to justify the restrictions on data flow violating the disciplines of the GATS. In this respect, it is important to note that the invocation of exceptions before WTO panels and the Appellate Body was almost never successful.

The specificities of the GATS legal architecture described above have clear implications not only for the agenda of the JSI negotiations on the issues related to data transfers but also on the relevant work undertaken in the other forums (see Section 3.6). This is for the following reasons:

a) GATS schedules of the original WTO members who had joined the organization at the time of its establishment on January 1, 1995, in particular, developing countries and LDCs, contain very scarce or no commitments in computer and related services and other data-intensive services sectors. Accordingly, as of now, most of them have almost no WTO obligations with respect to data flows. The situation is somewhat different for the new WTO Article XII members, who had to open their services markets more during the accession negotiations. This makes the reason for proposals related to the liberalization of services market access (e.g., full opening of at least the computer services sector) more understandable from the perspective of their proponents.

b) Reliance on the available WTO exceptions does not appear to offer sufficient certainty for the cases in which data transfer restrictions might need to be justified.

3.6 Data Flow Work in Other Forums

A brief inquiry into the provisions of some modern free trade agreements (FTAs) containing rules regulating the flow of data—the Comprehensive and Progressive Agreement on Trans-Pacific Partnership (CPTPP), the Singapore-Australia Free Trade Agreement (SAFTA), the United States–Mexico–Canada Agreement (USMCA), the Association of Southeast Asian Nations (ASEAN) E-Commerce Agreement (ECA), and the latest available draft of the Regional Comprehensive Economic Partnership (RCEP)[20]—allows for drawing several quick observations that might be pertinent for furthering the understanding of the issues and the logic of the textual and conceptual proposals made in the JSI so far. This scrutiny is supplemented by an overview

[20] "Since this paper was drafted, RCEP has been concluded and signed. The final version of the text is available at https://rcepsec.org/legal-text/.

of the data transfer provision in the Mexico–Panama Free Trade Agreement (MexPanFTA). Relevant developments in Africa are also considered, including the plans for the African Continental Free Trade Area (AfCFTA) e-commerce protocol and the Malabo Convention on Cybersecurity and Protection of Personal Data, which has not yet entered into force. This separate exploration is justified since there are no current FTAs containing e-commerce rules with African participation, even though new developments are expected in the future. For instance, the United States and Kenya are in the early stages of negotiating an FTA that might contain data flow rules (Office of the United States Trade Representative, 2020).

3.6.1 Transfer of Data and Data Localization Provisions in Selected FTAs

SAFTA[21] is an FTA concluded between Singapore and Australia. Both states are active proponents of e-commerce rules and co-conveners of the JSI. Although the agreement originally entered into force in 2003, it was renegotiated and, subsequently, revised in late 2016. Even if the e-commerce chapter (Chapter 14) already existed in the 2003 version of the agreement,[22] in 2016 it was substantially supplemented and expanded.

CPTPP[23] is an agreement concluded between 11 countries: Australia, Brunei, Canada, Chile, Japan, Malaysia, Mexico, New Zealand, Peru, Singapore, and Vietnam (four of those are ASEAN member states). The agreement was signed in March 2018. So far, the agreement has entered into force for seven of its 11 signatories.[24] Even though the United States is not a signatory to CPTPP, it had participated in the drafting of the agreement, and, in particular, its e-commerce chapter (Chapter 14).

USMCA[25] is an FTA concluded between the United States, Mexico, and Canada in late November 2018 to replace the North American Free Trade Agreement. The treaty entered into force on July 1, 2020. The negotiations leading to the agreement started in May 2017. Chapter 19 of the agreement, devoted to digital trade, is, thus, among the newest texts related to the issue.

RCEP is an FTA that was negotiated in the Indo-Pacific region between the 10 member states of the Association of Southeast Asian Nations (ASEAN), namely Brunei, Cambodia,

---

[21] The text of the agreement, as amended in 2016, is available at https://dfat.gov.au/trade/agreements/in-force/safta/Documents/agreement-to-amend-the-singapore-australia-free-trade-agreement.pdf

[22] The 2003 text of the agreement is available at https://wits.worldbank.org/GPTAD/PDF/archive/Singapore-Australia.pdf

[23] The text of the agreement is available at https://ustr.gov/trade-agreements/free-trade-agreements/united-states-mexico-canada-agreement/agreement-between

[24] On December 30, 2018, the CPTPP entered into force among the first six countries to ratify the agreement—Canada, Australia, Japan, Mexico, New Zealand, and Singapore. On January 14, 2019, the CPTPP entered into force for Vietnam.

[25] The text an earlier draft of the agreement is available at https://www.mfat.govt.nz/assets/CPTPP/Comprehensive-and-Progressive-Agreement-for-Trans-Pacific-Partnership-CPTPP-English.pdf

Indonesia, Laos, Malaysia, Myanmar, the Philippines, Singapore, Thailand, and Vietnam, and six of ASEAN's FTA partners—Australia, China, Japan, New Zealand, South Korea, and India. Chapter 12 of the agreement is devoted to electronic commerce.[26]

MexPanFTA[27] is an FTA concluded between Mexico and Panama in 2014 containing data transfer provisions in its Chapter 14, devoted to e-commerce.

ASEAN's ECA[28] is a subject-specific agreement aimed at establishing unified relevant rules within ASEAN. It was adopted in November 2018.

The results of the scrutiny could be summarized as follows:

- Each of the FTAs (except MexPanFTA) approaches the two disciplines (e.g., the free flow of data and data localization) separately. The MexPanFTA contains only free flow of data disciplines.
- The disciplines in the CPTPP, the SAFTA, the USMCA, the ASEAN ECA, and the RCEP are structured in two parts containing the main rule followed by the exceptions.
- The main rules in the CPTPP, the SAFTA, the USMCA, the ASEAN ECA, and the RCEP prohibit restrictions on the free flow of data and prohibit data localization, even though this end is achieved through somewhat different linguistic solutions and with different binding force (e.g., the ASEAN ECA provision incorporates the best endeavours clause). In the MexPanFTA, data transfers are allowed by the covered persons "in accordance with the applicable legislation on the protection of personal data and taking into account international practices." This language does not make it clear if restrictions justified otherwise than by protection of privacy reasons could be introduced.

With respect to the free flow disciplines:

- All texts except for the MexPanFTA specify that, to fall under the scope of the rule, the data should be transferred for business/commercial use.
- The texts of the SAFTA and the CPTPP also explicitly include personal data within the scope.
- A specific exception, featuring a customized version of the chapeau of GATT Article XX/ GATS Article XIV, is included (in the case of the RCEP, the exception is subject to the participants' discretion: "Parties affirm that the necessity behind the implementation of such legitimate public policy shall be decided by the implementing Party").

---

[26] The text of the RCEP e-commerce chapter is available at https://www.bilaterals.org/IMG/pdf/rcep-e-commerce-chapter-2.pdf. Please note that the final version of the RCEP text, including its e-commerce chapter, is now available online here: https://rcepsec.org/legal-text/.

[27] The text of the agreement (in Spanish) is available at http://www.sice.oas.org/TPD/MEX_PAN/Draft_MEX_PAN_FTA_s/Index_PDF_09.05.2014_s.asp

[28] The text of the agreement is available at http://agreement.asean.org/media/download/20190306035048.pdf

- The draft text of the RCEP further acknowledges the differences between national regulatory frameworks applicable to the issue and includes a security exception that is also at the discretion of the participant ("Nothing in this agreement shall prevent a Party from adopting or maintaining … any measure that it considers necessary for the protection of its essential security interests. Such measures shall not be disputed by other Parties").
- Data transfers related to financial services are either excluded (the ASEAN ECA and the CPTPP) or are subject to distinct regulation (the USMCA).

With respect to data localization:

- The main rule is a prohibition that requires data localization as a precondition for conducting business.
- The draft text of the RCEP further acknowledges the differences between national regulatory frameworks applicable to the issue, "including requirements that seek to ensure the security and confidentiality of communications."
- Approaches adopted with respect to the exceptions vary. The ASEAN ECA makes the rule subject to the requirements of national laws. The CPTPP, the SAFTA, and the RCEP incorporate exceptions identical to those used for the purposes of the data flow rules (as mentioned above). The USMCA does not contain any specific exception for the rule (yet subjects the localization of data used by providers of financial services to somewhat different thresholds).
- The RCEP is the only planned FTA of those assessed containing S&DT/flexibilities for developing countries and LDCs specifically related to the transfer of data and data localization. These include transitional periods for the application of the main rules of both disciplines (e.g., free transfer of data and prohibition of data localization) for the three ASEAN LDCs (Cambodia, Lao PDR, and Myanmar) and Vietnam. For LDCs, such periods last "for a period of five years after the date of entry into force of this agreement, with additional three years if necessary," while for Vietnam, it lasts for a period of five years without a chance of further extension.

To conclude, the CPTPP, the SAFTA, the USMCA, the ASEAN ECA, and the RCEP show significant convergence in their approaches to regulating the data flow disciplines. However, they also have certain important differences, including the binding force of the provisions (either an obligation or a best endeavour clause); framing of the exceptions (including the role of the national law and/or the participants or parties' own discretion); exempted types of data; and S&DT. The trends identified are overall consistent with the dynamics of the JSI discussions, which are outlined later in this paper. The MexPanFTA adopts a somewhat different and cautious model of the conditional flow of data, albeit without specifying how exactly and by whom the presence of the relevant conditions has to be assessed.

3.6.2 Data Flow Developments in Africa

In its recent note, presented during the 2018 West African Economic and Monetary Union e-commerce workshop, the African Trade Policy Centre (ATPC) of the UN Economic Commission for Africa recognized that:

> Until now, electronic commerce policy in Africa consisted mostly of e-commerce facilitation mechanisms, notably through trade facilitation measures. As a result, no regional measures were taken to regulate the other aspects linked to electronic commerce, such as flow of data or data localization, which were accounted for in the other regional approaches to e-commerce (for instance, by the CPTPP and the EU) (United Nations Economic Commission for Africa, 2018; translated by the author).

To cover the above gap, in February 2020, the Assembly of the African Union decided to focus on an AfCFTA Protocol on E-Commerce during Phase III of the negotiations, immediately after the scheduled conclusion of Phase II Negotiations. The Assembly directed the African Union Commission to embark on preparations for the upcoming negotiations and mobilize resources during 2020 for capacity building for African trade negotiators to be involved in the negotiation of e-commerce legal instruments under the AfCFTA.

Importantly, the Assembly also urged member states

> to critically review approaches that are being made to them by bilateral partners to enter into bilateral e-Commerce legal instruments with them in order to ensure that Africa is able to negotiate and implement an AfCFTA Protocol on e-Commerce where Africa has full authority on all aspects of e-commerce such as data and products being traded under e-commerce, and to promote the emergence of African owned e-Commerce platforms at national, regional and continental levels as part of our preparations for the negotiation of an AfCFTA Protocol on e-Commerce. (African Union, 2020)

Meanwhile, the African Union Commission has announced that it is working to address the data flow issue (Tempest, 2020).

Cross-border transfers of personal data in Africa might, in the future, also be subject to regulation by the African Union Convention on Cybersecurity and Personal Data Protections (the Malabo Convention, 2014).[29] The Malabo Convention has yet not entered into force, as it is awaiting the required number of ratifications.[30] The issues related to cross-border transfers of personal data are briefly but explicitly addressed in Articles 12 and 14 of the convention. Article 12 of the convention, outlining duties and powers of National Protection Authorities, in subparagraph

---

[29] The text of the Malabo Convention is available at https://au.int/sites/default/files/treaties/29560-treaty-0048_-_african_union_convention_on_cyber_security_and_personal_data_protection_e.pdf

[30] The status of the Malabo Convention as of May 22, 2020, is available at https://au.int/sites/default/files/treaties/29560-sl-AFRICAN%20UNION%20CONVENTION%20ON%20CYBER%20SECURITY%20AND%20PERSONAL%20DATA%20PROTECTION.pdf

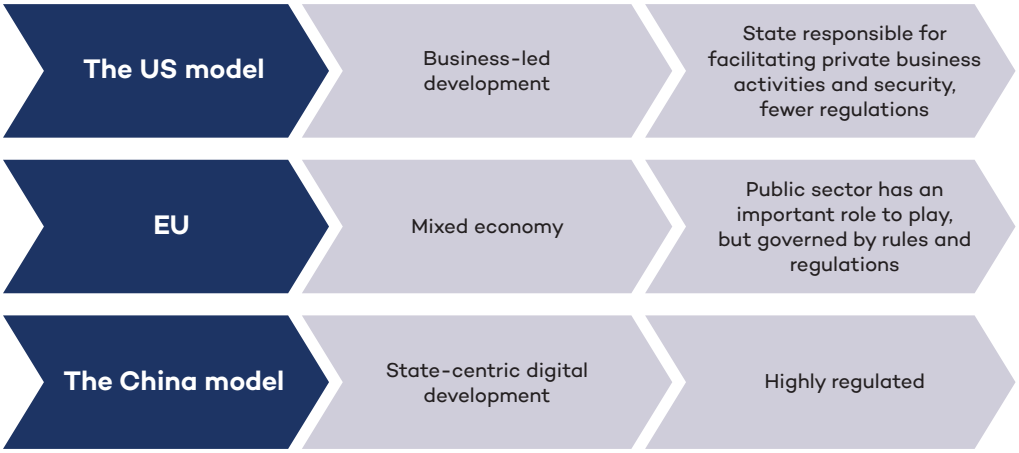
(k) makes such authorities responsible for "authorizing trans-border transfers of personal data"; in subparagraph (m) - for "establishing mechanisms for cooperation with the personal data protection authorities of third countries"; and, in subparagraph (n) - for "participating in international negotiations on personal data protection." Parts 3, 4 and 5 of the same article address data management measures and sanctions within the competence of National Data Protection Authorities and the relevant actions, which they might adopt in the case of emergency. Article 14.6.a establishes specific procedures for dealing with sensitive personal data, which "shall not be transferred abroad, to a non-Member state of the African Union unless such a state ensures an **adequate** level of protection of the privacy, freedoms and fundamental rights of persons whose data are being or are likely to be processed" (emphasis added). In turn, Article 14.6.b provides for an alternative solution, according to which the requirements set in 14.6.a do not apply if "before any personal data transfer to the third country **the data controller shall request authorization for such transfer from the national protection authority**" (emphasis added).

3.7 JSI Work on Data Flows: Overview

The information and analysis in the above sub-sections should help to scrutinize the proposals submitted by the JSI participants that address issues related to the flow of data (INF/ECOM/19, INF/ECOM/20, INF/ECOM/22, INF/ECOM/23, INF/ECOM/24, INF/ECOM/25, INF/ECOM/27, INF/ECOM/28, INF/ECOM/31, and INF/ECOM/34). Seven JSI participants have addressed issues/disciplines related to the free flow of data; six have made submissions on data localization requirements; two have addressed the free flow of data and data localization jointly (one in a non-paper and the other in a textual submission); and, finally, one JSI participant has made a submission suggesting specific rules to be applicable to the location of financial computing facilities for covered financial service suppliers.

Many of the proposals demonstrate high levels of convergence while also reflecting peculiarities of the known regulatory models (Figure 17) and clearly advocating in favour of the policy objectives of their proponents.

Figure 17. National regulatory models applicable to flow of data issues



Source: Singh, 2018.

3.7.1 Free Flow of Data

Following a model commonly adopted nationally and in the FTAs, the suggested free flow of data disciplines have a two-pronged structure. This structure includes a general rule establishing a principle of the free flow of data for the purposes of business/commercial activities, as well as exceptions and clarifications of several types that have had varying levels of support from JSI participants during the relevant discussions.

These exceptions are:

- Treatment of personal data (while one of the participants suggests detailed and specific rules for such data and one proposal explicitly identifies it as one of the legitimate public policy objectives, several proposals subject it to the general rule).
- Specifically drafted exceptions referring to "legitimate public policy objectives," subject to a safeguard containing language similar, yet not identical to, that of the chapeau of GATT Article XX and GATS Article XIV.
- Specifically drafted exceptions referring to "any measure that it considers necessary for the protection of its essential security interests," not subject to a safeguard of a type identified above.
- Language calling for the explicit exclusion of government data from the scope of the data flow disciplines.
- Finally, a supplementary cross-cutting national treatment-based safeguard, to be applicable to any of the exceptions to be, as proposed by two participants.[31]

[31] The relevant language reads: "A measure does not meet the conditions of paragraph 6 if it accords different treatment to data transfers solely on the basis that they are cross-border in a manner that modifies the conditions of competition to the detriment of [a covered person/service suppliers] of another [Party/Member]."

The submissions made do not explicitly address S&DT or broader enabling concerns. There seems to be a potential for interpreting the "legitimate public policy objectives" exception as including those, which, in turn, makes them subject to the pre-established safeguards.

3.7.2 Data Localization

The data localization rules also adopt a two-pronged structure, comprising a main rule and exceptions.

As far as the main rule is concerned, two different solutions are proposed. One of them is simple, while the other is more complicated. The simple solution, supported by the majority of the participants, suggests that participants shall not require the use or location of computing facilities in their territories as a condition for conducting business therein.

A more detailed solution, proposed by one of the participants,[32] seems to elaborate on different scenarios. It could lead to data localization in law and in fact, for instance, through imposing local pre- and post-processing requirements, or, indirectly, through prohibiting processing and storage abroad. The list is by far not exhaustive (cf. Figure 17).

The exceptions proposed to the data localization rules are largely identical to those put forth for the rules on the free flow of data, except for the national treatment-based safeguard (see the discussion on exceptions to the data flow rules and footnote 29 above). It is suggested by one participant to exclude the location of financial computing facilities from the general rules, making it subject to a specific regulation (see Section 3.7.3).[33]

The submissions made do not explicitly address S&DT or broader enabling concerns. There seems to be a potential for interpreting the "legitimate public policy objectives" exception as including those, which, in turn, makes them subject to the pre-established safeguards.

3.7.3 Location of Financial Computing Facilities

According to the stocktake text of August 2020 (INF/ECOM/57) seen by the author, a submission of one participant, containing a large number of the relevant definitions, in essence, justifies the exception from the general prohibition of data localization in case the "[Party's/ Member's] financial regulatory authorities do not have **immediate, direct, complete, and ongoing access** to information processed or stored on financial service computing facilities that the covered financial service supplier uses or locates outside the [Party's / Member's] territory for regulatory and supervisory purposes."

The submission does not explicitly address S&DT or, broader, enabling concerns.

---

[32] The relevant text is included in the submission on the free flow of data.

[33] Two other Participants have suggested excluding "financial services which are defined in GATS Annex on Financial Services" (INF/ECOM/31 and INF/ECOM/34).

3.8 Concluding Remarks on the Flow of Data and Data Localization

Free transfer of data across national borders can contribute to the development of both digital economies and a country's economy overall. Meanwhile, restrictions on data flows are increasingly imposed nationally in furthering various policy objectives.

The sovereignty of WTO members over their data is defined by the relevant WTO rules and commitments, which they have undertaken, even if subject to evolutionary interpretation. Of particular relevance are GATS market access and national treatment commitments in the computer services, telecommunications, financial services, and other data-intensive services sectors. This is because such commitments (unless limitations to them are inscribed in the schedules) also signify that the relevant data flows could not be restricted or data localization requirements could not be imposed in the committed services sectors. The GATS exceptions, including those in the Understanding on Commitments in Financial Services, provide only a limited shield in case failure to comply with the scheduled commitments is challenged. This is due to the complexity of the analysis that such exceptions require and the fact that WTO panels and the Appellate Body have often found that the conditions of such exceptions are not met, including the chapeau of GATS Article XIV. While no WTO dispute has yet centred on data flow restrictions, one might be initiated in the future.

On the other side of the spectrum, one can find original WTO members with almost "empty" GATS schedules, in particular in the sectors relevant to data transfers. Many of them are developing countries and LDCs. It is true that such members are not necessarily impacted by the GATS rules beyond MFN, transparency, and domestic regulation, should they decide to restrict the free flow of data across borders in the non-committed services sectors. Nevertheless, most of them are only making the first steps in transforming into digital economies and, hence, often do not have data disciplines either.

The JSI negotiations on data flows can become a forum in which varied interests can be presented and, possibly, reconciled. As of today, only the aspirations of some of the more digitally advanced proponents are explained in the documents available, and the policy objectives stated therein tend to lack explicit reference to development or incorporate it. Bringing forward the interests and concerns of developing countries and LDCs will require a careful balancing of various economic and social objectives. Some elements to be considered could include establishing clear parameters for possible deviations from the free flow of data principles; integrating solutions within the S&DT that focus on enabling the growth of digital economies, including through the establishment of the necessary infrastructure (i.e., data processing facilities that would enable harnessing the benefits of data in the future); and taking a position on the private data issues. It should be noted that the data localization strategy has to be commensurate with the size of the relevant market and infrastructure available locally, including measures taken to address cybersecurity risks. Last but not least, it should not be overlooked that access to data is a critical element of market liberalization in services and, thus, should be accounted for in the JSI market access discussions.

4.0 Provisions on Access to Source Code

In order for raw data to generate value, it needs to be processed. A process consists of a stream of tasks carried out by computer programs. Therefore, "to process data" means to carry out the actions defined by the sequence of instructions that make up the code of a computer program (The Dictionary of Computer Science, 2016). Computer programs underpin the chain of events related to the existence of digital data, from the storage in devices or in the cloud to data analysis and data transfer.

Most digital services and an increasing number of digital and non-digital products are enabled by computer programs. This is happening because the lines between digital industries and industries that are primarily physical—such as agriculture, construction, transport, and manufacturing—are becoming blurred. IoT will bring the latter even closer to the cyber world and will radically change their way of doing business. At the same time, it will allow the largest software companies to make a shift to physical industries.

4.1 Understanding Source Code

Computer programs rely on source code to function. It is the human-readable instructions that a programmer writes in a text file using a certain programming language. A programming language is a formal language, such as C++, JavaScript, or Python, for example (composed of letters, numbers and symbols), which comprises a set of instructions (in other words, a program) that programmers give the computer so it can produce an output. There are hundreds of programming languages, and new ones are frequently created. As an example, the image below shows how to give instructions to a computer in C++, so it displays the sentence "Hello world," one of the first exercises performed by students in programming classes.

```
#include <iostream>

int main()
{
    std::cout << "Hello, world!\n";
    return 0;
}
```

To interpret the program, the computer runs it through either an interpreter or a compiler. Interpreted languages and compiled languages both have advantages and disadvantages, so the choice between them depends on a case-by-case basis. Nevertheless, the distinction is important to understanding issues related to accessing the source code.

An example of a programming language that uses an interpreter is JavaScript, which is the most commonly found programming language in the world because it is required to be embedded in every web browser. This means that the programmer simply writes the program of the web page,

and the user's browser interprets the instructions. When a compiler is used, the interpretation happens on the programmer's side. He delivers a final "package" or product, composed by the program and its interpretation together, which will be simply read by the machine. C++ is an example of a programming language that uses a compiler.

This compiled package has a computer-readable form referred to as the "object code." A user in possession of a program in object code form is unable to make any changes in the program without undertaking an extremely lengthy and expensive technical process known as "decompilation." This means that, if a problem or "bug" is found in the software and a modification is needed, no matter how minor, the purchaser of the software must rely on the vendor to alter the source code, re-compile the program, and provide the purchaser with a new copy of the object code. The process of compilation into an object code also helps to keep the source code protected from unauthorized copying, as it is one of the ways to preserve its confidentiality.

Box 9. Source code or algorithm?

Both expressions are frequently used interchangeably because there are grey areas between them. Nevertheless, code and algorithm do not mean the same thing. In computer science, algorithms are a well-designed series of complex steps taken to solve a challenging problem. It is a piece of code, but one that follows rigorous development and serves a higher purpose. Code is usually much less complex and more straightforward, consisting of instructions for machines to execute, for example, to display a user interface, validate inputs, or perform calculations or transactions.

4.2 The Legal Protection of Source Code

The source code of a computer's software is protected in the same way as a "literary work," which means it is under copyright protection from the moment that the first line of code is created. Copyright law presents some limitations when it comes to the protection of software because it merely covers the material expression of the idea—the instructions written by the programmer—but not the idea itself. The characteristics of software differ significantly from a literary work, so in practice, software owners may use several different IP mechanisms in parallel to achieve a more comprehensive legal protection.

Depending on the degree of originality of the software—or of a certain feature included in it—patents can be used to protect the idea behind the product. Nevertheless, trade secrets have been the most common mechanism used to protect source code. A trade secret refers to confidential business information—an industrial or commercial secret—which provides an enterprise with a competitive edge. The unauthorized use of such information is regarded as an unfair practice and a violation of the trade secret. Depending on the legal system, the protection of trade secrets forms part of the general concept of protection against unfair competition or is based on specific stand-alone provisions on the protection of confidential information.

A trade secret offers several advantages compared to a patent for the protection of source code: it is not limited in time and may continue indefinitely as long as the secret is not revealed to the public; it has an immediate effect, whereas patents have to be drafted and filed; it does not require compliance with formalities, such as disclosure of the information to a government authority; and it involves no registration costs.

It should be noted, however, that in general, trade secret law does not offer protection against discovery by fair and honest means, such as by independent invention, accidental disclosure, or by reverse engineering. Reverse engineering is a method of taking a device or program apart to determine how it works. Trade secret law only allows the trade secret owner to sue someone who obtains or uses the secret in a dishonest commercial manner (Smith, 2017), as can be understood from the TRIPS Agreement Article 39, which remains silent when it comes to reverse engineering. At the WTO, all members need to observe TRIPS provisions, unless they are LDCs in the transitional period, which have narrower obligations, according to TRIPS Article 66.1. The transitional period is expected to end on July 1, 2021, unless extended, as has occurred previously. At present, if source code is unlawfully copied or a trade secret is obtained or used in a dishonest manner for commercial gain, WTO members have the option to seek legal action against the offender before the courts of another member.

TRIPS offers a minimum common standard of protection to trade secrets, but, in practice, countries have started to offer higher standards at the national level. Some national laws and court decisions have introduced limitations to reverse engineering, such as those related to motivation (e.g., reverse engineering allowed to promote interoperability) and scope (e.g., the decompilation of software should not go beyond what is strictly necessary for reverse engineering). These clauses are considered TRIPS-plus. FTAs have also included TRIPS-plus provisions on access to source code.

4.3 Requests for Disclosure, Transfer, or Access to Source Code

Since an increasing number of technology-related products rely on software to function, there are several public policy reasons why it could be relevant for governments to be able to request the disclosure, transfer of or access to the source code.

- Technology transfer: Developing countries and LDCs may want to require technology transfer in order to develop the capacity of local companies. Since an increasing number of products are powered by software, a prohibition on requesting access or transfer of the source code could also prevent technology transfer requirements.
- Crisis mitigation: The transfer of certain types of technologies may be considered "in the public interest," such as the transfer of technology that would allow countries to mitigate or adapt to the climate change crisis.

- Government procurement: In the case of a customized or semi-customized product, governments may be dependent on the vendor to make even the simplest changes to keep the software up to date with evolving governmental needs. If the licensor is unable or unwilling to make modifications to the source code, governments may find themselves stuck with expensive software that cannot be refined or upgraded.
- Auditing of algorithms: This is especially the case with regard to compliance with human rights laws, such as those against bias and discrimination.

With regard to technology transfer, it is important to highlight the importance that the issue acquired in the context of the United States–China trade war, which was triggered by U.S. allegations of China's unfair trade practices in technology transfer and IP under Section 301 of the U.S. Trade Act of 1974. The United States levied additional tariffs on more than half of Chinese imports, and China responded with imposing its own tariffs on U.S. imports. The United States has garnered support from the EU and Japan on the issue itself, though they did raise questions on some aspects of the approach the United States used under Section 301. The three parties have issued several joint statements condemning forced technology transfer as a practice "harmful to the development and use of innovative technologies" and "undermining the proper functioning of international trade" (Joint Statement on Trilateral Meeting of the Trade Ministers of the United States, Japan, and the European Union, 2018).

In addition to these general situations, some specific regulatory areas in which governments have enacted provisions requesting access to source code in their national laws include:

- Tax oversight: Authorities request access to the source code of software used for tax declaration and tax planning to check for potential tax evasion.
- Financial regulation: Software used in high-frequency trading can be checked to mitigate the possibility of using strategies that could constitute market abuse.
- Checking compliance with local regulation, especially safety and health: As software programs grow in complexity, the chances that the source code will present flaws or "bugs" increases as well. If the software powers devices that are sensitive from safety or health standpoints (e.g., software that powers the autonomous features of a vehicle or a pacemaker), governments may wish to be able to scrutinize the source code in order to verify its compliance with safety or health regulations before it authorizes the deployment of the devices among its citizens.
- Competition: Authorities can request access to source code in order to check if marketplaces are unduly providing advantages to their own products. For example, e-commerce platforms, such as Amazon, sell products on their website as a retailer and, at the same time, provide a marketplace where independent sellers can sell their products directly to consumers. Access to the source code could be important to verify if platforms are giving undue benefits to their own products in a way that affects competition.

- Complying with court decisions: The disclosure of the source code could be mandated by courts in the course of a lawsuit to verify the responsibility of the software producer for a flaw, for example.

The TRIPS Agreement would currently not pose an obstacle for governmental requests for access to the source code in these situations, provided that members offer adequate remedies in case the source code is illegitimately used in their jurisdictions. Nevertheless, provisions that have been included or are under discussion in several FTAs could severely constrain these governmental requests.

4.4 Provisions on Access to Source Code in Trade Negotiations

Several trade agreements prohibit governments from requiring the disclosure, transfer of, or access to the source code as a condition for market access. The CPTPP and the SAFTA exemplify this trend and include very similar provisions.

Article 14.17 of the CPTPP says that:

> No Party shall require the transfer of, or access to, source code of software owned by a person of another Party, as a condition for the import, distribution, sale or use of such software, or of products containing such software, in its territory.

Article 19 (1) of the SAFTA mentions that:

> Neither Party shall require the transfer of, or access to, source code of software owned by a person of the other Party, as a condition for the import, distribution, sale or use of such software, or of products containing such software, in its territory.

Provisions such as these are not only TRIPS-plus—because they put in place more restrictive conditions for requesting access to the source code than those present in TRIPS—they are also TRIMS-plus. Under the TRIMS Agreement, WTO members can still require technology transfer as a performance requirement imposed on investors.[34] Since an increasing number of technology-

[34] "The Agreement specifically prohibits the use of TRIMs considered to infringe GATT rules on 'national treatment' and against the use of 'quantitative restrictions.' It is limited in scope as it identifies only five types of TRIMs that are inconsistent with GATT, viz.,

1) Purchase or use of products of domestic origin or from any domestic source. Prohibition includes specifying particular products, volume or value of the local products or as proportion of local production of an enterprise.
2) Purchase or use of imported products by an enterprise should be limited to an amount related to the volume or value of the local production it exports.
3) Restriction of imports to an amount related to the volume or value of exported local production.
4) Restriction of foreign exchange access to an amount of its inflow attributable to the enterprise.
5) Restriction of exports by an enterprise by specifying the products so restricted, the volume or value of products so restricted, or the proportion of local production so restricted." (Rasiah, 2003)

Since the Agreement prohibits only a few measures, governments can still utilize other options.

related products rely on software to function, forbidding access to the source code could, in practice, hinder technology transfer.

The provisions that forbid governments from requesting disclosure, access, or transfer of the source code in trade agreements generally also present some exceptions that try to ensure that governments can still make these requests when it is essential for achieving key policy objectives. In some trade agreements, the exception is broadly formulated as an attempt to encompass situations that could not be foreseen at the present moment. Along these lines, exceptions are allowed for legitimate public policy objectives, provided that they are not applied in a manner that would constitute a means of arbitrary or unjustifiable discrimination or that would disguise a restriction on trade.

Some specific exceptions are also mentioned by trade agreements, in addition to or instead of the general clause mentioned above. Some of the most common are those that authorize governments to request access or transfer of source code:

- That is used in critical infrastructures[35]
- On military procurements
- In accordance with patent law regulations that establish that, in order to obtain a patent, the applicant needs to disclose her or his invention
- To ensure safety and security requirements
- To remedy a violation of competition law.

The USMCA provides an interesting example since it adds a blanket exception to the general prohibition on requesting access to the source code or algorithm, with the aim of empowering regulatory and judicial authorities to make these requests in some circumstances.

> This [general] Article does not preclude a regulatory body or judicial authority of a Party from requiring a person of another Party to preserve and make available the source code of software, or an algorithm expressed in that source code, to the regulatory body for a specific investigation, inspection, examination, enforcement action, or judicial proceeding, subject to safeguards against unauthorized disclosure.

This broad exception can be invoked among the three parties of the USMCA, but the CPTPP—of which Canada and Mexico are parties—still only includes narrow exceptions. With the proliferation of trade agreements and the different approaches that parties are taking when it comes to limiting the requests for access to the source code, a patchwork of regulations is emerging, which may increase complexity and reduce legal certainty.

[35] It should be noted that, in cybersecurity discussions, there is no common agreement on the concept of "critical infrastructures" and on the specific infrastructures that would be encompassed under this category. The matter largely depends on definition by national laws.

Box 10. The potential impact of source code provisions on open source software (OSS) in governmental procurement

When computer software is open source, the source code is released under a licence in which the copyright holder grants users the rights to study, change, and distribute the software to anyone and for any purpose. Widely known examples of OSS include Linux, adopted by public administrations around the world, and Ubuntu. Many governments in both developed and developing countries have decided to use OSS in governmental procurement as a means of reducing licensing costs, avoiding being hostage to proprietary software, and promoting indigenous technological development by having access to the source code of these products. Moreover, the transparency of the source code could mean that OSS is more secure than similar proprietary software since the community scrutinizing and testing the code is larger (Lynch, 2015). Open-source options have been preferred by the U.S. military in procurement since 2002, for example, and some countries require OSS for their voting machines in order to increase security and transparency. Governmental preference for OSS has been considered a valid requirement in public procurement specifications because it is a preference for a legal regime and not for a specific technology, provider, or product. Analysts believe that some proposals that prohibit governments from requiring access to the source code might present an obstacle for them to include OSS in public procurement requirements (Neeraj, 2017; Schmitz, 2015). Although most provisions on access to the source code apply only to mass-market software or products containing such software, there are doubts on whether the courts will interpret the term "commercially negotiated contracts" as including OSS (Neeraj, 2017; Smith, 2017).

4.5 Proposals Advanced in the JSI

Provisions on source code are also part of the JSI negotiations. In general terms, the main goal of WTO members who introduced proposals on access to source code is to prevent members from requiring access or transfer of the source code owned by a person of another member. In other words, members would commit to a general prohibition and avoid introducing regulation at the national level that would lead to access and transfer requirements.

This general prohibition is expressed in slightly different ways in the proposals submitted by members. While some only mention the source code, others include algorithms, for example. In addition, most proposals explicitly mention that members should not require access or transfer "as a condition for the import, distribution, sale, or use," while others introduce a broader prohibition not circumscribed to these specific cases. Finally, while some members are specific about not introducing access requirements as a condition for the import, distribution, sale, or use of the software itself, others also explicitly include the products that could contain the software, a distinction that could be relevant from the perspective of technology transfer requirements.

The exceptions that JSI members propose to the general prohibition vary greatly. In general, they reflect what has been discussed or introduced in trade agreements in recent years, such as exceptions related to software that is used for critical infrastructures, measures taken in the context of certification procedures, measures that are agreed voluntarily by both parties in the

context of commercially negotiated contracts, public procurement transactions, IP rights and their enforcement, application for or granting of a patent, and the right of states to take actions that they judge necessary for the protection of their security interests (which in some proposals explicitly include military procurement), among others.

At the present stage, proposals have been advanced for the purpose of discussion; therefore, they should not be considered definitive. Nevertheless, it is important to notice that different members focus on different exceptions, and none of the proposals has been entirely comprehensive when it comes to the cases in which exceptions may be introduced. Moreover, all proposals on access to the source code have been submitted by developed country members. At the time of this writing, developing country members and LDCs that participate in the JSI had not proposed text in this particular area. It is possible, therefore, that topics that are important to developing country members, such as technology transfer, may not have been fully taken into account in current JSI proposals.

An additional point to consider is that LDCs have not been obliged to implement the TRIPS Agreement in full. If current proposals on access to the source code are approved, LDCs participating in the JSI would be prompted to abide by a TRIPS-plus provision on access to source code—something that is important to take into account not only from practical but also from political and strategic standpoints. Therefore, specific exceptions could justifiably be negotiated for LDCs in the context of the JSI.

5.0 Conclusion

This issue paper has aimed to provide a comprehensive—but by no means exhaustive—and balanced account of some key issues relevant for the e-commerce JSI. These had been mentioned by participating developing country delegates in an earlier seminar held on January 29, 2020, as requiring priority attention and include the digital divide, enabling issues, data issues, and source code.

These are complex issues with important trade and development implications. While they are being addressed in various ways at national, regional, and international levels, the emerging rules, regulations, and agreements reflect diverse approaches being undertaken as well as a lack of participation by many developing countries and LDCs.

These issues have also been raised in the JSI on E-commerce, including through some proposals and written submissions, mainly by developed countries. The issue paper has strived to provide a concise account of these. The information and analysis in the issue paper should help developing countries and LDCs better understand the issues and thus improve their follow up and participation in the JSI as they deem fit. It should also help them in identifying their further needs for focused research, analysis, and technical assistance.

References

African Union. (2020). Decision on the African Continental Free Trade Area (AfCFTA) XXXIII (Assembly/AU/Dec.751(XXXIII). https://www.tralac.org/documents/resources/cfta/3176-au-assembly-decision-on-the-afcfta-february-2020/file.html

African Union Convention on Cybersecurity and Personal Data Protections (the Malabo Convention) (2014). https://au.int/sites/default/files/treaties/29560-treaty-0048_-_african_union_convention_on_cyber_security_and_personal_data_protection_e.pdf

Agreement between the United States of American, the United Mexican States, and Canada (USMCA). (2020, July 1). https://ustr.gov/trade-agreements/free-trade-agreements/united-states-mexico-canada-agreement/agreement-between

Ahmed, U., Bieron, B., & Horlick, G. (2015). *Mode 1, Mode 2, or Mode 10: How should internet services be classified in the global agreement on trade in service?* Boston University School of Law International Law Journal. https://www.bu.edu/ilj/2015/11/24/mode-1-mode-2-or-mode-10-how-should-internet-services-be-classified-in-the-global-agreement-on-trade-in-service/

Al-saleh, H. (2020, January 21–24). *E-commerce is globalization's shot at equality*. World Economic Forum Annual Meeting, Davos, Switzerland. https://www.weforum.org/agenda/2020/01/e-commerce-sme-globalization-equality-women/

Barnett, T. Jr., Jain, S., Andra, U. & Khurana, T. (2018, December). *Cisco Visual Networking Index (VNI) complete forecast update, 2017–2022*. Presented at APJC Cisco Knowledge Network (CKN). https://www.cisco.com/c/dam/m/en_us/network-intelligence/service-provider/digital-transformation/knowledge-network-webinars/pdfs/1213-business-services-ckn.pdf

Basu, A., Hickok, E., & Singh, C. A. (2019). *The localisation gambit unpacking policy measures for sovereign control of data in India*. https://cis-india.org/internet-governance/resources/the-localisation-gambit.pdf

Cannas, A., Tedeschi, L., Atzori, A. S., & Lunesu, M. F. (2019). How can nutrition models increase the production efficiency of sheep and goat operations? *Animal Frontiers, 9*(2), 33–44. https://www.researchgate.net/publication/332400827_How_can_nutrition_models_increase_the_production_efficiency_of_sheep_and_goat_operations

Carrapico, H. (2015). *The governance of online expression in a networked world*. Routledge.

Casalini, F. & López González, J. (2019). *Trade and cross-border data flows* (OECD Trade Policy Papers, No. 220, TAD/TC/WP(2018)19/FINAL). OECD Publishing. https://dx.doi.org/10.1787/b2023a47-en

Chelliah, C. (2016). *With data sovereignty, location isn't everything*. https://www.oracle.com/uk/cloud/paas/features/data-sovereignty/

Committee of Experts under the Chairmanship of Justice B.N. Srikrishna. (n.d.). *White Paper of the Committee of Experts on a data protection framework for India*. https://www.meity.gov.in/writereaddata/files/white_paper_on_data_protection_in_india_171127_final_v2.pdf

Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP). (2018, December 30). https://www.international.gc.ca/trade-commerce/trade-agreements-accords-commerciaux/agr-acc/cptpp-ptpgp/text-texte/index.aspx?lang=eng&_ga=2.136103793.1948634376.1607629322-529789109.1607629321

Cory, N. (2017). *Cross border data flows: Where are the barriers and what do they cost?* Information Technology and Innovation Foundation. https://itif.org/publications/2017/05/01/cross-border-data-flows-where-are-barriers-and-what-do-they-cost

The Dictionary of Computer Science. (2016). To process data. Oxford University Press.

Ebrahimi Darsinouei, A. (2017). *Understanding e-commerce issues in trade agreements: A development perspective towards MC11 and beyond*. CUTS International. http://www.cuts-geneva.org/pdf/STUDY%20-%20E-Commerce%20Towards%20MC11.pdf

European Union. (2020). *Shaping Europe's digital future*. https://ec.europa.eu/info/sites/info/files/communication-shaping-europes-digital-future-feb2020_en_4.pdf

Ferracane, M. F., & van der Marel, E. (2018). *Do data policy restrictions inhibit trade in services?* European Centre for International Political Economy. https://ecipe.org/publications/do-data-policy-restrictions-inhibit-trade-in-services/

Forbes China. (2019, October 10). *Greater China ranks No. 2 on new Forbes Digital 100 list*. Forbes. https://www.forbes.com/sites/forbeschina/2019/10/10/greater-china-ranks-no-2-on-new-forbes-digital-100-list/?sh=7e3c057c6fae

Gibbs, S. (2016). *Pokémon Go Japan launch delayed by McDonald's sponsorship leak*. The Guardian. https://www.theguardian.com/technology/2016/jul/20/pokemon-go-japan-launch-delayed-mcdonalds-sponsorship-gyms

Graf, C., Wolkerstorfer, P., Geven, A., & Tscheligi, M. (2010, November 21–26). *A pattern collection for privacy enhancing technology*. Presented at the 2nd International Conference on Pervasive Patterns and Applications (PATTERNS 2010), Lisbon, Portugal.

IDEAS Centre. (2020). *Joint Statement Initiative on E-commerce: The 7th (February) Cluster, 11-14 February 2020: Summary report*. https://ideascentre.ch/7eme-cluster-de-negociations-de-lidc-sur-le-commerce-electronique-11-14-fevrier-2020-rapport-de-synthese-joint-statement-initiative-on-e-commerce-the-7th-february-cluster-11-14-februa/

Internet Society. (2019). *IoT privacy for policymakers (Policy Brief)*. https://www.internetsociety.org/policybriefs/iot-privacy-for-policymakers/

International Telecommunications Union. (2018). *Assessing the economic impact of artificial intelligence* (ITU Trends Issue Paper, No.1.) https://www.itu.int/dms_pub/itu-s/opb/gen/S-GEN-ISSUEPAPER-2018-1-PDF-E.pdf

International Trade Centre. (2017). Closing the small-business and gender gap to make trade more inclusive (Ch. 8). In World Trade Organization and Organisation for Economic Co-operation and Development (Eds.), *Aid for trade at a glance 2017: Promoting trade, inclusiveness and connectivity for sustainable development*. OECD Publishing. http://www.oecd.org/dac/aft/aid-for-trade-at-a-glance-22234411.htm.

Ismail, Y. (2020). *E-commerce in the World Trade Organization: History and latest developments in the negotiations under the Joint Statement*. https://www.iisd.org/sites/default/files/publications/e-commerce-world-trade-organization-.pdf

Joekes, S., Frohmann, A., & Fontana, M. (2020). *A primer on gender and trade, gender, social inclusion and trade working group*. GESI strategy implementation grant hosted by the Trade and Investment Advocacy Fund (TAF2+). BKP Economic Advisors.

Joint Statement on Trilateral Meeting of the Trade Ministers of the United States, Japan, and the European Union. (2018, May 31). https://ustr.gov/about-us/policy-offices/press-office/press-releases/2018/may/joint-statement-trilateral-meeting

Kaukab, R. S. (2018, April 18). *Understanding e-commerce issues in trade agreements: A development perspective*. Presented at UNCTAD Ecommerce Week 2018. https://unctad.org/meetings/en/Presentation/dtl_eWeek2018p61_RashidKaukab_en.pdf

Ketels C., Bhattacharya, A., & Satar, L. (2019, August 12). *Global trade goes digital*. BCG Henderson Institute. https://www.bcg.com/publications/2019/global-trade-goes-digital.aspx

Kituyi, M. (2017). *Connecting the dots for sustainable development: E-commerce and the SDG's*. e-Trade for All Initiative. https://etradeforall.org/connecting-dots-sustainable-development-e-commerce-sdgs/

Kuner, C. (2012, February). The European Commission's proposed Data Protection Regulation: A Copernican revolution in European data protection law. *Bloomberg BNA Privacy and Security Law Report, 11*, 1–15. http://robertgrzeszczak.bio.wpia.uw.edu.pl/files/2012/12/Kuner_A-Copernican-Revolution-in-European-Data-Protection-Law.pdf

Labour, J. (2018). *Data sovereignty: What you need to know and why you should care*. https://cira.ca/blog/state-internet/data-sovereignty-what-you-need-know-and-why-you-should-care

Lopez Gonzalez, J. (2019). *Hitchhiker's guide to cross-border data flows*. Organisation for Economic Co-operation and Development. https://www.oecd.org/trade/hitchhikers-guide-cross-border-data-flows/

Loufield, E., & Vashisht, S. (2020). *Why some say we need data localization*. Center for Financial Inclusion. https://www.centerforfinancialinclusion.org/data-globalization-vs-data-localization

Lynch, J. (2015). *Why is open source software more secure?* InfoWorld. https://www.infoworld.com/article/2985242/why-is-open-source-software-more-secure.html

Mayer-Schoönberger, V., & Cukier, V. (2014). *Big data: A revolution that will transform how we live, work and think*. Mariner Books.

Meltzer, J. (2013). The Internet, cross-border data flows and international trade. *Issues in Technology Innovation, 22*. https://www.brookings.edu/wp-content/uploads/2016/06/internet-data-and-trade-meltzer.pdf

Mok, B. P. (2020). *Cross-border data flow as a business growth enabler*. Salesforce. https://www.salesforce.com/ap/blog/2020/05/cross-border-data-flow-business-growth-enabler.html?lrsc=8610bed0-081e-42cc-ba0c-7dd9754b441c

Muzaffar, M. (2020, May 17). *The next big data battlefield: Server geography* [in French]. OZY. https://www.ozy.com/the-new-and-the-next/next-trade-war-data-localization-servers/247767/

Neeraj, R. S. (2007). *Trade rules on source code: Deepening the digital inequities by locking up the software fortress* (Working paper CWS//WP/200/37). Centre for WTO Studies. http://wtocentre.iift.ac.in/workingpaper/Working%20Paper%2037.pdf

Ngoné, N. (2020, May 28). *Sénégal: Situation effective de la protection des données personnelles*. Interaktive. https://www.2bi.sn/senegal-situation-effective-de-la-protection-des-donnees-personnelles

Office of the United States Trade Representative. (2020, May). *United States–Kenya Negotiations: Summary of specific negotiating objectives*. https://ustr.gov/sites/default/files/Summary_of_U.S.-Kenya_Negotiating_Objectives.pdf

Organisation for Economic Co-operation and Development. (2018). *Bridging the digital divide: Include, upskill, innovate*. http://www.oecd.org/internet/bridging-the-digital-gender-divide.pdf

Pauer, A., Nagel, L., Fedkenhauser, T., Fritzsche-Sterr, Y., & Resetko, A. (2018). *Data exchange as a first step towards data economy*. PricewaterhouseCoopers. https://www.pwc.de/en/digitale-transformation/data-exchange-as-a-first-step-towards-data-economy.pdf

Remy, Y. J. (2019). *Closing the digital gender divide through trade rules* (Mainstreaming Gender in Trade Agreements Series). Centre for International Governance Innovation. https://www.cigionline.org/articles/closing-digital-gender-divide-through-trade-rules

Schmitz, P-E. (2019). *TiSA Agreement a threat for open source procurement?* Joinup. https://joinup.ec.europa.eu/collection/eupl/news/tisa-agreement-threat-o

Schwab, K. (2016). *The Fourth Industrial Revolution*. Crown Business.

Singapore–Australia Free Trade Agreement (SAFTA). (2003, July 28). Amended October 13, 2016. https://dfat.gov.au/trade/agreements/in-force/safta/Documents/agreement-to-amend-the-singapore-australia-free-trade-agreement.pdf

Singh, P.J. (2018). *Digital industrialisation in developing countries: A review of the business and policy landscape*. The Commonwealth Secretariat. https://itforchange.net/sites/default/files/1468/Digital-industrialisation-May-2018.pdf

Smith, S. (2017, December 10–13). *Some preliminary implications of WTO source code proposal* (Third World Network Briefings). Presented at the World trade Organization 11th Ministerial Conference, Buenos Aires, Argentina. https://www.twn.my/MC11/briefings/BP4.pdf

Tempest, A. (2020, May). *The digital economy and e-commerce in Africa: Drivers for the African Free Trade Area?* SAIIA. https://saiia.org.za/research/the-digital-economy-and-e-commerce-in-africa-drivers-for-the-african-free-trade-area/

Thystrup, A. G. (2018). *Gender-inclusive governance for e-commerce* (CTEI Working Paper). Graduate Institute of International and Development Studies, Centre for Trade and Economic Integration. https://repository.graduateinstitute.ch/record/296706

Tomiura, E., Ito, B., & Kang, B. (2019). *Effects of regulations on cross-border data flow: Evidence from a survey of Japanese firms* (Discussion Paper 19-E-088). Research Institute of Economy, Trade and Industry. https://www.rieti.go.jp/jp/publications/dp/19e088.pdf

United Nations. (n.d.). Sustainable Development Goals Knowledge Platform. https://sustainabledevelopment.un.org/post2015/transformingourworld

United Nations Economic Commission for Africa. (2018). *Note sur le commerce électronique en Afrique*. https://unctad.org/system/files/non-official-document/CEA_UEMOA2018_fr.pdf

United Nations Conference on Trade and Development. (2019a). *Digital economy report 2019: Value creation and capture: Implications for developing countries* (UNCTAD/DER/2019). https://unctad.org/en/PublicationsLibrary/der2019_en.pdf

United Nations Conference on Trade and Development. (2019b). *UNCTAD Rapid eTrade readiness assessments of Least Developed Countries: Policy impact and way forward*. https://unctad.org/en/PublicationsLibrary/dtlstict2019d7_en.pdf

U.S. Federal Trade Commission. (2015). *Internet of Things: Privacy & security in a connected world*. https://www.ftc.gov/system/files/documents/reports/federal-trade-commission-staff-report-november-2013-workshop-entitled-internet-things-privacy/150127iotrpt.pdf

van der Marel, E. (2015, July). *Disentangling the flows of data: Inside or outside the multinational company?* ECIPE. https://ecipe.org/publications/flows-data-inside-outside-multinational-company/

World Bank. (2016). *World development report 2016: Digital dividends*. https://www.worldbank.org/en/publication/wdr2016

World Trade Organization. (2020, May). *E-commerce, trade and the COVID-19 pandemic* (Information note). https://www.wto.org/english/tratop_e/covid19_e/ecommerce_report_e.pdf

Zuboff, S. (2019). *The age of surveillance capitalism: The fight for a human future at the new frontier of power*. PublicAffairs.

WTO Documents

Committee on Trade and Development – Aid for Trade. (2017, July 7). *Digital connectivity and e-commerce: Joint OECD-WTO aid-for-trade monitoring and evaluation exercise for the global review 2017* (WT/COMTD/AFT/W/72). https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/WT/COMTD/AFTW72.pdf&Open=True

Committee on Trade and Development – Aid for Trade. (2020, February 21). *Aid for trade work programme 2020–2021: Empowering connected, sustainable trade*. (WT/COMTD/AFT/W/81). https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/WT/COMTD/AFTW81.pdf&Open=True

Council on Trade in Services. (2001, Match 28). *Guidelines for the scheduling of specific commitments under the GATS* (S/L/92). Adopted by the Council for Trade in Services on 23 March 2001. https://docs.wto.org/dol2fe/Pages/FE_Search/FE_S_S009-DP.aspx?language=E&CatalogueIdList=20354,17121,876,45089,12298,42072,4627,200,3270,1228&CurrentCatalogueIdIndex=1&FullTextHash=&HasEnglishRecord=True&HasFrenchRecord=True&HasSpanishRecord=True

Council on Trade in Services. (1999, July 27). *Work Programme on Electronic Commerce: Progress report to the General Council* (S/L/74). Adopted by the Council for Trade in Services on 19 July 1999. https://docs.wto.org/dol2fe/Pages/FE_Search/FE_S_S009-DP.aspx?language=E&CatalogueIdList=32179&

Council for Trade in Services – Work Programme on Electronic Commerce. (2019, December 4). *Report by the Chairman of the Council for Trade in Services to the General Council* (S/C/58).

Council for Trade in Services – Work Programme on Electronic Commerce. (2019, June 17). *The economic benefits of cross border data flows: Communication from the United States* (S/C/W/382). https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/S/C/58.pdf

General Council. (2017, October). *Work programme on Electronic Commerce – Communication from Costa Rica. Draft ministerial decision – WTO E-Commerce development agenda* (JOB/GC/139). https://docs.wto.org/dol2fe/Pages/FE_Search/FE_S_S009-DP.aspx?language=E&CatalogueIdList=239336&CurrentCatalogueIdIndex=0&FullTextHash=371857150&HasEnglishRecord=True&HasFrenchRecord=True&HasSpanishRecord=True

General Council. (2018, April 11). *Exploratory work on electronic commerce – Non-paper from Brazil* (JOB/GC/176). https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/Jobs/GC/176.pdf&Open=True

General Council. (2018, May 16). *Joint statement on electronic commerce – Establishing an enabling environment for electronic commerce: Communication from the European Union* (JOB/GC/188). https://docs.wto.org/dol2fe/Pages/FE_Search/FE_S_S009-DP.aspx?language=E&CatalogueIdList=249269,248328,248297,248293,248269,246719,246082,245223,245187,244537&CurrentCatalogueIdIndex=8&FullTextHash=&HasEnglishRecord=True&HasFrenchRecord=True&HasSpanishRecord=True

General Council. (2019, July 23). *Item 6 – Work Programme on Electronic Commerce – Review of progress: Report by the Chairperson* (WT/GC/W/780). https://docs.wto.org/dol2fe/Pages/FE_Search/DDFDocuments/255875/q/WT/GC/W780.pdf

General Council. (2019, November 28). *Work Programme and Moratorium on Electronic Commerce: Communication from Australia; Canada; Chile; Colombia; Costa Rica; Georgia; Guatemala; Hong Kong, China; Iceland; Israel; Republic of Korea; Mexico; New Zealand; Norway; Panama; Paraguay; Singapore; Switzerland; Thailand and Uruguay* (WT/GC/W/792). https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/WT/GC/W792.pdf&Open=True

General Council. (2019, November 21). *Work Programme and Moratorium on Electronic Commerce: Communication from Chad on behalf of the LDC Group* (WT/GC/W/787). https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/WT/GC/W787.pdf&Open=True

General Council. (2019, December 11). *Work Programme on Electronic Commerce: General Council Decision* (WT/L/1079). Adopted on 10 December 2019. https://docs.wto.org/dol2fe/Pages/FE_Search/FE_S_S009-DP.aspx?language=E&CatalogueIdList=259703,259704,259705,259706,259710,259651,259652,259663,259304,259264&CurrentCatalogueIdIndex=5&FullTextHash=&HasEnglishRecord=True&HasFrenchRecord=True&HasSpanishRecord=True

General Council. (2019, April 6). *Work Programme on Electronic Commerce: The e-commerce moratorium and implications for developing countries – Communication from India and South Africa* (WT/GC/W/774). https://docs.wto.org/dol2fe/Pages/FE_Search/DDFDocuments/254708/q/WT/GC/W774.pdf

General Council. (2020, March 26). *Work Programme on Electronic Commerce – Broadening and deepening the discussions on the moratorium on imposing customs duties on electronic transmissions – Communication from Australia; Canada; Chile; Colombia; Hong Kong, China; Iceland; Republic of Korea; New Zealand; Norway; Singapore; Switzerland and Uruguay* (WT/GC/W/799). https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/WT/GC/W799.pdf&Open=True

General Council. (2020, November 3). *Work Programme on Electronic Commerce: The e-commerce moratorium : scope and impact – Communication from India and South Africa* (WT/GC/W/798). https://docs.wto.org/dol2fe/Pages/FE_Search/FE_S_S009-DP.spx?language=E&CatalogueIdList=264789%2C264692%2C263985%2C262610%2C262031%2C261632%2C261432%2C261434%2C259951%2C259601&CurrentCatalogueIdIndex=4&FullTextHash=&HasEnglishRecord=True&HasFrenchRecord=True&HasSpanishRecord=True

World Trade Organization. (1994). General Agreement on Tariffs and Trade 1994. (GATT). https://www.wto.org/english/docs_e/legal_e/06-gatt_e.htm

World Trade Organization (1995). General Agreement on Trade in Services. https://www.wto.org/english/docs_e/legal_e/26-gats_01_e.htm

World Trade Organization. (2005, April 7). *United States – Measures affecting the cross-border supply of gambling and betting services*. Report of the Appellate Body. (WT/DS285/AB/R). https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=Q:/WT/DS/285ABR.pdf&Open=True

World Trade Organization. (2009, December 21). *China – Measures affecting trading rights and distribution services for certain publications and audiovisual entertainment products*. Report of the Appellate Body. (WT/DS363/AB/R). https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=Q:/WT/DS/363ABR.pdf&Open=True

World Trade Organization. (2018, December). *Joint Statement on Electronic Commerce: Snapshot – December 2018 Co-conveners' Overview* [Restricted access].

World Trade Organization. (2018, December). *Joint Statement on Electronic Commerce: Snapshot – December 2018 Co-conveners' Overview. Attachment A: Snapshot of issues explored.* [Restricted access].

World Trade Organization. (2018, December). *Joint Statement on Electronic Commerce: Snapshot – December 2018 Co-conveners' Overview. Attachment B: Compilation of text-examples*. [Restricted access].

World Trade Organization. (2019, March 25). *Exploratory Work on Electric Commerce – Non-paper from Brazil* (INF/ECOM/3). https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/INF/ECOM/3.pdf&Open=True

World Trade Organization. (2019, January). *Joint Statement on Electronic Commerce* (WT/F1056). https://docs.wto.org/dol2fe/Pages/SS/directdoc.as1056px?filename=q:/WT/L/1056.pdf&Open=True

World Trade Organization. (2019, April 1). *Joint Statement on Electronic Commerce – Communication submitted by Benin* (INF/ECOM/18). https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/INF/ECOM/18.pdf&Open=True

World Trade Organization. (2019, April 30). *Joint Statement on Electronic Commerce – Communication from Brazil* (INF/ECOM/27). https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/INF/ECOM/27.pdf&Open=True

World Trade Organization. *Joint Statement on Electronic Commerce – Communication by Burkina Faso* (INF/ECOM/53). (2020, March 17). https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/INF/ECOM/53.pdf&Open=True

World Trade Organization. (2019, May 9). *Joint Statement on Electronic Commerce – Communication from Canada* (INF/ECOM/30). [Restricted access].

World Trade Organization. (2019, June 11). *Joint Statement on Electronic Commerce – Communication from Canada* (INF/ECOM/34). https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/INF/ECOM/34.pdf&Open=True

World Trade Organization. (2019, May 9). *Joint Statement on Electronic Commerce – Communication from Canada. Concept paper – Building confidence and trust in digital trade*. (INF/ECOM/29). https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/INF/ECOM/29.pdf&Open=True

World Trade Organization. (2019, September 19). *Joint Statement on Electronic Commerce – Communication from Canada. Concept paper – Preventing the use of personal information from being used for discrimination or persecution of natural persons* (INF/ECOM/39). https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/INF/ECOM/39.pdf&Open=True

World Trade Organization. (2019, April 24). *Joint Statement on Electronic Commerce – Communication from China* (INF/ECOM/19). https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/INF/ECOM/19.pdf&Open=True

World Trade Organization. (2019, May 9). *Joint Statement on Electronic Commerce – Communication from China* (INF/ECOM/32). [Restricted access].

World Trade Organization. (2019, September 23). *Joint Statement on Electronic Commerce – Communication from China* (INF/ECOM/40). [Restricted access].

World Trade Organization. (2019, November 14). *Joint Statement on Electronic Commerce – Communication from Côte d'Ivoire* (INF/ECOM/46). https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/INF/ECOM/46.pdf&Open=True

World Trade Organization. (2019, December 13). *Joint Statement on Electronic Commerce – Communication from Côte D'Ivoire* (INF/ECOM/49). https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/INF/ECOM/49.pdf&Open=True

World Trade Organization.(2019, April 26). *Joint Statement on Electronic Commerce – Communication from European Union. EU proposal for WTO disciplines and commitments related to electronic commerce*. (INF/ECOM/22). https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/INF/ECOM/22.pdf&Open=True

World Trade Organization. (2019, March 25). *Joint Statement on Electronic Commerce – Communication from New Zealand* (INF/ECOM/2). https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/INF/ECOM/2.pdf&Open=True

World Trade Organization. (2019, October 14). *Joint Statement on Electronic Commerce – Communication from New Zealand* (INF/ECOM/42). https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/INF/ECOM/42.pdf&Open=True

World Trade Organization. (2019, May 9). *Joint Statement on Electronic Commerce – Communication from Republic of Korea* (INF/ECOM/31). [Restricted access].

World Trade Organization. (2019, April 30). *Joint Statement on Electronic Commerce – Communication from Singapore* (INF/ECOM/25). https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/INF/ECOM/25.pdf&Open=True

World Trade Organization. (2019, April 29). *Joint Statement on Electronic Commerce – Communication from the Separate Customs territory of Taiwan, Penghu, Kinmen and Matsu.* (INF/ECOM/24). [Restricted access].

World Trade Organization. (2019, May 6). *Joint Statement on Electronic Commerce – Communication from Ukraine* (INF/ECOM/28). [Restricted access].

World Trade Organization. (2019, April 26). *Joint Statement on Electronic Commerce – Communication from United States* (INF/ECOM/23). [Restricted access].

World Trade Organization. (2019, December 10). *Joint Statement on Electronic Commerce – Communication submitted by Cameroon* (INF/ECOM/48). https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/INF/ECOM/48.pdf&Open=True

World Trade Organization. (2019, July 19). *Joint Statement on Electronic Commerce – Communication submitted by Kenya*. (INF/ECOM/37). https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/INF/ECOM/37.pdf&Open=True

World Trade Organization. (2019, April 26). *Joint Statement on Electronic Commerce – Text Proposal – Communication from Japan* (INF/ECOM/20). [Restricted access].

World Trade Organization. (2019, March 25). *WTO Negotiations on Trade-Related Aspects of E-Commerce: Elements of a potential approach under the framework of the Joint Statement on Electronic Commerce – Communication from Argentina, Colombia and Costa Rica* (INF/ECOM/1). https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/INF/ECOM/1.pdf&Open=True

World Trade Organization. (2020, February 10). *Joint Statement on Electronic Commerce – Communication from Indonesia* (INF/ECOM/52). [Restricted access].

World Trade Organization. (2020, February 3). *Joint Statement on Electronic Commerce – Communication from Philippines* (INF/ECOM/50). https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/INF/ECOM/50.pdf&Open=True

World Trade Organization. (2020, May). *Joint Statement on Electronic Commerce Meeting Schedule February – May 2020* [Restricted access].

World Trade Organization. (2020, August 19). *WTO Electronic Commerce Negotiations: Stocktake text – August 2020*. (INF/ECOM/57). [Restricted access].

Additional Resources

AccessNow. (2014). *The impact of forced data localization on fundamental rights*. https://www.accessnow.org:443/the-impact-of-forced-data-localisation-on-fundamental-rights/

African Union. (2020). Decision on the African Continental Free Trade Area (AfCFTA) (Assembly/AU/4(XXXIII)). 33rd Ordinary Session of the Assembly of the Union. https://www.tralac.org/documents/resources/cfta/3176-au-assembly-decision-on-the-afcfta-february-2020/file.html

Aldonas, G. D. & Ahmed, U. (2015). *Addressing barriers to digital trade*. The E15 Initiative. https://e15initiative.org/publications/addressing-barriers-to-digital-trade/

Alliance for Affordable Internet. (n.d.). *Policy & regulatory good practices*. https://1e8q3q16vyc81g8l3h3md6q5f5e-wpengine.netdna-ssl.com/wp-content/uploads/2016/04/A4AI-Policy-and-Regulatory-Good-Practices.pdf

Andrenelli, A. & López González, J. (2019). *Electronic transmissions and international trade: Shedding new light on the moratorium debate* (OECD Trade Policy Papers No. 233). OECD Publishing. https://doi.org/10.1787/57b50a4b-en.

Azmeh, S. & Foster, C. G. (2016). *The TPP and the digital trade agenda: Digital industrial policy and Silicon Valley's influence on new trade agreements* (International Development, Working Paper Series 16-175). Department of International Development. http://eprints.whiterose.ac.uk/125522/

Barayre, C. & Grigoriou, C. (2020, April 30). *Préparation de la CEDAO au commerce électronique*. Presented at Renforcer le commerce électronique dans la CEDEAO, Virtual eWeek. https://static.ptbl.co/static/attachments/238639/1588065868.pdf?1588065868

Belli, L. (2017). *Community networks: The Internet by the people, for the people. Official Outcome of the UN IGF Dynamic Coalition on Community Connectivity*. FGV Direito Rio. http://bibliotecadigital.fgv.br/dspace/bitstream/handle/10438/19401/Community%20networks%20-%20the%20Internet%20by%20the%20people%2c%20for%20the%20people.pdf?sequence=1&isAllowed=y%2C

Broadband Commission for Sustainable Development. (n.d.). *2025 Targets: "Connecting the Other Half."* https://broadbandcommission.org/Documents/BD_BB_Commission_2025%20Targets_430817_e.pdf

Burri, M. (2017). The governance of data and data flows in trade agreements: The pitfalls of legal adaptation. *UC Davies Law Review, 51*, 65–132.

Burrington, I. (2018). *The environmental toll of a Netflix binge*. The Atlantic. https://www.theatlantic.com/technology/archive/2015/12/there-are-no-clean-clouds/420744/

Chander, A. & Le, U. P. (2015). Data nationalism. *Emory Law Journal, 64*, 721–722. https://scholarlycommons.law.emory.edu/cgi/viewcontent.cgi?article=1154&context=elj

Ciuriak, D., & Ptashkina, M. (2019). *Leveraging the digital transformation for development: A Global South strategy for the data-driven economy*. (CIGI Policy Brief No. 148). https://www.cigionline.org/publications/leveraging-digital-transformation-development-global-south-strategy-data-driven

Committee of Experts under the Chairmanship of Justice B.N. Srikrishna. (n.d.). *A free and fair digital economy: Protecting privacy, empowering Indians*. https://meity.gov.in/writereaddata/files/Data_Protection_Committee_Report-comp.pdf

Commonwealth Secretariat. (2020). *The state of the digital economy in the Commonwealth*. https://thecommonwealth.org/sites/default/files/inline/Digital%20Connectivity%20Report_low%20res_.pdf

Crosby, D. (2016). *Analysis of data localization measures under WTO services trade rules and commitments* (E15 Initiative Policy Brief). International Centre for Trade and Sustainable Development and World Economic Forum. http://e15initiative.org/publications/analysis-of-data-localization-measures-under-wto-services-trade-rules-and-commitments.

Dahlman, C., Mealy, S., & Wermelinger, M. (2016). *Harnessing the digital economy for developing countries* (OECD Development Centre Working Paper No. 334). https://www.oecd-ilibrary.org/docserver/4adffb24-en.pdf?expires=1588711174&id=id&accname=guest&checksum=D4247AD9CA2FE0895E811D424F8D0A81

Drake, W. J. (1993). Territoriality and intangibility: Transborder data flows and national sovereignty (Ch. 13). In K. Nordenstreng and H. I. Schiller (Eds.), *Beyond national sovereignty: International communications in the 1990s* (pp. 259–313). Ablex. http://tinyurl.com/wjdrake-tbdf-1993.

European Union. *IE-evidence – cross-border access to electronic evidence: Improving cross-border access to electronic evidence*. https://ec.europa.eu/info/policies/justice-and-fundamental-rights/criminal-justice/e-evidence-cross-border-access-electronic-evidence_en

Farid Badran, M. (2018). Economic impact of data localization in five selected African countries. *Digital Policy, Regulation and Governance, 20*(4). https://www.emerald.com/insight/content/doi/10.1108/DPRG-01-2018-0002/full/pdf?title=economic-impact-of-data-localization-in-five-selected-african-countries

Fernández Pérez, M. (2016). *Corporate-sponsored privacy confusion in the EU on trade and data protection*. EDRi. https://edri.org/corporate-sponsored-privacy-confusion-eu-trade-data-protection/

Ferracane, M. F. (2017). *Restrictions on cross-border data flows: A taxonomy* (Working Paper No. 1/2017). European Centre for International Political Economy. https://ecipe.org/wp-content/uploads/2017/11/Restrictions-on-cross-border-data-flows-a-taxonomy-final1.pdf

Force Hill, J. (2014). The growth of data localization post-Snowden: Analysis and recommendations for U.S. policymakers and industry leaders. *Lawfare Research Paper Series, 2*(3). https://assets.documentcloud.org/documents/7276302/THE-GROWTH-OF-DATA-LOCALIZATION-POST-SNOWDEN.pdf

Gemalto. (2018). *Businesses collect more data than they can handle, reveals Gemalto*. https://www.gemalto.com/press/pages/businesses-collect-more-data-than-they-can-handle-reveals-gemalto.aspx

Gleb, B. (2020). *Choosing the right cloud service: IaaS, PaaS, or SaaS*. Ruby Garage. https://rubygarage.org/blog/iaas-vs-paas-vs-saas.

Hardy, Q. (2016). *Cloud computing brings sprawling centers, but few jobs, to small towns*. New York Times. https://www.nytimes.com/2016/08/27/technology/cloud-computing-brings-sprawling-centers-but-few-jobs-to-small-towns.html

International Centre for Trade and Sustainable Development. (2017). Debating the future of e-commerce and digital trade in Buenos Aires. *Bridges, 21*(40). https://www.ictsd.org/bridges-news/bridges/news/debating-the-future-of-e-commerce-and-digital-trade-in-buenos-aires

International Trade Center. (2017). *New pathways to e-commerce: A global MSME competitiveness survey*. http://www.intracen.org/uploadedFiles/intracenorg/Content/Publications/New%20Pathways%20to%20E-commerce_Low%20res(2).pdf

Jones, C, I., & Tonetti, C. (2020). Nonrivalry and the economics of data. *American Economic Review, 110*(9), 2819–2858. https://christophertonetti.com/files/papers/JonesTonetti_DataNonrivalry.pdf

Kelsey, J. (2020, February). *Important differences between the final RCEP electronic commerce chapter and the TPPA and lessons for e-commerce in the WTO*. Bilaterals.org. https://bilaterals.org/?important-differences-between-the

Kende M., & Sen, N. (2019). *Cross-border e-commerce WTO discussions and multi-stakeholder roles – stocktaking and practical ways forward* (CTEI Working Paper 2019-01). Centre for Trade and Economic Integration. https://repository.graduateinstitute.ch/record/297080?_ga=2.26592249.510868197.1607611532-1224727352.1607611532

Lenio, J. (2015). *The mystery impact of data centers on local economies revealed*. Area Development. https://www.areadevelopment.com/data-centers/Data-Centers-Q1-2015/impact-of-data-center-development-locally-2262766.shtml

Leviathan Security Group. (2015). *Quantifying the cost of forced localization*. https://static1.squarespace.com/static/556340ece4b0869396f21099/t/559dad76e4b0899d97726a8b/1436396918881/Quantifying+the+Cost+of+Forced+Localization.pdf

Manyika, J., Lund, S., Bughin, J., Woetzel, J., Stamenov, K., & Dhingra, D. (2016). *Digital globalization: The new era of global flows*. McKinsey Global Institute. http://www.mckinsey.com/business-functions/digital-mckinsey/our-insights/digital-globalization-the-new-era-of-global-flows

Manzar, O. (2017). *What is data colonisation and why it matters to us in India*. https://www.business-standard.com/article/economy-policy/who-owns-your-data-india-needs-to-tackle-data-colonisation-soon-117081700234_1.html

McNamee, J. (2016). *Free flow of data –What is It?* EDRi. https://edri.org/free-flow-of-data/

Meltzer, J. P. (2015). The Internet, cross-border data flows and international trade. *Asia & the Pacific Policy Studies, 2*(1), 90–102.

Mexico–Panama Free Trade Agreement (MexPanFTA). (2015, July 1) [in Spanish]. http://www.sice.oas.org/TPD/MEX_PAN/Draft_MEX_PAN_FTA_s/Index_PDF_09.05.2014_s.asp

Miller, R. (2008). *The economics of data center staffing*. Data Center Knowledge. https://www.datacenterknowledge.com/archives/2008/01/18/the-economics-of-data-center-staffing

Mitchell, A., & Mishra, N. (2019). Regulating cross-border data flows in a data-driven world: How WTO law can contribute. *Journal of International Economic Law, 22*. https://www.researchgate.net/publication/333176371_Regulating_Cross-Border_Data_Flows_in_a_Data-Driven_World_How_WTO_Law_Can_Contribute

Ohara, D. (2018). *Synovus Financial joins Columbia Data Center Neighbors with fewer than 25 employees. Why does Google's data center need 200 employees?* Green Data Center Blog 2.0. https://www.greenm3.com/gdcblog/2008/1/12/synovus-financial-joins-columbia-data-center-neigh bors-with.html

Osaka Declaration on Digital Economy. (2019). http://www.g20.utoronto.ca/2019/osaka_declaration_on_digital_economy_e.pdf

Pepper, R., Garrity, J., & LaSalle, C. (2016). Cross-border data flows, digital innovation, and economic growth. In S. Baller, S. Dutta, & B. Lanvin (Eds.), *The global information technology report 2016: Innovating in the digital economy* (pp. 39–40). World Economic Forum. https://www.weforum.org/reports/the-global-information-technology-report-2016.

Ptashkina, M. (2018). *Facilitation 2.0: E-commerce and trade in the digital age*. The E15 Initiative. https://e15initiative.org/publications/facilitation-2-0-e-commerce-and-trade-in-the-digital-age/

Rasiah, R. (2003). Transnational corporations, learning and innovation. *Technology Policy Briefs, 2*(1). https://www.merit.unu.edu/publications/pb/tpb_v2_01_2003.pdf

Regional Comprehensive Economic Partnership Agreement. (2020, November 15). https://rcepsec.org/legal-text/

Samans, R., & Botwright, K. (2019). *Exploring international data flow governance platform for shaping the future of trade and global economic interdependence* (White Paper). World Economic Forum. http://www3.weforum.org/docs/WEF_Trade_Policy_Data_Flows_Report.pdf

Satariano, A. (2020). *Europe's privacy law hasn't shown its teeth, frustrating advocates*. New York Times. https://www.nytimes.com/2020/04/27/technology/GDPR-privacy-law-europe.html

The retreat of the global company. (2017). The Economist. https://www.economist.com/news/briefing/21715653-biggest-business-idea-past-three-decades-deep-trouble-retreat-global

Theme D: Cross cutting issues, including development, transparency and cooperation: Infrastructure gaps/ Digital divide. (2018, June 19). Presentation by Costa Rica, E-commerce Joint Statement Initiative https://www.wto.org/english/tratop_e/ecom_e/xcom_e/meet18-19_presentation_costarica_e.pdf

Tomiura, E., Ito, B., & Kang, B. (2020, March 14). *Cross-border data transfers under new regulations: Findings from a survey of Japanese firms*. https://voxeu.org/article/cross-border-data-transfers-under-new-regulations

TRALAC. (2020). *Trade in the digital economy: A TRALAC guide*. https://www.un.org/ldcportal/wp-content/uploads/2020/02/TRALAC-guide-on-Trade-in-the-Digital-Economy.pdf

Tuthill, L. (2016, July 5). *E-commerce and the WTO*. Presented at the MIKTA Workshop on Electronic Commerce, Geneva, Switzerland. https://www.wto.org/english/forums_e/business_e/1_1_TUTHILL.pdf

United Nations. (2019). Report of the Secretary-General on SDG progress 2019. https://sustainabledevelopment.un.org/content/documents/24978Report_of_the_SG_on_SDG_Progress_2019.pdf

United Nations Conference on Trade and Development. (2020, April 29). *Data and privacy unprotected in one third of countries, despite progress*. https://unctad.org/en/pages/newsdetails.aspx?OriginalVersionID=2348

World Atlas. (2017). *The 25 largest internet companies in the world*. https://www.worldatlas.com/articles/the-25-largest-internet-companies-in-the-world.html

World Trade Organization. (2019). *World trade report: The future of services trade*. https://www.wto.org/english/res_e/booksp_e/00_wtr19_e.pdf

Annex 1. The SDGs and E-Commerce Enabling Issues

The Sustainable Development Goals (SDGs) with enabling e-commerce targets are 1, 4, 8, 9, 10, 16, and 17. An indicative and non-exhaustive list of such targets is presented in Table A1.

Table A1. Selected SDG targets enabling e-commerce

	SDG 1.4 seeks to "by 2030, ensure that all men and women, in particular the poor and the vulnerable, have … access to … appropriate new technology and financial services, including microfinance."
	SDG 4.4 aims to "substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship" by 2030.
	SDG 8.3 aims to "promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage the formalization and growth of micro-, small-and medium-sized enterprises, including through access to financial services." SDG 8.10 refers to strengthening of the capacity of domestic financial institutions "to encourage and expand access to banking, insurance and financial services for all."
	SDG 9.1 points to the development of "quality, reliable, sustainable and resilient infrastructure, including regional and transborder infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all." SDG 9.a sees the facilitation of "sustainable and resilient infrastructure development in developing countries through enhanced financial, technological, and technical support to African countries, least-developed countries, landlocked developing countries, and small island developing states."
	SDG 10.6 calls on ensuring "enhanced representation and voice for developing countries in decision-making in global international economic and financial institutions in order to deliver more effective, credible, accountable and legitimate institutions."
	SDG 16.a provides for "strengthen[ing] relevant national institutions, including through international cooperation, for building capacity at all levels, in particular in developing countries, to prevent violence and combat terrorism and crime."

	SDG 17 (Technology) points to the “enhance[ment of] North-South, South-South and triangular regional and international cooperation on and access to science, technology and innovation and enhance knowledge sharing on mutually agreed terms, including through improved coordination among existing mechanisms, in particular at the United Nations level, and through a global technology facilitation mechanism.” SDG 17 (Systemic issues – Policy and Institutional Coherence) encourages "enhance[d] policy coherence for sustainable development,” as well as “respect[ing] each country’s policy space and leadership to establish and implement policies for poverty eradication and sustainable development." SDG 17 (Systemic issues – Data, Monitoring and Accountability) aims to “enhance capacity-building support to developing countries, including for least-developed countries and small island developing States, to increase significantly the availability of high-quality, timely and reliable data disaggregated by income, gender, age, race, ethnicity, migratory status, disability, geographic location and other characteristics relevant in national contexts” by 2020.

Source: United Nations, n.d.

All the SDGs (including those containing e-commerce enabling elements, some of which were mentioned above) incorporate targets, the attainment of which depends on ensuring access by different (including socially disadvantaged) groups of stakeholders to knowledge, data, research, and cooperation. Those could be easier to achieve in digitally enabled economies and societies. Since e-commerce enabling measures contribute to broader digitalization, they are also conductive to the attainment of these SDG targets. An indicative and non-exhaustive list of such targets is presented in Table A2.

Table A2. Selected SDG targets, the attainment of which could be facilitated in digitally enabled economies/societies

	SDG 2.a calls to “Increase investment, including through enhanced international cooperation, in rural infrastructure, agricultural research and extension services, technology development and plant and livestock gene banks in order to enhance agricultural productive capacity in developing countries, in particular least-developed countries”.
	SDG 3.d refers to “strengthen[ing] the capacity of all countries, in particular developing countries, for early warning, risk reduction and management of national and global health risks.”
	SDG 4.5 aims to “eliminate gender disparities in education and ensure equal access to all levels of education and vocational training for the vulnerable, including persons with disabilities, indigenous peoples and children in vulnerable situations” by 2030.
	SDG 5.b addresses improvement in "the use of enabling technology, in particular information and communications technology, to promote the empowerment of women."

	SDG 7.a aims, to "enhance international cooperation to facilitate access to clean energy research and technology" by 2030.
	SDG 8.6 aims to "substantially reduce the proportion of youth not in employment, education or training" by 2030.
	SDG 9.5 sets goals to "enhance scientific research, upgrade the technological capabilities of industrial sectors in all countries, in particular developing countries, including, by 2030, encouraging innovation and substantially increasing the number of research and development workers per 1 million people and public and private research and development spending."
	SDG 13.3 provides for "Improve[ments in] education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning."
	SDG 14.a aims to "increase scientific knowledge, develop research capacity and transfer marine technology, taking into account the Intergovernmental Oceanographic Commission Criteria and Guidelines on the Transfer of Marine Technology, in order to improve ocean health and to enhance the contribution of marine biodiversity to the development of developing countries, in particular small island developing States and least-developed countries."
	SDG 16.7 calls to "ensure responsive, inclusive, participatory and representative decision-making at all levels."
	SDG 17 (Trade) provides for a "significant increase in the exports of developing countries. SDG 17 (Systemic Issues - Multi-stakeholder Partnerships) encourages an "enhancement [of] the Global Partnership for Sustainable Development, complemented by multi-stakeholder partnerships that mobilize and share knowledge, expertise, technology and financial resources, to support the achievement of the Sustainable Development Goals in all countries, in particular developing countries."

Source: United Nations, n.d.

Published by the International Institute for Sustainable Development.