1

Data Network as Enabler

Digital Inclusion and Trade Policy

1.1 Introduction

Efficient and affordable digital physical infrastructure is the prerequisite that enables people to meaningfully participate in the data-driven economy. In this broadband era, people who are connected are empowered in a manner that allows them to access information, online education, health and banking services, and much more. Broadband communications services, which include fixed-line and wireless communications networks, contribute not only to the integration of remote regions and disadvantaged groups, but also to key infrastructure in the economic development of virtually all sectors. In this context, broadband infrastructure is essential to improvements in the quality of life, for both developed and developing countries.[1]

The benefits of broadband development, however, are not evenly distributed. A long-debated concern expressed by developing economies is the inability to take advantage of evolving digital technology.[2] The reality is that digital transformation varies across countries and people.[3] Generally, this inability underscores the importance of greater "digital inclusion," which is defined as bridging the gap between individuals and groups, as well as economies.[4] In measuring digital development, it is

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[1] See generally Tony Grubesic and Elizabeth Mack, *Broadband Telecommunications and Regional Development* (Routledge, 2016), at 1–7, 179–180.

[2] See, for example, UNCTAD, "The COVID-19 Crisis: Accentuating the Need to Bridge the Digital Divides" (2020) <https://unctad.org/publication/covid-19-crisis>.

[3] OECD, "Measuring the Digital Transformation: A Roadmap for the Future" (2019), at 1–3.

[4] *Ibid.*

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important to note that, in 2019, only about 40 percent of people in developing countries were able to access and use the Internet.[5] According to International Telecommunications Union (ITU) statistics, although globally more than 1 billion new Internet users have been added from 2017 to 2022, outstanding digital divides persist between "connected countries, communities, and people."[6] By mid-2022, 5.3 billion people were Internet users, which means that almost 37 percent of the world's population does not use the Internet.[7] Most often, such divides stem from insufficient or slow connectivity, which is closely correlated to geography and socioeconomic status.[8] Substantial digital divides exist between countries,[9] with nearly 87 percent of people using the Internet in developed countries compared to approximately 44 percent in developing countries.[10] In least developed countries (LDCs), only 19 percent of individuals are online.[11] At the same time, intercontinentally, the trend of datafication continues to boost international Internet traffic and therefore requires more and more international bandwidth. It is evident that the demand for submarine cable infrastructure is quickly growing. Currently, transatlantic cable connections are the densest routes, with the highest traffic capacity, which continues to grow annually at the rate of 38 percent.[12] According to the American Chamber of Commerce, submarine communications cables that link the US and the European

[5] ITU, "Digital Inclusion of All" (2022) <https://www.itu.int/en/mediacentre/backgrounders/Pages/digital-inclusion-of-all.aspx>.

[6] *Ibid.* According to ITU statistics, digital divides are also evident within countries. Males, urban residents, and young people are more likely to access the Internet than women, rural residents, and the elderly. The ITU statistics also reveal that the digital gender gap is more substantial in developing and least developed countries.

[7] *Ibid.*

[8] *Ibid.*

[9] *Cf.*, under different framing and definitions of "digital divide," scholars refer to the "divide" between the digital trade strategies of the EU, the US, and China. See generally Susan Ariel Aaronson and Patrick Leblond, "Another Digital Divide: The Rise of Data Realms and Its Implications for the WTO" (2018) 21(2) Journal of International Economic Law 245; Henry Gao, "Digital or Trade? The Contrasting Approaches of China and US to Digital Trade" (2018) 21(2) Journal of International Economic Law 297; Mira Burri, "The Global Digital Divide as Impeded Access to Content" in Mira Burri and Thomas Cottier (eds), *Trade Governance in the Digital Age* (Cambridge University Press 2012), at 396 (discussing "the many divides" that contain not only infrastructure connectivity but also content access).

[10] ITU-D, "Digital Inclusion" (2023) <www.itu.int/itu-d/sites/digital-inclusion>.

[11] *Ibid.*

[12] Daniel S. Hamilton and Joseph P. Quinlan, "The Transatlantic Economy: Annual Survey of Jobs, Trade and Investment between the United States and Europe" (2021), at 56–57.

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Union (EU), two of the most developed areas, carry 55 percent more data than transpacific routes and 40 percent more data than US–Latin American routes.[13]

Evidently, the "haves" – people who are connected to the Internet – are empowered. Digital infrastructure allows people to participate in a digital world, which in turn increases their overall well-being in these countries.[14] On the other hand, being "unconnected" means the "have-nots" cannot access online health services, make payments via mobile phone, or increase productivity through digital skills. The recent pandemic has convincingly demonstrated the need to bridge the digital divide. The COVID-19 crisis has stimulated a surge in the use of digital services. In the US, for example, home broadband traffic was up by roughly 20–40 percent from the onset of COVID-19.[15] The unprecedented demand during the pandemic for online delivery, including e-commerce, e-education, and e-health, has underscored the need for efficient and affordable digital services.[16] Even in developed countries, telecommunications regulators required Netflix and YouTube to reduce streaming loads in an attempt to prevent the Internet from collapsing under the strain of heavy usage due to the coronavirus pandemic. The need to address the challenges that hamper greater digital inclusion in developing countries, particularly in LDCs, is now more urgent than ever.[17]

Looking to the future, the core idea behind Industry 4.0,[18] as supported by the fifth generation (5G) network, is to connect machinery to the Internet, which encompasses technologies including 3D printing, the Internet of Things (IoT), artificial intelligence (AI), and big data analytics.[19] The connected devices associated with the IoT, for example, will dramatically increase demands on digital networks. Nearly every piece of technology we use will be part of an always-on, always-connected web of

[13] *Ibid.*, at 56. Note that content and cloud services suppliers are gradually displacing telecommunications operators as the major investors in (private) submarine cables.
[14] See UNCTAD, "Technology and Innovation Report" (2021), at 3, 78.
[15] Doug Brake, "Lessons from the Pandemic: Broadband Policy after COVID-19" Information Technology & Innovation Foundation (ITIF) (2020) <https://itif.org/publications/2020/07/13/lessons-pandemic-broadband-policy-after-covid-19>.
[16] WTO, "E-Commerce, Trade and the Covid-19 Pandemic Information Note" (2020).
[17] *Ibid.*
[18] Sudip Misra et al., *Introduction to Industrial Internet of Things and Industry 4.0* (Routledge 2020), at 51–71.
[19] *Ibid.*, at 3–9.

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smart sensors and data feedback devices.[20] That in turn will unleash a torrent of data traffic across the Internet. However, the reality is that current networks are nowhere near ready to accommodate this level of Internet traffic.[21] Accommodating the technology evolution and meeting ensuing connectivity demands will require continued modernization of legacy telecommunications infrastructure, as well as the creation of additional broadband networks.[22] In light of the high levels of investment required to adopt 5G networks, developed countries' early deployment of 5G networks is expected to exacerbate the current digital divide.[23] According to industry estimations, the cost to deploy a 5G network may range from USD 6.8 million to USD 55.5 million, depending on the size of the city.[24] The ITU predicts that 5G penetration will be around 60 percent in developed economies by 2025, whereas the same network connectivity during this period will be below 10 percent in Latin America and below 5 percent in African countries.[25]

1.2 Opening the Services Market

1.2.1 Telecommunications Liberalization

In the context of international economic law, a few premise questions are in order. What role has the liberalization of telecommunications services played in the emergence of today's broadband "digital divide?" How might international trade agreements have contributed to such inequalities? How can the WTO help to narrow the digital divide, or even to promote digital inclusion? To answer these questions, a brief overview of the negotiating context of the relevant WTO treaty obligations is discussed below.

[20] The IoT refers to "a global, distributed network of physical objects that are capable of sensing or acting on their environment, and able to communicate with each other, other machines or computers." Rajkumar Buyya and Amir Dastjerdi (eds), *Internet of Things: Principles and Paradigms* (Elsevier 2016), at 3. The IoT should be seen as "the aggregation of many machine-to-machine (M2M) connections" which focus on the sharing of data and processing that takes place between these devices.

[21] ITU, "GSR Discussion Paper: Regulation and the Internet of Things" (2015) <www.itu.int/en/ITU-D/Conferences/GSR/Documents/GSR2015/Discussion_papers_and_Presentations/GSR_DiscussionPaper_IoT.pdf>.

[22] ITU, "Setting the Scene for 5G: Opportunities & Challenges" (2018) <www.itu.int/pub/D-PREF-BB.5G_01>, at 30.

[23] *Ibid.* See also UNCTAD, "Digital Economy Report" (2019) <https://unctad.org/webflyer/digital-economy-report-2019>, at 7.

[24] UNCTAD, supra note 22.

[25] *Ibid.*

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Historically speaking, the pre-Uruguay Round General Agreement on Tariffs and Trade (GATT) system applied only to trade in goods. In light of the increased potential for international trade in services, the elimination of trade barriers to service sectors became a major priority of a number of developed countries in the Uruguay Round of trade negotiations in the early 1990s.[26] The conclusion of the General Agreement on Trade in Services (GATS) in 1994 forms an essential component of the legal framework for a global trading system.[27] The GATS is the first multilateral trade agreement to cover trade in services, through which WTO members commit to the liberalization of the services sectors. In scheduling their market access commitments, members indicate the limitations on market access for each services sector scheduled with regard to each of the "four modes of supply."[28]

Arguably, the GATS opened global telecommunications markets for multinational telecommunications companies in such a way that a critical mass of WTO members have included the telecommunications sector in their schedules of commitments. Overall, emerging economies have recorded a high incidence of commitments on Mode 3 (foreign investment). According to the WTO Secretariat, such unique patterns of commitment by emerging economies "illustrate the importance they have attached to foreign direct investment (FDI) as a means of improving and extending national telecommunications networks and universal access."[29] Over the years, the interplay between the liberalization of the telecommunications market and the possibility of attracting foreign investment in the sector has been repeatedly raised by WTO members – with divergent viewpoints. While some delegates from developing countries pointed out that the degree of liberalization in the telecommunications sector should be based on "the possibility for such liberalization to promote both growth and development,"[30] delegates from developed

[26] Andrew Lang, "GATS" in Daniel Bethlehem et al. (eds), *Oxford Handbook of International Trade Law* (Oxford University Press 2009).

[27] *Ibid.*

[28] At the most general level, the conceptual cornerstone of the GATS is its definition of trade in services. For the purposes of the GATS, trade in services is defined in Article I:2 by reference to four different ways in which such trade can occur: cross-border supply (Mode 1); consumption abroad (Mode 2); supply through commercial presence (Mode 3, *i.e.*, foreign investment); and supply through the presence of natural persons (Mode 4).

[29] WTO Secretariat, *Guide to the GATS: An Overview of Issues for Further Liberalization of Trade in Services* (Kluwer Law International 2001), at 540.

[30] "Multilateral Trade Negotiations the Uruguay Round Group of Negotiations on Services" MTN.GNS/23 (July 11, 1989), para. 12. (In the meeting, the delegate for Brazil "regretted

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countries continued to stress that the liberalization of telecommunications could help modernize the economy, promote development, and bring "considerable growth effects" in the FDI host countries.[31]

For a long time, even before the broadband era, developing countries and LDCs have required injections of foreign capital into their telecommunications infrastructure. In the pre-GATS world, however, most states maintained state-monopoly control over telecommunications. Despite the enormous demand for capital to build large-scale networks, the telecommunications services sector was generally closed to FDI. When the GATS became effective, market forces were unleashed, and monopoly telecommunications incumbents began to face both domestic and foreign competition. In theory, competition driven by market forces should deliver services more effectively than monopoly-based schemes.[32] The economic assumption was that government-owned telecommunications companies were being privatized and confronted with the threat of entry from new competitors, thereby forcing these monopolies to become more efficient. At the same time, openness to foreign capital in the telecommunications industry could result in increased infrastructure investment and thus bridge the digital divide.[33]

1.2.2 From Monopoly to Competition

The promised economic benefit of market access commitments, however, has never been realized in many developing countries and LDCs. There is a missing link between telecommunications liberalization and broadband investment. Before the WTO opened the global telecommunications market, cross-subsidization within a monopolized market was the traditional means of pursuing "universal service" goals for most countries. Under such a monopoly scheme, losses incurred from less lucrative activities were financed by income earned from more profitable ones.[34]

the absence of development concerns" and stressed the gap between developed and developing countries regarding the capacities in supplying the telecommunications services.)

[31] "Note by the Secretariat, WTO Council for Trade in Services: Special Session" TN/S/M/2 (July 10, 2002), Report of the Meeting held on June 5 and 6, 2002, para. 48.

[32] See generally Gregory Sidak and Daniel Spulber, "Deregulation and Managed Competition in Network Industries" (1998) 15 Yale Journal on Regulation 117, at 120.

[33] *Ibid*., at 122.

[34] Stuart Benjamin and James Speta, *Internet and Telecommunication Regulation* (Carolina Academic Press 2019), at 670.

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The trend of telecommunications liberalization brought about by the GATS, however, has posed a significant threat to cross-subsidies.[35] As observed by Batura, in the pre-GATS age, monopolistic suppliers of telecommunications services financed universal service through cross-subsidization. Generally, one monopoly operator served the entire domestic telecommunications market and signed bilateral commercial agreements with the monopolists of other countries for international interconnection.[36] However, the operation had to be changed following the liberalization of the market. In competitive telecommunications markets, cross-subsidies have been squeezed out of the rate structure because prices in low-profit areas are not rebalanced to competitive levels. As a result, market forces may even broaden the digital divide.[37] Without governmental intervention, profit-motivated telecommunications network operators will prioritize serving densely populated, high-usage urban areas rather than rural areas or low-usage households – the "cream-skimming" or "cherry-picking" effect.[38]

The transitional stages from a monopolistic to a competitive telecommunications market, therefore, have been a bumpy road in terms of reshaping universal service policies, especially for developing countries and LDCs, where infrastructure development needs are urgent. According to the United Nations Conference on Trade and Development (UNCTAD), a dominant part of FDI has been concentrated in a select few countries, leaving the LDCs to receive less than 2 percent of global FDI.[39] Over the past decade, FDI flows to LDCs have increased only marginally.[40] Among all infrastructure sectors, FDI in renewable energy generation and distribution services has increased since 2021, while FDI in other infrastructure sectors, including telecommunications services, barely grew.[41]

[35] *Ibid.*, at 672.
[36] Olga Batura, *Universal Service in WTO and EU Law: Liberalization and Social Regulation in Telecommunications* (Springer 2016), at 87.
[37] See Benjamin and Speta, supra note 34, at 672. See also Thomas Bonnett, *Telewars in the States: Telecommunications Issues in a New Era of Competition* (Council of Governors' Policy Advisors 1996), at 100.
[38] Benjamin and Speta, *ibid.*, at 672. See also Stuart M. Benjamin, *Telecommunications Law and Policy* (Carolina Academic Press 2012), at 631–632 (explaining why, in competitive telecommunications markets, the cost of supplying telecommunications service per subscriber is lower in more densely populated areas).
[39] United Nations, "World Investment Report 2016" (2016), at 37.
[40] United Nations, "World Investment Report 2022" (2022), at 12–13.
[41] *Ibid.*, at 13.

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As Shaffer observed in a broader context, international trade liberalization results in the more efficient use of resources, but the gain from such economic efficiency may not be "inclusively shared."[42] Rather, international trade, together with "other primary culprits," can contribute to increased inequality.[43] Evidently, market liberalization alone failed to promote broadband equality. In order to promote affordable access to physical networks, the challenge for governments is how to utilize competition to maximize access while enforcing a digital inclusion policy to minimize geographic inequalities. After all, while competition delivers broadband services in "abundance," it distributes them unequally.[44] As discussed below, the domestic 'funding' mechanism therefore becomes the central issue in the alleviation of the digital divide.

1.3 Bridging the Digital Divide

1.3.1 Universal Broadband Service

The lack of "universal access" to telecommunications services has been addressed nationally – primarily via "universal service" mechanisms administered by national communications regulators to spur infrastructure development in high-cost areas.[45] From a historical perspective, the contemporary concept of "universal service" carries a somewhat different meaning today than when it was coined by Theodore Vail, the chief architect of the Bell system.[46] When Vail first advocated for "one policy, one system, universal service" in 1908, the term "universal service" was conceived as a single provider offering a single telephone network, to which all customers were connected.[47] In that context, the losses could easily be "cross-subsidized" by the profits within a monopoly scheme – just as the Bell system did in the US.[48]

[42] Gregory Shaffer, "Reconceiving Trade Agreements for Social Inclusion" in Manfred Elsig et al. (eds), *The Shifting Landscape of Global Trade Governance* (Cambridge University Press 2019), at 157, 159, 161.
[43] *Ibid.*, at 161.
[44] See Shin-yi Peng, "Universal Telecommunications Service in China: Trade Liberalization, Subsidy, and Technology in the Making of Information Equality in the Broadband Era" (2003) 4 Asian-Pacific Law & Policy Journal 21, at 36.
[45] Benjamin and Speta, supra note 34, at 665–685.
[46] *Ibid.*, at 665.
[47] *Ibid.*
[48] *Ibid.*, at 670.

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Following the liberalization of telecommunications in the 1990s, it has been generally recognized by regulators around the world that increased competition, coupled with a domestic universal service fund,[49] may provide a nation with the best opportunity to achieve the goal of digital inclusion.[50] To bridge the digital divide, governments have typically turned to public policies that aim to both promote market efficiency and improve social welfare – namely, pro-competitive regulations complemented by "universal service" mechanisms that mitigate the digital divide between commercially viable and nonviable areas.[51] The modern concept of "universal service" therefore means the availability of telecommunications services for all customers at an affordable price, supported by subsidies.[52] One striking example is Section 254 of the US Telecommunications Act of 1996, which employs a funding mechanism to finance universal service through equitable contributions by all telecommunications operators.[53] The basic rationale is that while competition can foster affordability by reducing costs and prices in profitable areas, a "universal service fund" can help to ensure that "basic services" are provided to unprofitable rural areas.[54]

Neither "universal" nor "service," however, are self-defining terms. Considering the uncertainty surrounding technological developments, it is necessary for regulators to operate in a reactive manner, implementing universal service policies that can adjust to unique changes in digital technologies. Consequently, most jurisdictions use vague language in their regulations to offer a fair degree of interpretive flexibility.[55] For example, the scope of the universal service scheme in the US remains

[49] For best practices in universal service funds, see ITU, "Universal Service Funds and Digital Inclusion for All" (2013) <www.itu.int/en/ITU-D/Digital-Inclusion/Documents/USF_final-en.pdf>, at16–19.

[50] *Ibid.* It should also be noted that several innovative broadband infrastructure projects are emerging, including Loon (Internet-beaming balloons) and SpaceX (low Earth orbit satellite). These disruptive technologies have the potential to substantially change broadband policy in the coming years. Zoe Kleinman, "Satellites Beat Balloons in Race for Flying Internet" (*The BBC News*, January 25, 2021).

[51] *Ibid.*

[52] Benjamin and Speta, supra note 34, at 684.

[53] *Ibid. Cf.*, infra notes 80 & 81. Currently, a relevant debate is whether to ask big tech companies to contribute to universal service funds.

[54] OECD, "Universal Service Obligations in a Competitive Telecommunications Environment" (1995) <www.oecd.org/sti/broadband/2349175.pdf> (offering a comprehensive examination of the rationale of universal service policies).

[55] For comparative studies of universal service policy across countries, see ITU, supra note 49, at 30–32.

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dynamic, which comprises "an evolving level of telecommunications services" that regulators must periodically revisit and reevaluate.[56]

1.3.2 Evolving Technologies

In practice, the definition of "universal service" is pragmatic in order to ensure that policies will keep pace with technological developments. As technology evolves, much of the debate focuses on what should be included under the definition of universal service. In this regard, "universal service" in many jurisdictions essentially refers to the provision of "minimum" telecommunications service to people at an affordable price.[57] Nevertheless, the core question is as follows: What level of telecommunications service represents the "minimum"? Should it include both fixed and mobile broadband Internet access? If yes, how "broad" is the broadband of the network? How should the definition of universal service evolve toward a higher standard of service as digital technologies improve and demands for advanced services increase?

There are variations in the definitions of universal service, and policy tools and financing approaches differ from country to country.[58] Broadband Internet access has been advocated as a "fundamental right."[59] Finland, as a Utopian example, is the first country in the world to enshrine broadband access as a right in law – legally guaranteeing the Finnish people a 1 MB speed by 2010 and a 100Mbps (megabit per

[56] Section 254 of the US Telecommunications Act requires the Federal-State Joint Board to consider the extent to which such services: first, are essential to education, public health, and safety; second, have been subscribed to by a substantial majority of residential consumers; third, are being deployed in public telecommunications networks by telecommunications carriers; and fourth, are consistent with public interest, convenience, and necessity.

[57] Charles Kennedy, *An Introduction to U.S. Telecommunications Law* (Artech House 2001), at 185–199. The U.S. Telecommunications Act of 1996 was drafted in recognition of the fact that cross-subsidization funding mechanisms could not survive under the new competitive regime. The Act employs funding mechanisms financed through equitable contributions by all service providers. Every telecom carrier that provides telecom services contributes, on an equitable basis, to the universal service support mechanisms. An eligible telecom carrier can receive support from these mechanisms for the provision of facilities and services within the scope of the universal service policy.

[58] ITU, supra note 49, at 30–32.

[59] For example, Satya Nadella, the CEO of Microsoft, is the advocator for "broadband fundamental rights." Clare Duffy, "Broadband Internet Access Is a Fundamental Right" (*CNN Business News*, July 15, 2020).

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second) broadband connection by the end of 2015.[60] Similarly, the UK government has recognized that access to the Internet is "the passport to the information society"[61] and an "essential element to participate in the economy," which is "as vital as access to electricity a century ago." In practice, the UK government announced a new "legal right" to 25 Mbps broadband in 2015, which ensures that all residents and businesses in the UK have access to broadband through a "Universal Broadband Obligation."[62] The government has also used "coverage obligations" attached to the mobile operators' licenses and has required operators to reach 95 percent of the UK population by 2025.[63] In this context, Taiwan, which is classified as a developing country, was also set to ensure "broadband human rights" to "all disadvantaged people," enabling access to 25 Mbps broadband services.[64] At the other end of the spectrum, however, the United Nations' 2025 targets for 25 Mbps broadband-Internet user penetration are 65 percent in developing countries and 35 percent in LDCs.[65]

It should be noted, however, that the above fundamental right-oriented approach was to guarantee minimum broadband access to disadvantaged groups in rural areas. The reality is that a "broadband human right" is "not enough" in developed countries. Despite the relatively low floor set by developed countries in terms of standards,[66] the EU also has ambitious digital plans for 2025, including Gigabit (1000 Mbps) connectivity for all main socioeconomic drivers, such as schools,

[60] Finland became the first country in the world to make broadband a legal right for every citizen. Since July 1, 2010, every Finn has the right to access to a 1Mbps (megabit per second) broadband connection. "Finland Makes Broadband A 'Legal Right'" (*BBC News,* July 1, 2010).

[61] UK Parliament, "Universal Broadband Obligation" (2009) <https://edm.parliament.uk/early-day-motion/37476/universal-broadband-obligation>.

[62] "UK Government Makes 10Mbps Universal Broadband Obligation" (*Telecoms News,* November 9, 2015) <https://telecoms.com/451742/uk-government-makes-10mbps-universal-broadband-obligation/>.

[63] UK Government, "£1 billion Deal Set to Solve Poor Mobile Coverage" (October 25, 2015) <www.gov.uk/government/news/1-billion-deal-set-to-solve-poor-mobile-coverage>.

[64] Executive Yuan, "E-Competitiveness Annual Report" (December 2018), at 48.

[65] ITU, "The State of Broadband 2020: Tackling Digital Inequalities" (September 2020) <www.itu.int/dms_pub/itu-s/opb/pol/S-POL-BROADBAND.21-2020-PDF-E.pdf>, at 5.

[66] The EU has also announced its connectivity objectives that 100 Mbps networks will reach "all European households" by 2025. EU, "Connectivity for a European Gigabit Society" (February 26, 2021) <https://ec.europa.eu/digital-single-market/en/news/connectivity-european-gigabit-society-brochure>.

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transport hubs, hospitals, and public administrations.[67] On the other side of the Atlantic, the US Federal Communications Commission (FCC) has allocated $9.2 billion from its Rural Digital Opportunity Fund for high-speed broadband services – with the vast majority of locations receiving Gigabit broadband.[68] Indeed, as Moyn pointed out, it is critical to note that "sufficiency" and "equality" are different.[69] The "basic needs," "human rights" oriented solutions to digital inclusion – providing the minimum broadband speed – "coexist with a crisis of material inequality."[70]

To conclude, at present, a universal service policy has been the most popular legal mechanism for countries in the promotion of digital inclusion.[71] Generally, a universal service policy provides a certain level of interpretive flexibility as technology evolves. Textually speaking, "universal" may mean that everyone is entitled to services that meet their needs, regardless of their ability to pay.[72] "Minimum" may also be defined as "something people actually want"[73] – as part of their "basic needs."[74] In today's digital age, how much broadband do we need? Based on the UN's 2025 targets, 25 Mbps seems to be the answer for developing countries and LDCs – a wide gap compared to the EU 2025 Gigabit connectivity goal. This reconfirms both the theory and the experience that human rights are rarely an effective tool to address socioeconomic inequalities.

1.4 Digital Inclusion under International Trade Agreements

1.4.1 The GATS Telecommunications Reference Paper: Universal Service

Universal service policies, which are now generally accomplished through national funding, are explicitly recognized by the GATS

[67] *Ibid.*
[68] FCC, "Successful Rural Digital Opportunity Fund Auction to Expand Broadband to Over 10 Million Rural Americans" (*FCC News*, December 7, 2020) <https://docs.fcc.gov/public/attachments/DOC-368588A1.pdf>.
[69] Samuel Moyn, *Not Enough: Human Rights in an Unequal World* (Harvard University Press 2018), at 3.
[70] Moyn, *ibid*., at 218.
[71] Bonnett, supra note 37, at 100.
[72] See generally Ian Gough, "Universal Basic Services: A Theoretical and Moral Framework" (2019) 90(3) The Political Quarterly 2.
[73] *Ibid.*
[74] Kennedy, supra note 57, at 185–199.

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Telecommunications Reference Paper (Telecom Reference Paper). More specifically, in stipulating that WTO members have the right to define the kind of universal service obligations they wish to adopt, Section 3 (Universal Service) of the Telecom Reference Paper implicitly permits members to establish a universal service support fund, stating the following:

> Any Member has the right to define the kind of universal service obligation it wishes to maintain. Such obligations will not be regarded as anti-competitive per se, provided they are administered in a *transparent, non-discriminatory and competitively neutral manner* and are not more burdensome than necessary for the kind of universal service defined by the Member.[75] (emphasis added)

Section 3 of the Telecom Reference Paper, however, is silent as to whether such a fund should be maintained through operator levies or the general tax system. As a whole, the Telecom Reference Paper does not impose a single method by which universal service providers should be chosen or a specific mechanism by which universal service should be funded.[76] Rather, it leaves WTO members free to define the scope and method of a universal service policy that suits them depending on unique national circumstances. Such flexibility allows members to pursue universal service objectives through a wide range of methods, as long as these social objectives are achieved in a transparent, non-discriminatory manner.[77] In addition, Section 3 requires that the collection and distribution of a subsidy fund should be performed in a competitively neutral manner, and that the funding levied should not be more than is necessary to meet the member's universal service policy requirements.[78] In practice, a member's universal service scheme should be administered in alignment with the general principles required by Section 3 of the Telecom Reference Paper. For example, when implementing a universal service fund, a member should specify that such a fund is to be financed by all physical network operators, regardless of whether they are domestic or foreign enterprises or joint ventures. Nevertheless, WTO members

[75] Telecom Reference Paper, Section 3 (Universal Service).
[76] Damien Geradin and Michel Kerf, "Levelling the Playing Field: Is the WTO Adequately Equipped to Prevent Anti-Competitive Practices in Telecommunications?" in Damien Geradin & David Luff (eds), *the WTO and Global Convergence in Telecommunications and Audio-Visual Services* (Cambridge University Press 2004), at 131, 146.
[77] *Ibid.,* at 154–155.
[78] *Ibid.*

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have the discretion to impose self-defined universal service obligations on services suppliers. A member's telecommunications regulator has wide policy space in advancing universal broadband service.

In this datafied world, potential reform in this regard is moving toward a requirement that big tech companies contribute their fair share to support the universal service mechanism. In the "FCC Reports to Congress on Future of the Universal Service Fund," the FCC Commissioners, and in particular Brendan Carr, advocated for a new approach to funding the government's universal service system.[79] After pointing out that Netflix, YouTube, Amazon Prime, Disney+, and Microsoft have been "enjoying a free ride on . . . Internet infrastructure," Carr specifically asked the US Federal-State Joint Board on Universal Service to ensure that "the businesses that derived the greatest benefit from a communications network . . . are required to pay the lion's share of the costs."[80] Similarly, the EU has launched a public consultation surrounding how to fund infrastructure upgrades needed for transformative digital technologies, including AI and Metaverse/virtual reality (VR) applications.[81] By underscoring that all players benefiting from the digital economy should "fairly contribute to the required investments," and that the entire industry should make "proportionate contribution to the costs" of public infrastructure,[82] it is clear that EU policymakers recognize the need for big tech companies to bear greater responsibility for the universal service goal. Turning back to the Telecom Reference Paper, this book contends that the proposed reforms to the member's universal service system are aligned with Section 3, which provides sufficient policy leeway to accommodate the divergent policy needs of WTO members and structural changes to the broadband market, as long as they are administered in a transparent, non-discriminatory, and competitively neutral manner. Despite this, the *Mexico–Telecom* case below demonstrates how a WTO member's universal service policy can go too far.

[79] FCC, "Reports to Congress on Future of the Universal Service Fund" (August 15 2022) <www.fcc.gov/document/fcc-reports-congress-future-universal-service-fund>, at 63.

[80] FCC, "Carr Calls for Ending Big Tech's Free Ride on the Internet" (*FCC News*, May 24, 2021) <https://docs.fcc.gov/public/attachments/DOC-372688A1.pdf>.

[81] European Commission, "The Future of the Electronic Communications Sector and Its Infrastructure, Consultation Questionnaire" (February 23, 2023) <https://digital-strategy.ec.europa.eu/en/consultations/future-electronic-communications-sector-and-its-infrastructure>.

[82] *Ibid.*

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1.4.2 *The* Mexico–Telecom *Case: Cost-Oriented Rates*

The *Mexico–Telecom* dispute[83] was the first WTO panel proceeding to solely address the GATS, and it is also the only dispute settlement case to address international trade of telecommunications services.[84] The US asserted that Mexico's rules governing connection rates for international telecommunications traffic violated its WTO commitments to provide interconnection at reasonable rates. It claimed that the interconnection rates negotiated by Telmex, the incumbent telecommunications supplier in Mexico, were not consistent with the "cost-oriented" requirement imposed by Section 2.2(b) of the Telecom Reference Paper.[85] Mexico argued that the US erroneously interpreted "cost-oriented" rates as simply equal to the "bare cost" of supplying the telecommunications services, and that instead, the term must be interpreted by taking into account the qualifying phrase "transparent, reasonable, and economically feasible" in Section 2.2(b) of the Telecom Reference Paper.[86] In the view of Mexico, relevant factors in assessing whether cost-oriented rates were "reasonable" include "the state of a WTO member's telecommunications industry; the coverage and quality of its telecommunications network; and the return on investment."[87] Mexico further argued that in assessing whether the cost-oriented rates were "economically feasible," key factors should include "the efficient use of income and wealth" and "the needs of the operator and the policy goals of the country."[88] In this respect, Mexico's policy objectives to promote universal service, which "depended to a large extent on interconnection revenues," should be taken into

[83] Panel Report, *Mexico – Measures Affecting Telecommunications Services (Mexico – Telecom),* WT/DS204/R, April 2, 2004.

[84] See generally Shin-yi Peng, "Trade in Telecommunications Services: Doha and Beyond" (2007) 41(2) Journal of World Trade 293.

[85] Telecom Reference Paper, Section 2 (Interconnection), 2.2 (Interconnection to be ensured):

> Interconnection with a major supplier will be ensured at any technically feasible point in the network. Such interconnection is provided. . . . (b) in a timely fashion, on terms, conditions (including technical standards and specifications) and cost-oriented rates that are transparent, reasonable, having regard to economic feasibility, and sufficiently unbundled so that the supplier need not pay for network components or facilities that it does not require for the service to be provided; . . ..

[86] Panel Report, *Mexico – Telecom*, para. 7.164.

[87] *Ibid.*

[88] *Ibid.,* para. 4.180.

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consideration.[89] Throughout the litigation, Mexico repeatedly stressed the need for "infrastructure development" and "universal service."[90] The main argument is clear: The term "economic feasibility" in Section 2.2(b) of the Telecom Reference Paper provides great latitude in allowing its major supplier, Telmex, to include charges for infrastructure development or universal service.[91]

In response to Mexico's arguments, the US clarified the relationship between Section 2.2 (cost-oriented rate) and Section 3 (universal service) of the Telecom Reference Paper. In the view of the US, "interconnection charges are limited to the specific network components and facilities required for the interconnection service provided."[92] Therefore, Telmex's interconnection charge, which includes a universal service component, violates the "cost-orientation" requirement in Section 2.2. At the same time, the recovery of universal service subsidies hidden in Mexico's interconnection charges also violates the "transparent administration" of universal service obligations in Section 3.[93] The US further pointed out that the Telecom Reference Paper separates the disciplines on cost-orientation rates in Section 2 from the disciplines on universal service in Section 3.[94] The US delegation argued that if Mexico wished to promote "investment" in its national telecommunications infrastructure, it should "fund" its rollout costs in a way that is consistent with Section 3 of the Telecom Reference Paper. The US contended that Mexico's recovery of universal service subsidies paid to Telmex through the levy of hidden, inflated interconnection rates from foreign suppliers would be inconsistent with the Section 3 requirement that universal service obligations be administered in a transparent, non-discriminatory and competitively neutral manner.[95] Interestingly enough, during the oral hearing in the litigation, the US delegation "lectured" that Mexico's above-cost interconnection rates had not and could not lead to infrastructure rollout and increase the country's teledensity. The statement went on as follows: "competition, along with … the imposition of a universal service

[89] *Ibid*., para.7.164.
[90] Oral Statement of the United States at the Second Meeting of the Panel, *Mexico–Telecom*, WT/DS204/R, March 12, 2003, para. 3.
[91] *Ibid*., para. 59.
[92] *Ibid*., paras. 61–63.
[93] *Ibid*.
[94] *Ibid*.
[95] Answers of the United States to the Panel's Questions to the Parties at the Second Meeting, *Mexico–Telecom*, WT/DS204/R, March 27, 2003, para. 53.

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obligation that is consistent with the requirements of Section 3 of the Telecom Reference Paper, will help Mexico achieve infrastructure rollout and increased teledensity."[96]

While recognizing that the high degree of flexibility embedded in the term "cost-oriented" implies that more than one pricing methodology can be employed when calculating "cost-oriented" rates, the panel nevertheless noted that the widespread use of long-term incremental cost methodologies among WTO members should serve as a reference in determining the costs incurred in supplying the service.[97] On that basis, the panel concluded that Mexico was in violation of its "cost-orientation rate" commitments under Section 2.2(b) of the Telecom Reference Paper, because the interconnection rates charged by Telmex were substantially higher than the costs actually incurred in supplying the interconnection services.[98] The panel's interpretation of the cost-orientation principle, which did not consider domestic regulatory objectives and practices, has been criticized by Howse as "laissez-faire ideology" and a "hyperliberal teleological view" toward the liberalization and deregulation of the telecommunications sector.[99] Twenty years after the *Mexico–Telecom* case, the issue of universal service, although framed in different legal contexts, once again came to the fore in the *Brazil – Taxation* case.

1.4.3 *The* Brazil Taxation *Case: Public Morals Exception*

Digital inclusion measures that extend beyond the context of the Telecom Reference Paper might also violate other WTO obligations and therefore raise the question of whether such measures can be justified by the WTO's general exceptions. At the core of the issue is to what extent digital inclusion falls within the scope of the "public morals" exceptions. In this regard, the *Brazil – Taxation* dispute represents a remarkable case surrounding the challenges faced by international economic law in striking a balance between trade efficiency and digital

[96] Comments of the United States on Mexico's Answers to the Panel's Questions at the Second Meeting, *Mexico – Telecom*, WT/DS204/R, April 30, 2003, para. 43.
[97] Panel Report, *Mexico – Telecom*, para. 7.177.
[98] *Ibid.*, 7.216.
[99] Robert Howse, "Importing Regulatory Standards and Principles into WTO Dispute Settlement: The Challenge of Interpreting the GATS Arrangements on Telecommunications" in Ioannis Lianos and Okeoghene Odudu (eds), *Regulating Trade in Services in the EU and the WTO: Trust, Distrust and Economic Integration* (Cambridge University Press, 2012), at 445, 464–467.

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inclusion.[100] The measures at issue concerned four Brazilian tax incentive programs.[101] Among others, under the Brazilian Digital Inclusion Program, only goods eligible for tax benefits are Brazilian domestic products,[102] representing a straightforward situation of incentives that are provided in respect of a preference for domestic over imported goods. The complaining parties – the EU and Japan – claimed that the Digital Inclusion Program is inconsistent with Article III:4 National Treatment principle of the GATT.[103]

One key issue in the dispute was whether the discriminatory aspects of the measures could be justified under Article XX(a) of the GATT 1994[104] – the public morals exception.[105] In the litigation, Brazil argued that "there is a gap between demographics and regions that have access to modern information and telecommunications technology and those that do not have access or have restricted access."[106] According to Brazil, the measures in dispute represented an important means to "bridge this digital divide and promote social inclusion," which would in turn "improve literacy, democracy, social mobility, economic quality, and growth."[107] To support its overarching policy goals, Brazil submitted as evidence the United Nations' Millennium Development Goals Report, which stressed that "ICT access and use are unequally distributed within and between countries," and that "it will be essential to address the

[100] Request for Consultations by the European Union, *Brazil – Certain Measures Concerning Taxation and Charges (Brazil – Taxation)*, WT/DS472/1, January 8, 2014. Panel Report, *Brazil – Taxation*, WT/DS472/R, January 11, 2019, para. 7.622.

[101] Panel Report, *Brazil – Taxation*, paras. 8.5, 8.16. The measures at issue include the Informatics Program, the Program of Incentives for the Semiconductor Sector (PADIS), the Program of Support for the Technological Development of the Digital TV Equipment Industry (PATVD), and the Digital Inclusion Program (acronyms represent Brazilian-language versions of these programs).

[102] *Ibid*., paras. 7.315–7.317. The retailers in turn only obtain the tax benefits to the extent that they have purchased these domestic goods (for resale), instead of like foreign goods.

[103] *Ibid*., para. 7.3.2.

[104] *Ibid*., paras. 7.3.6.3.

[105] GATT, Article XX (General Exceptions):

> Subject to the requirement that such measures are not applied in a manner which would constitute a means of arbitrary or unjustifiable discrimination between countries where the same conditions prevail, or a disguised restriction on international trade, nothing in this Agreement shall be construed to prevent the adoption or enforcement by any contracting party of measures: (a) necessary to protect public morals; . . ..

[106] Panel Report, *Brazil – Taxation*, para. 7.544.

[107] *Ibid*., para. 7.545.

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widening digital divide."[108] It further stated: "Only then will the transformative power of ICTs and the data revolution be harnessed to deliver sustainable development for all."[109] In this regard, the EU argued that the social and economic development objectives claimed by Brazil may "characterize any governmental action."[110] According to the EU, if objectives such as access to information were protected under Article XX, "then any governmental action taken in the public interest could be justifiable under Article XX."[111]

The panel found that a concern existed in Brazilian society with respect to the need to bridge the digital divide, and that such concern was within the meaning of Article XX(a) of the GATT 1994.[112] The panel therefore proceeded to examine whether the measures at issue satisfied the "necessity test" – the principle of proportionality in the context of international economic law. Under this "necessity test" practice, a central question is whether the discriminatory aspects of the measure are necessary to achieve the claimed objective: closing the digital divide.[113] More specifically, the central question in *Brazil – Taxation* concerned whether the alternative measures proposed by the complaining parties were WTO-consistent measures that were reasonably available to Brazil, that were less trade restrictive than the measures at issue, and that could achieve an equal or higher level of contribution to the objective of bridging the digital divide.[114] The panel found that the alternatives proposed by the complaining parties would not only be WTO-consistent and less trade restrictive than the Brazilian tax incentive programs,[115] but that they would also make a more substantial contribution to the claimed objective than the measures at issue.[116] The panel therefore concluded that Brazil had not demonstrated that the measures at issue were "necessary" to achieve digital inclusion within the meaning of Article XX(a) of

[108] *Ibid*., para. 7.563.
[109] *Ibid.*
[110] *Ibid.*
[111] *Ibid*., para. 7.548.
[112] *Ibid*., paras. 7.568–7.569.
[113] *Ibid*., para 7.596.
[114] *Ibid*., para. 7.549. See also European Union's opening statement at the first meeting of the Panel, *Brazil –Taxation*, WT/DS472/R, para. 165.
[115] Panel Report, para. 7.609. Both complaining parties have proposed certain WTO-consistent, less trade-restrictive alternative measures that they consider are reasonably available to Brazil, including nondiscriminatory tax exemptions on digital TV transmitters, or the overall elimination of import tariffs on digital TV transmitters.
[116] *Ibid*. para.7.618.

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the GATT 1994.[117] In other words, Brazil's developmental concerns could not justify the imposition of national-origin measures.

In a broader sense, it is an awkward task for a WTO panel to address the "digital divide" within the context of Article XX of the GATT. Limited to its mandate, the panel's primary task is to safeguard trade interests and address problems that arise when digital policies have an impact on trade. Nonetheless, the development of network infrastructure is the foundation upon which individuals are empowered to benefit from digital opportunities. Infrastructural dimensions, including enhancements to teledensity and Internet density by wireline, as well as wireless connections, often involve WTO-inconsistent subsidization measures that grant tax exemptions or subsidize ICT-related sectors in any possible way. The mere fact that a responding party must have attempted to stretch the scope of the "public morals" exception to justify its digital inclusion policy within the WTO indicates that the interplay between international economic law and digital inequality invites further reflection.

The WTO's general exceptions provide a hierarchical framework by which to balance international trade commitments against national social preferences, ranging from the protection of public morals to the maintenance of public health.[118] WTO members can, for example, justify violations of their obligations assumed under the GATS through recourse based upon one of the grounds delineated in GATS Article XIV.[119] The opening sentence of Article XIV (the Chapeau) indicates that the negotiators' intent was that all grounds listed in this provision "trump" trade obligations delineated in the rest of the GATS.[120] In other words, trade liberalization is not the supreme goal that all WTO members must strive to achieve at the expense of other public objectives. Domestic measures aimed at bridging the digital divide, if successfully invoked under GATS

[117] *Ibid.*, paras. 7.544–7.568. The finding of the panel in this case raised a critical question as to what constitutes public morals and how to distinguish between public policies that fall under public morals and those that do not. Unfortunately, in the appeal, while the EU and Japan each appealed certain issues of law and legal interpretations developed in the Panel Reports, both parties did not appeal the issue of Article XX(a). The key questions remain unanswered.

[118] See, for example, GATS, Article XIV.

[119] *Ibid.*

[120] Petros C. Mavroidis, *Trade in Goods* (Oxford University Press 2012), at Ch. 5 (Deviating from WTO Obligations).

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Article XIV, may provide WTO members with a lawful escape route from their GATS obligations.

Although the term "public morals" is not further defined in the WTO's general exceptions, WTO jurisprudence offers examples of public policies that have been found by panels or the Appellate Body to pertain to public morals,[121] which include preventing underage gambling,[122] combatting money laundering,[123] protecting national culture and traditional values,[124] safeguarding animal welfare,[125] and, as demonstrated in the *Brazil – Taxation* case, bridging the digital divide and promoting social inclusion.[126] Nevertheless, only measures that are necessary to protect public morals will be deemed consistent with the GATS. In this context, the criteria for the "necessity test" have been consistently reproduced and emphasized in WTO jurisprudence, under which WTO members "have the right to decide which level of protection of the objectives it pursues."[127] In this particular respect, it is up to WTO members to determine the level of protection of digital inclusion they consider appropriate, and other WTO members cannot challenge the level of digital inclusion pursued.[128] However, the "necessity test" requires the consideration of alternatives to the measure taken in order to determine whether existing options are "less trade restrictive" while "providing an equivalent contribution to the achievement of the objective pursued."[129]

[121] See also Christian Delev, "A Moral Stretch? US–Tariff Measures and the Public Morals Exception in WTO Law" (2021) World Trade Review 1–12. Panel Report, *United States – Tariff Measures on Certain Goods from China (US Tariff Measures)*, WT/DS543/R, not yet adopted, para. 7.113.

[122] See Appellate Body Report, *United States – Measures Affecting the Cross-Border Supply of Gambling and Betting Services (US-Gambling)*, WT/DS285/AB/R, April 20, 2005, para. 278.

[123] *Ibid.*

[124] Appellate Body Report, *China – Measures Affecting Trading Rights and Distribution Services for Certain Publications and Audiovisual Entertainment Products (China – Publications and Audiovisual Products)*, WT/DS363/AB/R, January 19, 2010, paras. 141–143.

[125] See, for example, Appellate Body Report, *European Communities – Measures Prohibiting the Importation and Marketing of Seal Products* (*EC – Seal Products),* WT/DS400/AB/R, WT/DS401/AB/R, June 18, 2014, paras. 5.199–5.203.

[126] *Brazil – Taxation*, paras*. 7.552–7.568.*

[127] See, for example, Panel Report, *Argentina – Measures Relating to Trade in Goods and Services* (*Argentina – Financial Services),* WT/DS453/AB/R9, April 14, 2016, para. 7.684.

[128] See, for example, Appellate Body Report, *EC – Seal Products,* para. 5.214.

[129] Panel Report, *EC – Seal*, paras. 5.260–5.264. Appellate Body Report, *Brazil – Measures Affecting Imports of Retreaded Tyres (Brazil – Tyres)*, WT/DS332/AB/R, December 17, 2007, paras. 141, 143, 156, 178.

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As evidenced in *Brazil – Taxation*, the overall structure of the necessity test developed by the dispute settlement organs of the WTO serves as a critical tool by which to balance the public interests of the regulating member and the trade interests of other WTO members. Consistent with overall Article XX jurisprudence, while the panel in *Brazil – Taxation* reaffirmed the validity of "digital divide" concerns for purposes of the public morals exception, it also reinforced the necessity test as a limit in terms of how such measures can be applied. To conclude, when trade policy collides with digital inclusion policy, it leads to a dilemma between trade and non-trade values. Faced with such a dilemma, the WTO remains the most effective forum for balancing competing interests. Normatively speaking, however, there is little room for the panels to further expand the reach of the exceptions, and this is attributable to the prominence of the "necessity test" in applying the GATT/GATS general exception language.

1.4.4 DEPA: Digital Inclusion Module

Further disciplines of digital trade have been realized in FTAs and other preferential trade agreements (PTAs) in recent years.[130] In particular, significant achievements have been advanced by the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP)[131] and the United States–Mexico–Canada Agreement (USMCA).[132] Moreover, the Digital Economy Partnership Agreement (DEPA) between Singapore, Chile, and New Zealand represents an innovative and collaborative approach to digital trade issues.[133] Other recently concluded FTAs, such

[130] The concept of "digital trade," which in this book is understood in a broad sense, encompasses international trade enabled by digital technologies. There is no single definition of digital trade. OECD defines it as "Digitally enabled transactions of trade in goods and services that can either be digitally or physically delivered." OECD, "The Impact of Digitalization on Trade" (2021) < https://search.oecd.org/trade/topics/digital-trade/>.

[131] The Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP) Agreement, available at, for example, the website of the MFAT, <www.mfat.govt.nz/en/trade/free-trade-agreements/free-trade-agreements-in-force/comprehensive-and-progressive-agreement-for-trans-pacific-partnership-cptpp>.

[132] United States–Mexico–Canada Agreement (USMCA), available at, for example, the website of the USTR, <https://ustr.gov/usmca>.

[133] Digital Economy Partnership (DEPA) between Singapore, Chile, and New Zealand, available at <www.mti.gov.sg/Trade/Digital-Economy-Agreements/The-Digital-Economy-Partnership-Agreement >.

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as the EU–UK Trade and Cooperation Agreement (EU–UK TCA),[134] the Regional Comprehensive Economic Partnership (RCEP) and the EU-New Zealand Free Trade Agreement (EU–NZ FTA), also serve as indicators of future digital trade negotiations.[135]

One important feature of these FTAs, although it may not immediately affect digital inclusion policies, is worth emphasizing: There has been increasing recognition of a state's "right to regulate." Moving beyond the GATS preamble, participating parties have increasingly reserved a more concrete "right to regulate" in the FTAs. The Preamble of the CPTPP, for example, includes language stipulating that CPTPP members recognize their inherent right to regulate and resolve issues, preserving the flexibility of the parties to "set legislative and regulatory priorities, safeguard public welfare, and protect legitimate public welfare objectives," including "public morals."[136] As another example, in the Digital Trade Chapter, the parties of the EU–UK TCA reaffirm the right to regulate for the purpose of achieving legitimate policy objectives, such as "public morals."[137] Over the long run, this trend may help to strike a balance between trade efficiency and digital inclusion, especially in trade dispute litigation where the preamble of a treaty is a source of interpretative guidance.

Nonetheless, the DEPA represents a new form of digital trade agreement that directly addresses the issue of digital inclusion.[138] The Digital Inclusion module in the DEPA – the first of its kind – establishes new collaborations pertaining to digital trade issues, including reduced disparities between developed and developing countries, and among haves and have-nots within a given country.[139] Article 11 stipulates that the parties acknowledge "the importance of digital inclusion to ensure that all people and businesses have what they need to participate in,

[134] The EU-UK Trade and Cooperation Agreement (EU-UK TCA), available at <https://commission.europa.eu/strategy-and-policy/relations-non-eu-countries/relations-united-kingdom/eu-uk-trade-and-cooperation-agreement_en>.

[135] The Regional Comprehensive Economic Partnership (RCEP), available at <https://rcepsec.org/>; The EU-New Zealand Free Trade Agreement (EU–NZ FTA), available at <https://policy.trade.ec.europa.eu/eu-trade-relationships-country-and-region/countries-and-regions/new-zealand/eu-new-zealand-agreement/text-agreement_en>.

[136] CPTPP, supra note 131, the Preamble.

[137] EU-UK TCA, supra note 134, Article 198.

[138] Other FTAs, whether in the Telecommunication Chapters or the E-Commerce/Digital Trade Chapters, did not substantively go beyond the WTO Agreement in this regard.

[139] Module 11 Digital Inclusion of the DEPA.

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contribute to, and benefit from the digital economy."[140] The parties also recognize "the importance of improving access for women, rural populations and low socio-economic groups."[141] Toward that end, the parties have agreed to cooperate on matters relating to digital inclusion, which may comprise, in part, the promotion of "inclusive and sustainable economic growth," to ensure that the benefits and opportunities of the digital economy are more widely shared.[142]

Surely, the language in Article 11 is relatively "soft" in terms of enforceability. The parties simply "acknowledge" or "recognize" the importance of digital inclusion, a scenario that does not provide countries involved with adequate legal tools by which to enhance their broadband infrastructure. It should be noted, however, that Article 14 renders Article 11 subject to dispute settlement.[143] A party may request the appointment of an arbitral tribunal to settle disputes among the parties concerning their rights and obligations with regard to digital inclusion. Overall, there is still a long way to go in transforming "digital inclusion" from a "shield" (*i.e.*, a defense) to a "sword" (*i.e.*, an affirmative obligation) under international trade agreements. However, a relatively softer cross-border regime like DEPA provides an early signal of the direction that stronger international commitments to digital inclusion may eventually take in the future. To conclude, a DEPA-type digital inclusion provision that requires cooperation in bridging the digital divide is a feasible starting point.[144] DEPA has apparently resulted in minor but highly symbolic progress in global digital inclusion efforts.

1.4.5 WTO JSI on E-Commerce: Digital Trade and Development

At the multilateral level, the dynamics in the interplay between trade liberalization and digital (in)equality likely will continue. Recent negotiating proposals in the WTO JSI on E-commerce reveal the uneasy relationship between digital trade and development.[145] Central debates

[140] DEPA, Article 11.1.1.
[141] DEPA, Article 11.1.2.
[142] DEPA, Article 11.1.3.
[143] DEPA. Article 14.
[144] Andrew Mitchell and Neha Mishra, "Digital Trade Integration in Preferential Trade Agreements" (2020) 191 Asia-Pacific Research and Training Network on Trade Working Paper Series.
[145] WTO, "Joint Statement on Electronic Commerce" WT/L/1056 (January 25, 2019). G20 trade negotiators in June 2019 issued a joint statement on digital economic policies that

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include how to promote digital capacity and take into account the special constraints that developing countries face in the digital economy.[146] Communication from Côte d'Ivoire, among other interventions, called for the WTO Secretariat to be responsible for establishing a multilateral cooperation forum to "ensure universal benefits from the digital economy."[147] Reiterating the fact that they "lack the infrastructure to fully exploit the potential of e-commerce,"[148] developing countries' position is that they "have not felt the effects of trade digitalization on their economic development," and that the ongoing e-commerce negotiations may "ignore the development interests of low-income countries."[149] Similar communications from developing country members also requested that the WTO Secretariat establish a fund to support the integration of developing countries and LDCs into the digital economy. In their view, the WTO "should be responsible" for identifying and cataloguing the various programs, which are aimed at "providing technical assistance and implementing pilot projects for the development of e-commerce."[150] In summary, developing countries have been pressing for "development-focused digital industrialization,"[151] stressing that needs more pressing than digital liberalization include the promotion of digital capacity and the safeguarding of universal benefits of the data-driven economy.[152] They have clearly positioned themselves in support of the argument that the WTO JSI on E-commerce should specifically

has paved the way for the WTO's plurilateral e-commerce talks. A consolidated text had been distributed to WTO members in December 2020, which is now the basis for negotiations. As of May 2023, participating countries have not yet agreed on divisive issues such as cross-border data flows. See generally WTO, "Electronic Commerce" <www.wto.org/english/tratop_e/ecom_e/ecom_e.htm>.

[146] Communication from Argentina, Colombia, and Costa Rica, "WTO Negotiations on Trade-Related Aspects of E-Commerce" INF/ECOM/1 (March 25, 2019). Non-Paper from Brazil, "Exploratory Work on Electronic Commerce" INF/ECOM/3 (March 25, 2019).

[147] Communication from Côte d'Ivoire, INF/ECOM/46 (November 14, 2019). Communication from Côte d'Ivoire, INF/ECOM/49 (December 16, 2019).

[148] *Ibid.*

[149] *Ibid.*

[150] *Ibid.*

[151] Communication from the African Group, "Report of Panel Discussion on Digital Industrial Policy and Development" JOB/GC/133 (July 21, 2017). See Non-Paper from Brazil, JOB/GC/98 (July 20, 2016). Communication from China, "Joint Statement on Electronic Commerce" INF/ECOM/19 (April 24, 2019).

[152] Inside US Trade, "WTO E-Commerce Talks Co-Convener: No Conclusions on Legal Path" (March 16, 2021).

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address the urgent needs of digital connectivity, namely, the enabling infrastructure of e-commerce activities.[153]

Drawing upon the experiences of the FTA negotiations, the issue of how to tackle digital trade and development will continue to be one of the primary battles in the WTO JSI on E-commerce.[154] Among others, one key issue is how to extend special and differential (S&D) treatment in the area of digital trade, which typically offers trade preferences, flexibility, transition periods, and technical assistance to developing countries.[155] The concept of S&D has been incorporated into the E-Commerce/Digital Trade Chapters of the FTA. In the CPTPP, Vietnam has been given a transition period, during which its existing data localization measures cannot be challenged by other parties. Similarly, a grace period has also been extended to both Vietnam and Malaysia for existing measures concerning the cross-border transfer of information by electronic means.[156] By the same token, obligations concerning interactive computer services will not apply to Mexico until three years after the USMCA becomes effective.[157] It remains to be seen how S&D provisions will be incorporated into the WTO e-commerce trade rules.[158]

Amid the JSI negotiations, it is important to save the WTO e-commerce trade deal from being a digital "haves" trade agreement. In the digital world, developed countries might just as well be from Mars, while developing countries might just as well be from Venus. In the meantime, the latter are still at the stage where they are struggling to provide Internet access in rural areas and among disadvantaged groups, whereas the former are already focusing on cutting edge issues

[153] Shin-yi Peng, "Digital Trade" in Daniel Bethlehem et al. (eds), *The Oxford Handbook of International Trade Law* (Oxford University Press 2022), chapter 29.

[154] See, for example, Rolf Weber, "Global Law in the Face of Datafication and Artificial Intelligence" in Peng et al. (eds), *Artificial Intelligence and International Economic Law: Disruption, Regulation, and Reconfiguration* (Cambridge University Press, 2021) (discussing the further transformation of the global trade regime).

[155] The WTO Agreements contain over 150 special and differential treatment provisions (S&D). For more general discussion on S & D, see WTO, "Proposals to Enhance Special Treatment for Developing Countries" (2020) <www.wto.org/english/news_e/news20_e/devel_21sep20_e.htm>. See generally Seung Wha Chang, "WTO for Trade and Development Post-Doha" (2007) 10(3) Journal of International Economic Law 553.

[156] CPTPP, supra note 131, Article 14.18.

[157] USMCA, supra note 132, Chapter 19, ANNEX 19-A. See Mark Wu, "Digital Trade-Related Provisions in Regional Trade Agreements: Existing Models and Lessons for the Multilateral Trade System" RTA Exchange, ICTSD and IDB (November 2017).

[158] Peng, supra note 153.

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such as open government data, e-invoicing facilitation, etc.[159] Such gaps have posed challenges to the promotion of the more widespread adoption of multilateral e-commerce trade rules. The WTO must be very careful not to give emerging economies a reason to think they are being excluded from the multilateral process. Priority in the negotiating agenda should be given to addressing the issues surrounding infrastructure development, including both goods (*e.g.*, tax measures on ICT products)[160] and services (*e.g.*, broadband FDI).[161] It remains to be seen how WTO members can find the common ground needed to balance digital trade liberalization and development needs. Unless infrastructure concerns from developing countries and LDCs are addressed, the ongoing e-commerce trade deal may end up being labeled a digital "haves" trade agreement.

1.5 Broadband Investment in a Broader Policy Context

1.5.1 Network Neutrality

From a broader policy perspective, a long and painful debate that has been repeatedly asserted as central to broadband investment centers on the regulations regarding network neutrality.[162] Briefly, the erosion of broadband telecommunications revenues has had a disruptive effect on the sector over the past decade. Digital applications such as WhatsApp have become practical alternatives to "traditional" telecommunications services.[163] Voice and messaging services provided by Internet applications have dramatically drawn voice and short messaging service (SMS) traffic away from mobile operators, causing a significant impact on "traditional" network volumes and revenues.[164] In addition to these revenue-eroding trends, streaming content delivered by suppliers such

[159] See for example, Communication from New Zealand, INF/ECOM/36 (July 5, 2019).
[160] As discussed above in Section 1.4.3 (the *Brazil – Taxation* case).
[161] As discussed above in Section 1.2.1 (the lack of foreign capital in broadband investment).
[162] Tim Wu, "A Proposal for Network Neutrality" (2003) < www.timwu.org/OriginalNNProposal.pdf>. See also Tim Wu, "Network Neutrality, Broadband Discrimination" (2002) 2 Journal of Telecommunications & High Technology Law, at 141. For discussions on both sides of the debate regarding network neutrality, Tim Wu & Christopher S. Yoo, "Keeping the Internet Neutral? Tim Wu and Christopher Yoo Debate" (2007) 59 Federal Communications Law Journal, at 575.
[163] See, for example, Mansoor Iqbal, "WhatsApp Revenue and Usage Statistics" (*Business of Apps,* 2023).
[164] *Ibid.*

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as Netflix has resulted in the growing demand for broadband infrastructure to seamlessly connect data. Taken together, broadband infrastructure itself is becoming the so-called dumb pipe.[165] Internet content and applications "piggyback" on physical network infrastructure for delivery,[166] while at the same time directly competing with services offered by infrastructure operators. Because of these perceived vulnerabilities, some broadband operators have resorted to blocking or degrading Internet traffic.[167]

Against this backdrop, network neutrality is a term that encompasses various levels of equal treatment of online traffic. The primary concept behind network neutrality is that "all data traffic on a network should be treated indiscriminately."[168] This means that in practice, Internet service providers (ISPs) would be restricted from blocking, degrading, or prioritizing the delivery of online content and applications at their discretion.[169] Whether network neutrality should be imposed as a regulatory requirement has become a controversial issue in many jurisdictions, with politically powerful advocates both in favor of and against its imposition.[170] Especially in the US, since network neutrality's emergence as an academic idea in the early 2000s, the controversy surrounding it has never ceased.[171] Network neutrality opponents have claimed,[172] among other issues, that incentives for physical network operators to continually

[165] See, for example, Daniel L. Brenner, "Creating Effective Broadband Network Regulation" (2010) 62 Federal Communications Law Journal 13 (discussing the "near-religious war" between network neutrality advocates who envision a dumb pipe provided by broadband operators).

[166] Shin-yi Peng, "GATS and the Over-the-Top Services: A Legal Outlook" (2016) 50(1) Journal of World Trade 21 (explaining the vertical competition between broadband operators and OTT services suppliers).

[167] FCC, "In the Matter of Protecting and Promoting the Open Internet" GN Docket No. 14–28 (March 12, 2015), para. 7.

[168] Boston Human Rights Commission, "Broadband Access in Boston Project Report" (2021) <www.boston.gov/sites/default/files/file/2022/07/Broadband-Access%20Spring%202021.pdf>, at 22.

[169] Wu, supra note 162. See also EU, "Open Internet – Sharing Europe's Digital Future" (2022) <https://ec.europa.eu/digital-single-market/en/open-internet>.

[170] Relevant issues, among others, include the impact of network neutrality policy on consumer choices, see Christopher S. Yoo, "Beyond Network Neutrality" (2005) 19 Harvard Journal of Law & Technology 1, at 50; and the consideration of mobile broadband, see Christopher S. Yoo, "Wireless Network Neutrality: Technological Challenges and Policy Implications" (2016) 31 Berkeley Technology Law Journal 1409.

[171] In 2018, the FCC under the Trump administration decided to "remedy the marketplace intrusions" of the 2015 Open Internet Order that "have harmed competition, broadband infrastructure investment, and innovation." The current FCC of the Biden administration is now in the process of "restoring" the Obama-era network neutrality rules.

[172] See generally Yoo, supra note 162.

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invest in broadband infrastructure may be reduced if operators cannot realize revenues from the additional traffic generated by online content and application suppliers such as Netflix and YouTube.[173] In their view, increasing Internet traffic has resulted in a congestion problem, and without new sources of revenue, necessary infrastructure investments in the transmission network layer will be at risk.[174] Based on some empirical data, network neutrality opponents have argued that "the digital divide would have widened" if network neutrality rules were restored.[175] On the other hand, based on an analysis of broadband economics, supporters of network neutrality have advanced arguments suggesting that the neutrality policy would not overly interfere with broadband operators' ability to "earn a return on their infrastructure investment."[176]

In the arena of international economic law, a looming version of network neutrality – "Open Networks, Network Access and Use" – has emerged since the early 2010s in both bilateral and plurilateral trade negotiations.[177] More recently, a quasi-network neutrality provision, "Principles on Access to and Use of the Internet for Electronic Commerce/Digital Trade" (Access Principles), has been incorporated into the FTAs such as CPTPP's E-Commerce Chapter and the USMCA's Digital Trade Chapter.[178] In other words, although the provision did not come closer to a comprehensive approach to network

[173] See for example, Comcast, "Notice of Ex Parte Communication, Protecting and Promoting the Open Internet" GN Docket No. 14–28; "Framework for Broadband Internet Service" GN Docket No. 10–127 (December 24, 2014).

[174] *Ibid.* Such a viewpoint seems to be shared by the telecom regulator – the Ofcom of the UK – where there is currently maintained a network neutrality framework. Ofcom, "Net Neutrality Review" (October 21, 2022) <www.ofcom.org.uk/__data/assets/pdf_file/0028/245926/net-neutrality-review.pdf>.

[175] American Consumer Institute, "Bridging the Digital Divide: Net Neutrality and Rural Connectivity" (November 9, 2020).

[176] Wu, supra note 162, at 9.

[177] "Open Networks, Network Access and Use" was incorporated into the TISA negotiating texts of the Annex on e-commerce. Jane Kelsey and Burcu Kilic, "Briefing on US TISA Proposal on E-Commerce, Technology Transfer, Cross-border Data Flows and Net Neutrality" (2014) <www.world-psi.org/en/briefing-us-tisa-proposal-e-commerce-technology-transfer-cross-border-data-flows-and-net-neutrality>. A similar provision can be found in Article 2 of the US-EU Trade Principles on Information, Communication Technology Services; Article 3 of the Japan-US Trade Principles for ICT Services states that: "[g]overnments recognize that Internet access providers should strive to avoid unreasonable discrimination in transmitting lawful network traffic."

[178] USMCA, supra note 132, Article 19.10 (Principles on Access to and Use of the Internet for Digital Trade): "The Parties recognize that it is beneficial for consumers in their territories to be able to: (a) access and use services and applications of a consumer's choice available on the Internet, subject to reasonable network management. . ."

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neutrality, a miniature concept of this has been injected into FTAs, with one outstanding caveat: reasonableness.

To illustrate, under both trade agreements, broadband operators within the territories of the parties are still allowed to maintain "reasonable network management." In this regard, it is permissible for broadband operators within the CPTPP parties to offer their subscribers certain content on an exclusive basis.[179] It should be noted that the concept of "reasonable network management" has been highly controversial within the domestic context, and there is no guidance surrounding its meaning in most jurisdictions. Some broadband operators have claimed that "reasonable network management" may require practices "to reduce or mitigate congestion on the network, ensure quality-of-service, or address traffic that is unwanted or harmful to users, among other things."[180] If so, this caveat creates a space for broadband operators to throttle Internet traffic or downgrade bandwidth for certain data flows.[181]

After all, if we borrow from the WTO's jurisprudence on the "reasonableness" standard, the term "reasonable" is defined by several WTO panels as "in accordance with reason," "not irrational or absurd," "sensible," "within the limits of reason,"[182] and "not greatly less or more than might be thought likely or appropriate."[183] Compared with other, more "advanced" standards, such as necessity and proportionality, reasonableness represents a basic standard, which merely requires that the acts are not "irrational or absurd."[184] It can be argued, however, that under the "reasonableness test," the question of whether a broadband operator's

[179] CPTPP, supra note 131, Article 14.10, footnote 6: "The Parties recognize that an Internet access service supplier that offers its subscribers certain content on an exclusive basis would not be acting contrary to this principle."

[180] AT&T, "AT&T Open Internet Policy Statement" <www.att.com/legal/terms.openinternetpolicy.html>.

[181] However, arguably, the Access Principles in the international trade agreements merely address the most basic standard: no blocking. See Rodrigo Polanco Lazo and Sebastián Gómez Fiedler, "A Requiem for The Trans-Pacific Partnership: Something New, Something Old and Something Borrowed? A Requiem for the TPP" (2018) 18(2) Melbourne Journal of International Law 298.

[182] Panel Reports, *China – Measures Related to the Exportation of Various Raw Materials (China – Raw Materials)*, WT/DS394/R/WT/DS395/R/WT/DS398/R, February 22, 2012, paras. 7.696, 7.741.

[183] Panel Reports, *United States – Certain Country of Origin Labelling Requirements (US-COOL)*, WT/DS384/R / WT/DS386/R, July 23, 2012, paras 7.850–7.851.

[184] *Ibid.* See Shin-yi Peng, "The Rule of Law in Times of Technological Uncertainty: Is International Economic Law Ready for Emerging Supervisory Trends?" (2019) 22(1) Journal of International Economic Law 1, at 19.

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network management practices violate the Access Principles should be examined under specific country conditions. Namely, the state of broadband development of a party, especially in the developing world, should be taken into account. When viewed in this light, "reasonableness" is to be determined in context, accommodating local development needs.[185] For example, broadband operators' practices in Vietnam might be more likely to be considered "reasonable" Internet traffic management if the degraded service was due to traffic congestion concerns. On the other hand, an ISP's degrading of Internet traffic in Singapore, a leading country in the world in terms of broadband speeds,[186] might be found "unreasonable" as a whole.

In any event, these quasi-network neutrality "rules" under the FTAs are of a soft law nature. The parties merely "recognize" the benefits of the Access Principles, which are subject to a party's domestic "policies, laws and regulations." To a large extent, these provisions do not impose mandatory or legally binding obligations. Such obligations carry little institutionalized enforcement for noncompliant behavior. The softness of these provisions reflects the political sensitivity surrounding this issue.

1.5.2 Digital Silk Road

From a foreign policy angle, there has been unconventional but potentially overwhelming progress regarding digital connectivity: the Digital Silk Road (DSR) component of China's Belt and Road Initiative (BRI).[187] The BRI, as China's most significant strategic agenda following its accession to the WTO, has centered its initiatives on infrastructure development. Despite mounting concerns regarding debt sustainability and the commercial as well as the political rationale behind the initiative, China's actions to bridge the global infrastructure gap – whether roads, railways,

[185] See Arturo J. Carrilloa, "Having Your Cake and Eating It Too? Zero-Rating, Net Neutrality, and International Law" (2016) 19 Stanford Technology Law Review 364.

[186] Singapore ranked top on the Internet Quality Index 2020. Katharina Buchholz "The Best & Worst Places for Internet Quality" (*Statista*, February 23, 2021) <www.statista.com/chart/24261/internet-quality-ranking/>.

[187] See Heng Wang, "The Belt and Road Initiative Agreements: Characteristics, Rationale, and Challenges" (2021) 20 World Trade Review 282, at 287; Gregory Shaffer and Henry Gao, "A New Chinese Economic Order?" (2020) 23(3) Journal of International Economic Law 607, at 614–620; Julien Chaisse & Mitsuo Matsushita, "China's 'Belt and Road' Initiative: Mapping the World Trade Normative and Strategic Implications" (2018) 52 Journal of World Trade 163, at 167.

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ports, electricity, or telecommunications infrastructure – are nevertheless welcome in many developing countries and LDCs.[188] Under the umbrella of the BRI, the DSR has gained its own momentum since its emergence in 2015 and is becoming more and more central to the BRI.[189]

The DSR's primary undertaking is straightforward: rolling out broadband in dozens of countries in BRI regions where digital infrastructure is underdeveloped or even nonexistent, and upgrading existing Internet connections to a higher broadband across BRI regions.[190] Under the DSR, dozens of projects have been implemented with the help of Chinese government investments, which generally involve financial aid and technical support for digital infrastructure and related industries. For example, China has been deeply involved in the Infrastructure Consortium for Africa, including the establishment of national broadband networks. Several African countries have substantially benefited from the DSR, primarily in the areas of 5G networks and fiber-optic cables.[191] Overall, the DSR has been concentrating on the urgent needs of broadband connectivity in the Global South.[192]

From a "legal" perspective,[193] China has signed memoranda of understanding (MoU) along the path of the DSR, with at least sixteen countries agreeing to closer cooperation in the development of digital infrastructure.[194] In the Belt and Road Digital Economy Cooperation Initiative, for example, the parties to the MoU declare their intentions to "expand broadband access and improve quality, improve the construction of regional communication, Internet, satellite navigation, as well as other important information infrastructure and facilitate interconnection."[195]

[188] See generally Jeremy Garlick, *The Impact of China's Belt and Roald Initiative* (Routledge 2019), at 170–203.
[189] Deloitte, "BRI Update 2019" (2019).
[190] *Ibid.*
[191] This includes, at the least, Angola, Ethiopia, Nigeria, Zambia, and Zimbabwe. Steven Feldstein, "Testimony before the U.S.-China Economic and Security Review Commission Hearing on China's Strategic Aims in Africa" (May 8, 2020) <www.uscc.gov/sites/default/files/Feldstein_Testimony.pdf>. It should be noted that the 5G networks being developed around the DSR will increase transmission capacity, which is essential to IoT and AI applications.
[192] *Ibid.* China has signed DSR cooperation agreements with at least sixteen countries.
[193] BRI agreements are often of a "soft law" nature – taking advantage of the elements of soft law instruments to address sensitive issues such as cooperation in the digital sphere. Wang, supra note 187, at 297.
[194] Council on Foreign Relations, "Assessing China's Digital Road Initiative" <www.cfr.org/china-digital-silk-road/>.
[195] *Ibid.*

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The parties also stress the priority to "explore ways to expand high-speed Internet access and connectivity at [an] affordable price," as well as to "promote broadband network coverage and improve service capacity and quality."[196]

In practice, the DSR is driven by China's private companies. Supported by the DSR, telecommunications services suppliers such as China Telecom Corporation, China Mobile, and China Unicom, together with telecommunications equipment vendors such as Huawei and ZTE, take advantage of the "DSR label" to expand their 5G markets overseas.[197] These Chinese companies work together, supply integrated solutions, and – at the same time – "transplant" Chinese standards to the DSR regions.[198] In the long run, the more the DSR's beneficiary countries depend on Chinese systems in their digital infrastructure, the more progress China realizes in leading the way in global standards for 5G and beyond. In addition to its technical standard-setting efforts, China's involvement in digital infrastructure through the DSR is increasingly leading to geopolitical and security implications.[199] Concerns have been raised that China can leverage the DSR to "export" its model of technology-enabled authoritarianism to recipient regions,[200] which would compromise personal data protection and human rights in those countries.[201] More specifically, commentators argue that China, through the DSR, will further influence recipient countries to adopt surveillance measures that are detrimental to Internet freedoms.[202] In this context, the 2021 G7 summit in Cornwall highlighted such concerns.[203] During

[196] *Ibid.*

[197] Matthew S. Erie & Thomas Streinz, "The Beijing Effect: China's Digital Silk Road as Transnational Data Governance" (2021) 54(1) New York University Journal of International Law & Policy 1, at 22.

[198] *Ibid.*, at 14, 75.

[199] Francisco Jose Leandro, "The OBOR Global Geopolitical Drive: The Chinese Access Security Strategy" in Julien Chaisse and Jedrzej Gorski (eds), *The Belt and Road Initiative: Law Economics and Politics* (Brill Nijhoff 2018), at 88; Joshua Meltzer, "China's One Belt One Road Initiative: A View from the United States" (*Brookings Report*, June 19, 2017).

[200] See for example, Human Rights Watch, "China's Techno-Authoritarianism Has Gone Global" (April 8, 2021) <www.hrw.org/news/2021/04/08/chinas-techno-authoritarianism-has-gone-global>.

[201] *Ibid.*

[202] Richard Fontaine and Daniel Kliman, "On China's New Silk Road, Democracy Pays a Toll" (*Foreign Policy,* May 16, 2018) <https://foreignpolicy.com/2018/05/16/on-chinas-new-silk-road-democracy-pays-a-toll/>.

[203] G7 Rivals China with Grand Infrastructure Plan, Reuters (*Reuters*, June 13, 2021).

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the 2021 summit, allied leaders announced a "global infrastructure plan" – the Build Back Better World program – to "provide an infrastructure alternative to China's BRI."[204] At the 2022 Summit, G7 leaders formally launched "the Partnership for Global Infrastructure and Investment," which aims to "close the infrastructure gap in developing countries,"[205] and to offer, if not rival, an alternative to China's BRI in developing countries and LDCs.

In summary, although primarily driven by a political agenda and strategic propaganda, the DSR represents an indispensable component in mapping the whole contours of the issues surrounding digital inclusion. The DSR has often been conceptualized as a strategic extension of China's digital technologies and authoritarian policies, and China's digital push for development cooperation has long been framed as a part of the Chinese effort to assert itself as the dominant technological power in the world.[206] In any event, China's support for major telecommunications infrastructure projects under the DSR has proven to be a rather strategic and thus effective approach to influencing the developing and the less developed worlds. Admittedly, the DSR can help to enhance digital connectivity in underserved regions, improve broadband access in developing countries, and, at the end of the day, narrow the infrastructure gap.[207] Of course, the most pressing challenge facing recipient countries undergoing digital development with the aid of China is how to bargain for their "digital sovereignty."[208]

1.6 Conclusion

The "enabling" character of digital physical infrastructure raises questions regarding how best to tackle the issue of "trade and development" in a datafied world. In this chapter, we have examined the issue of digital inclusion at the broadband infrastructure level. This chapter should be read in conjunction with Chapters 5 and 6 of this book. After all, the remedy for broadband access (Chapter 1) cannot be meaningfully

[204] *Ibid.* The program, if implemented, will help narrow a US $40 trillion need for infrastructure projects across the developing world.

[205] "President Biden and G7 Leaders Formally Launch the Partnership for Global Infrastructure and Investment" (*White House Press*, June 26, 2022).

[206] Feldstein, supra note 191; Erie and Streinz, supra note 197.

[207] To some extent, the G7's response to the BRI of creating its own B3W shows recognition of BRI's impact.

[208] See Section 3.5.1 of this book for additional discussion.

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realized without ensuring it is in sync with digital application (Chapter 5) and data flow (Chapter 6). Put simply, this is attributable to the fact that the more people access the Internet, the more data digital platforms gain. The far-reaching datafication of human activities goes hand in hand with communications on the 5G broadband. Moreover, as Chapter 2 will continue to address, cybersecurity risks have been growing in parallel with the increasing penetration of broadband networks. Increasing Internet connectivity has led to a surge in cybersecurity threats. Although Huawei's campaign has emphasized how its exclusion from many countries' telecommunications markets would "exacerbate the digital divide,"[209] the digital economy relies not only on the availability, but also on the resilience, of broadband infrastructure.[210] Secure and trusted broadband services are equally, if not more, important to a universal broadband service in this datafied world. The security and availability of 5G networks in some way conflict.

[209] Huawei, "Corporate Fact Sheet: What Is the Impact of Huawei's Exclusion from the U.S. Market?" <www.huawei.com/en/facts/questionanswer/what_is_the_impact_of_huaweis_exclusion_from_the_us_market>.

[210] Since the telecommunications liberalization in the 1990s, the central dimension of the broadband policy has been the universal service and competition law. In the recent decades, however, the cybersecurity critical infrastructure dimension has been shifting to the center.

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