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Transforming Global Trade and Development With Digital Technologies

STEPHEN EZELL AND STEFAN KOESTER I MAY 2023

Digital technologies have transformed global commerce and raised living standards. By better aligning global trade rules to foster growth in digital technologies, economic and social benefits can be widely distributed.

KEY TAKEAWAYS

- The next generation of digital technologies—advanced manufacturing and 3D printing, autonomous shipping and trucking, blockchain-enabled customs documentation, and quantum computing—will have significant global trade and development impacts.
- Benefits from digital technology deployment are not shared if investment in information technology (IT) infrastructure—5G networks and broadband access—does not keep up with growing global demand, especially in the Global South.
- Trade barriers continue to inhibit free-flowing global trade in IT products, including digital technologies that are key to reducing global emissions and meeting the UN's Sustainable Development Goals.
- Expanding the WTO's Information Technology Agreement is a much-needed next step in the global trade rules paradigm that will foster increased trade in energy and environmental products while growing digital service-based economies.
- Data indicates that countries that did not join the previous Information Technology Agreement lost out on valuable trade and growth spurred by digital technologies and failed to build a domestic IT sector.
- The WTO and participating nations must work to reinvigorate multilateral digital and environmental product trade agreements to avoid the possibility of digital service protectionism, which would result in a failure to invest and deploy needed technologies.

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INTRODUCTION

New and emerging technologies continue to transform the global economy and trade itself, harnessing the positive impacts of increasing international commerce and facilitating the movement of goods and services across borders. The 21st century has been defined by the impacts of technological innovation on the critical challenges of our time, including increasing global standards of living, fostering sustainable development, preserving and protecting valuable human and natural resources, and combatting climate change. Together, technological innovation and increased trade can foster more-efficient processes, broaden the horizon of global partners, and support development and growth in the Global North and South. At the dawn of the Fourth Industrial Revolution, it is not yet clear which technologies will fulfill the dual mandate of increasing global standards of living and fostering inclusive trade by increasing opportunities for the Global South. Emerging digital technologies, however, can power innovation, productivity, and efficiency; secure supply chains; dramatically increase product transparency; and improve customer experiences, all while growing markets and opportunities for global commerce.

Imagine a world of autonomous trucks and shipping that relies on artificial intelligence (AI) and a fifth-generation cellular network (5G) backbone facilitating advances in production such as additive manufacturing (i.e., 3D printing). Quantum computing provides continuous improvements in industrial process manufacturing, stimulating new methods to improve everything from lithium-ion batteries and biodegradable plastics to sustainable aviation fuel.[1] Supply chain management within and across borders is synchronized through improved data analytics, predictive maintenance technology, and AI-enabled risk assessment using smart contracts. Internet of Things (IoT)-enabled shipping containers communicate with one another and the network, ensuring that products are maintained in proper condition, reducing waste and spoilage. All this is enabled by distributed ledger technologies and electronic customs and legal information available to parties at the tap of a finger, thus facilitating payment, receipt, and legal compliance. Transaction costs for handling customs documents, which before could have

exceeded the cost of moving a container, are dramatically reduced and security is enhanced through blockchain-backed electronic customs documents. On top of these trade efficiencies are reductions in transportation emissions and waste and increased consumer transparency and choice regarding environmentally and socially sound products. Making this a reality, however, requires implementing national and global trade rules that reduce barriers to data flows, addressing non-tariff barriers such as incongruous standards and data interoperability, and encouraging private-sector investments through stable and clear regulatory frameworks and global rules of the road. Additionally, local technical capacity and expertise must be robust enough to support the IT infrastructure alongside government capacity to accommodate new technologies and benefit from their adoption. Digital technologies have the potential to provide massive efficiency gains and increased opportunities for trade, but developing and developed countries alike must have the requisite technical capacity to play in this evolving world.

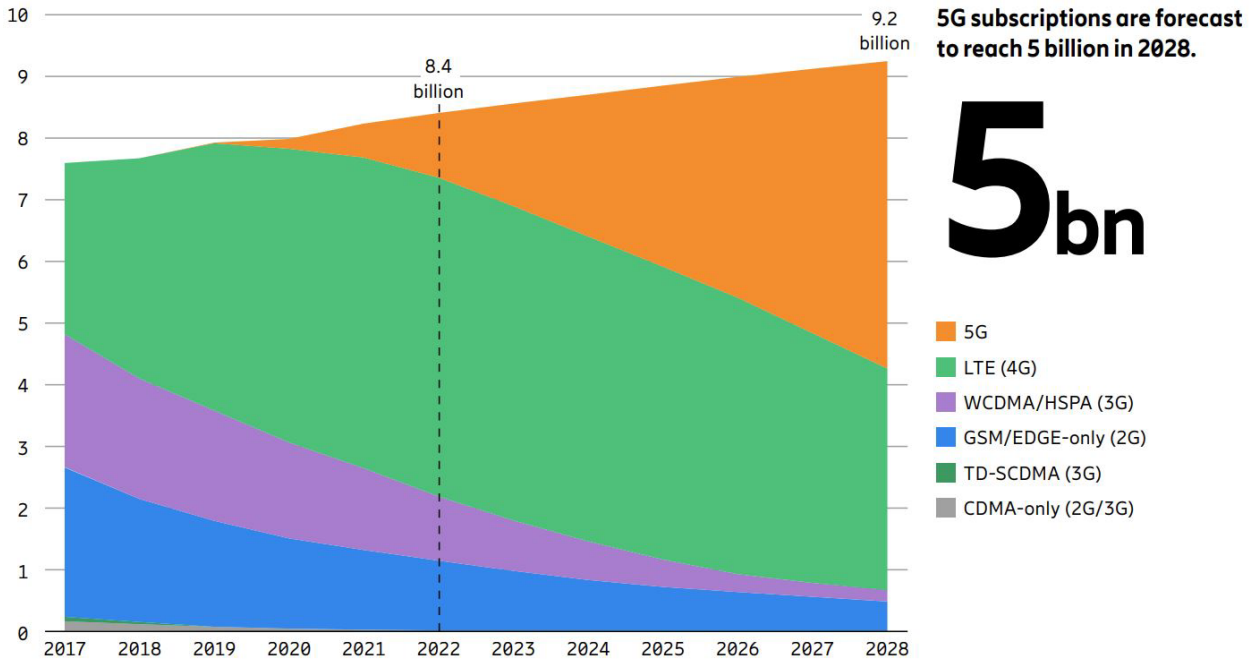
This paper details emerging digital technologies and how they can positively impact global trade and sustainable development, spotlighting several technologies deployed across both developing and developed economies. In total, information and communication technology (ICT) solutions can help reduce global greenhouse gas emissions by up to 15 percent by 2030 while being responsible for only 1.4 percent of the global carbon footprint.[2] This paper also notes which technologies are likely to be critical in the coming decade to facilitate these goals, noting potential hurdles and drawbacks, and how trade rules and national policies can be reshaped to take advantage of the benefits of digital technologies. It sets the framework for thinking about how emerging technologies both challenge existing World Trade Organization (WTO) rules and suggests ways to reform and develop explicit rules to maximize the powerful potential of digital technologies.

INVESTING IN INFORMATION AND COMMUNICATION TECHNOLOGY INFRASTRUCTURE

ICT infrastructure represents a key predicate to realizing the benefits of digital technologies. For instance, analysts predict the world will field 30 billion Internet-connected devices by 2025.[3] But maximizing the impact of the underlying digital tools and platforms (from computers and smartphones to the applications that run on them) powering the global digital economy requires permitting the unencumbered flow of data. In 1992, global broadband data flows were a measly 100 gigabytes (GB) per day; today global Internet traffic stands at 150,000 GB per second. Google alone processes 100,000 Internet search queries globally per second. Alongside these data requirements come infrastructure requirements to support their buildout and adoption. Increasing adoption, bandwidth, ICT personnel, and technical capacity remain a challenge, in not only the Global South but also the Global North. 5G networks, with their ultra-low latency and increased network capacity, enable increased connectivity with more and more devices such as Internet-connected manufacturing equipment, mobile payment systems, smart infrastructure, mobile and electronic customs documentation, and other applications. Global 5G access, according to a 2022 Ericsson report, stands at around 1 billion subscribers.[4] These users are heavily concentrated in North America, Japan, South Korea, and the European Union. However, rapid adoption in China, India, South America, and Middle East and North Africa (MENA) countries is speeding 5G adoption, putting it on track to be the fastest-adopted new wireless standard. It is projected that, by 2028, 5G subscriptions will number 5 billion and account for approximately 55 percent of global mobile use. (See figure 1.) Mobile 5G usage and

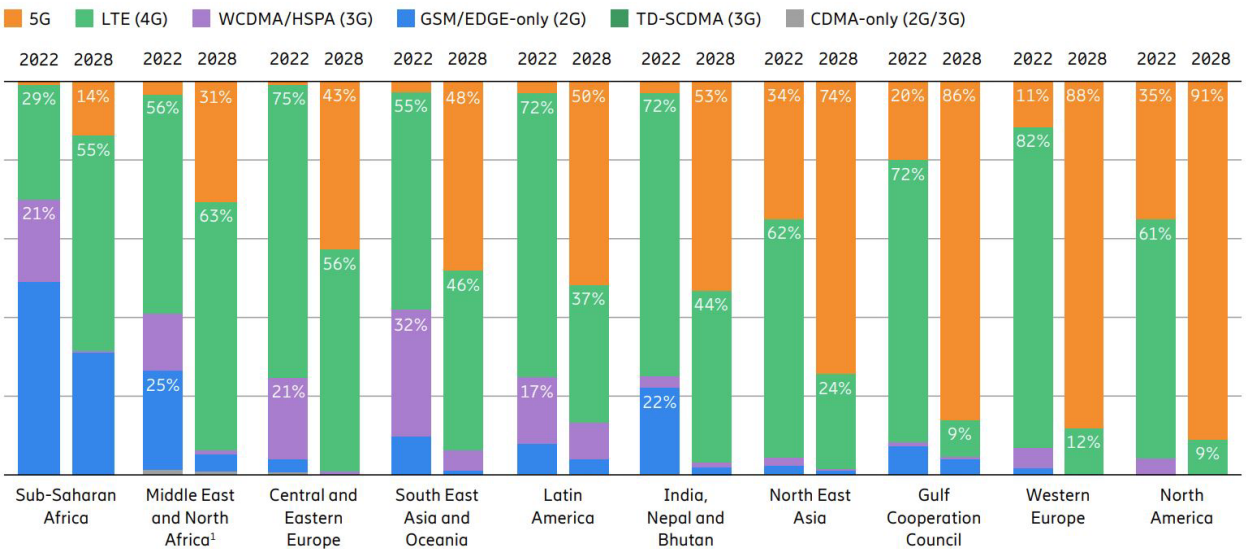
subscriptions are expected to account for the majority of users, far outpacing fixed broadband connections.

Figure 1: Mobile subscriptions by technology ($US billion)[5]



Analysts expect North America and the EU to continue to lead this growth, achieving near universal adoption accompanied by high penetration in China, India, MENA, and northeast Asia.[6] However, Sub-Saharan Africa, parts of the Middle East, Central and Eastern Europe, and South East Asia and Oceania are all expected to experience slower uptake of 5G subscriptions, resulting in less than half of all broadband subscriptions being the latest, fastest broadband technology by 2028. (See figure 2.) These under-connected areas are expected to experience rapid increases in economic growth, population, and trade. Realizing the potential growth opportunities enabled by digitally enabled trade requires a dedicated focus on ensuring far greater access to 5G networks. The Global South must balance domestic desires to support preferred telecommunications providers with the need to rapidly roll out 5G technologies. Overly prescriptive policy provisions for telecommunications services are likely to shut out foreign providers and undermine uptake and growth. Slow growth in 5G access would likely have substantial knock-on effects, as downstream users are unable to benefit from an enhanced telecommunications network and may miss out on trade in both goods and services.

Figure 2: Mobile subscriptions by region and technology[7]



Thus, bridging the digital divide between the Global North and South is not just a critical objective to supporting greater global socio-economic development but also key to facilitating global trade growth. The United Nations Conference on Trade and Development (UNCTAD) reported that e-commerce sales increased to $25.6 trillion globally in 2018, up 8 percent from 2017.[8] From e-files, blueprints, data-hosting systems, and software solutions to websites, email, music, and movies, electronic transmissions and the content and services they constitute are critical in powering today's global economy.[9] The global digital service economy also represents a critical growth opportunity for many developing countries. If a country has widespread access to adequate broadband, it is more likely to support a digital services economy for software development, accounting and auditing practices, transcription, and data and content moderation for global technology companies. Growth in a country's digital services sector provides an opportunity to support economic and employment growth that is both less carbon intensive than that provided by industrial or manufacturing sectors and in a manner that builds domestic technology expertise.

Countries and regions that fall behind in the development of cutting-edge data infrastructure are unlikely to be robust trading partners with highly connected and integrated digital economies. Should the Global South fail to take advantage of its current digital opportunity, a growing, if unfortunate, bifurcation between global technology leaders and laggards, including diminished trade, would likely occur. Yet, even within developing countries, access to and use of ICTs can have a dramatic effect on a firm's profitability, productivity, and size. Researchers have noted the connection between ICT-enabled firms in developing nations and their economic success, finding that those firms were twice as profitable and 65 percent more productive and increased employment more than did those developing-country firms that did not invest in ICTs.[10]

Greater use of digital tools and engagement in international e-commerce and digital trade unlocks more resources for investments in intangible assets including research and development (R&D), staff training and technical expertise, intellectual property, and branding by increasing market opportunities and firm revenue, leading to more innovation. According to the McKinsey Global Institute, intangible assets have more than doubled as a share of global revenue, from 5.5

to 13.1 percent since 2000.[11] In short, an open, tariff-free Internet leads to global economic growth, as it makes trade more accessible, dynamic, and innovative.

Big and small firms all rely on digital trade and data flows; however, micro, small, and medium-sized enterprises (MSMEs) are even more susceptible to these types of costs and barriers to digital trade. MSMEs can lack the size, resources, political capital, or management capabilities to navigate regulations among multiple jurisdictions. Their ability to engage in international trade depends on rules and tools that ensure easy, safe, and low-or no-cost customer and market identification, communications, transactions, and deliveries to people around the world. For example, in Mexico, 97.3 percent of firms are MSMEs and 2.7 percent are SMEs.[12] Further, MSMEs tend to rely on larger platforms to sell their goods and services (i.e., MercadoLibre, Amazon). Elsewhere, initiatives such as Amazon's "Made in Italy"—which has seen Italian product sales rise by 30 percent, with 45 percent sold as exports—would suffer from reduced sales and revenue opportunities. Access to a robust digital infrastructure that allows MSMEs to trade in both goods and services at a global scale opens up previously untapped markets. But facing trade obstructions, MSMEs will export and innovate less and be less likely to survive in a globalized trading world.

Empowering MSMEs to leverage the digital economy matters greatly, especially when a recent World Bank study conducted across 99 countries finds that SMEs represent the most-significant contributors to employment in developing nations, on average being responsible for over 66 percent of permanent full-time employment and 86 percent of new jobs created.[13] For instance, as Nicola Mawson of *IT Web* noted, if South Africa is to meet its government's target of creating 11 million new jobs by 2030, SMEs will have to play a key role—and for them, "ICT will be a critical enabler."[14] In summary, an open, accessible and tariff-free Internet supported by domestic and international ITC firms and know-how is the critical factor in determining whether a country can seize the economic growth benefits of the global digital economy or be left behind in an attempt to bolster domestic firms that are unlikely able compete.

THE PROMISE OF DIGITAL TECHNOLOGIES IN TRADE, SUSTAINABLE DEVELOPMENT, AND COMBATING CLIMATE CHANGE

Trade barriers that inhibit the realization of the potential of ICTs within both the Global North and South remain. These can be categorized into hardware-based barriers and data regulatory barriers that hinder both the flow of investment in ICT and national policies around data security and sharing, interoperability, and transparency. The WTO's Information Technology Agreement (ITA) has been one of the most successful plurilateral trade agreements of the last two decades. From its original 29 signatories to the 82 countries now a party to the agreement, the ITA provides a zero-in/zero-out tariff schedule for nearly $2 trillion in global trade in ICT products and components. As technologies continue to improve and entrepreneurs innovate, global plurilateral agreements ought to evolve with the inclusion of advanced ICT products, such as energy-efficient equipment for buildings and electrical transmission systems, smart meters, additive printing and manufacturing, advanced semiconductor products, 5G equipment, drones, and IoT-enabled devices such as heat pumps, refrigerators, and other household appliances that have the potential to reduce energy consumption and be responsive to demands from the electric grid. Research from the Information Technology and Innovation Foundation (ITIF) has found significant economic growth and revenue potential as a result of expanding the quantity of

exempted ICTs under the ITA. For example, developing countries, 10 years after an expansion of products covered by the ITA, often realize increased tax revenues (engendered from increased economic growth) that outstrip forgone tariff revenue, signaling significant potential gains from trade for both Global North and South.[15] For example, ITIF estimates Brazil's cumulative 10-year gross domestic product (GDP) growth attributable to ITA accession would reach nearly $20 billion, with the country able to recoup 123 percent of its forgone tariffs (due to increased tax revenue from enhanced economic growth).[16] Joining the ITA would also stimulate significant economic growth in Argentina ($1.3 billion in cumulative GDP growth over 10 years), Indonesia ($5.4 billion), and Kenya ($1.4 billion) to name just a few.[17] Economic research indicates that much of these gains are the result of productivity and innovation benefits at the firm level, which in turn spur industry-wide increases in economic growth.[18] Not only do broader economic gains flow from lowering trade barriers to ICTs, but there are also strong positive impacts on increasing education investments, spurring favorable business development, and supporting efficient legal institutions.[19] That is why industry groups from both developing and developed countries alike have called on the WTO to speed negotiations toward a third generation ITA (ITA-3) in order to significantly increase the number of technology products covered by the agreement.[20]

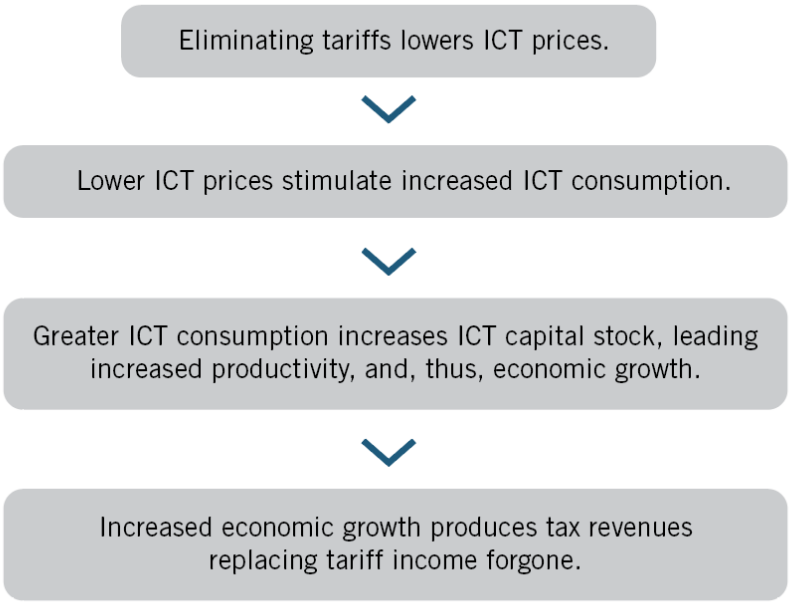
The ITA-3 proposes expanded categories of tariff-free energy-efficient and environmental technologies including battery storage, electrical panels and control systems, solar water heaters, smart gas, energy, electricity meters, and LEDs. Behind these advanced systems are semiconductors that facilitate the movement of not only data but also power. Semiconductors are critical to realizing continuous improvements in energy efficiency. For example, in 2010, data centers consumed 194 terawatt hours (TWh) of electricity, about 1 percent of global electricity consumption. Since then, the global installed base of servers has increased by 30 percent; compute instances have increased more than sixfold; data center Internet protocol traffic has increased by a factor of 11; and data center storage capacity has experienced a 25-fold increase.[21] However, over this time, greater storage-drive efficiencies and densities have reduced energy use by nearly 90 percent. Overall, the energy intensity of data centers has decreased about 20 percent annually since 2010.[22] Elsewhere, semiconductors enable solar panels to harvest up to 57 percent of power normally lost to real-world conditions such as clouds, dirt, and animal interference.[23]

Moreover, economists have found that demand for ICT products is price elastic, whereby ICT consumption rises by a factor greater than its price reduction. ITIF's model for estimating the economic impacts of ITA accession uses a price elasticity of 1.3 for ICT products based on research findings pioneered by Cette et al. in 2012.[24] The price elasticity for ICT demand allows one to estimate the annual growth in imports of ICT goods anticipated by eliminating tariffs on ITA-covered products, whereby a 1.0 percent decrease in ICT price (via removed tariffs) induces a 1.3 percent increase in consumption of those goods, with this heightened consumption further increasing the extent of a country's ICT capital stock.

Over time, increased ICT consumption and the resulting growth in a nation's ICT capital stock creates widespread positive externalities. A proliferation of ICT lets workers provide services more efficiently and businesses innovate their products and operations, raising overall productivity and economic growth. Leveraging Cardona et al.'s research, ITIF applied a growth factor suggesting that a 1 percent increase in a nation's net ICT capital stock generates a 0.06 percent increase in a nation's real GDP.[25] Multiplying a country's estimated annual net growth in ICT capital stock by

this growth factor provides an estimate of the GDP growth achievable by extending ITA coverage to more ICT products. For instance, analyzing the potential impact of countries joining the ITA-2 agreement (an expansion of the original ITA that went into effect in 2016) finds that, over a 10-year period, joining the ITA would bolster Argentina's economic growth by an estimated 1.52 percent; Pakistan's by 1.30 percent; Kenya's by 1.29 percent; and Cambodia's by 0.98 percent.[26] The following flow chart summarizes the analytical framework ITIF used to estimate the economic impacts of ITA accession for countries. (See figure 3.) [27]

Figure 3: ITIF's analytical framework modeling the benefits of ITA accession



Some have raised concerns that greater automation and digitalization in economies may displace certain workers. Yet, while skill-biased technological change will impact some workers—necessitating that countries have effective workforce retraining and reskilling programs in place—the reality on net is that technological change tends to increase, not decrease, employment opportunities over time, while playing a key role in bolstering a nations' productivity and economic growth potential.[28] That's why the Organization for Economic Cooperation and Development (OECD) found that "historically, the income-generating effects of new technologies have proved more powerful than the labor-displacing effects: technological progress has been accompanied not only by higher output and productivity, but also by higher overall employment."[29] Developing-world policymakers need to embrace, not fear, the power of digital technologies to positively transform their societies, and not burden domestic, or foreign, ICT enterprises with digital trade barriers (e.g., forced data localization policies). Rather, policymakers should take advantage of next-generation ICT industries and work to attract firms through the development of a competitive investment and policy environment for foreign firms.

Smart Manufacturing

Smart manufacturing—the application of ICT (such as industrial robots, 3D printers, Internet of Things, AI, big data, etc.) to every facet of modern manufacturing—is transforming how products

are designed, fabricated, used, operated, serviced post-sale, and recycled, just as it is transforming the operations, processes, and energy footprint of factories and the management of manufacturing supply chains.[30] The McKinsey Global Institute estimated that this advent of manufacturing digitalization may increase global manufacturing productivity by 10 to 25 percent, with the potential to create as much as $1.8 trillion in new value per year across the world's factories by 2025.[31] This accords reasonably well with a General Electric report, "Industrial Internet: Pushing the Boundaries of Minds and Machines," which estimates the Industrial Internet could boost annual U.S. productivity growth by 1 to 1.5 percentage points and add $10 trillion to $15 trillion to global GDP over the next 20 years.[32] Moreover, the widespread adoption of smart manufacturing could result in a 25 percent improvement in energy efficiency, 25 percent reduction in safety accidents, and a 40 percent reduction in water usage, along with substantial decreases in material waste.[33]

The ITA would promote global manufacturing digitalization by bringing more products, such as industrial robots and 3D printers, under ITA coverage. Adding up global imports in 2020 for both the components and end products representing industrial robots and 3D printers proposed for ITA-3 inclusion shows the total import value for such products exceeds $70 billion.[34]

3D Printing

Additive manufacturing (i.e., 3D printing) refers to a manufacturing process in which successive layers of material are built up to synthesize a three-dimensional solid object composed in a digital file, with each layer a thinly sliced horizontal cross-section of the eventual object.[35] 3D printing enables fundamentally new shapes and mechanical linkages that simply cannot be achieved through traditional subtractive manufacturing techniques, while offering many applications for improving speed and efficiency, reducing errors, and eliminating as much as 70 percent of waste generated from traditional subtractive manufacturing processes.[36]

The current $12.6 billion global marketplace for 3D printers is expected to grow to $62.8 billion by 2028, at a 21 percent compound annual growth rate (CAGR).[37] Especially as 3D printing becomes cost competitive across a range of materials—from plastic to metals such as titanium—it heralds the potential to transform manufacturing by "democratizing it" (i.e., making it more globally achievable), enabling the production of goods closer to final markets, and permitting mass customization (i.e., production lot sizes of one, as opposed to one million). A report from ING Bank estimates that the rise of 3D printing could see the share of 3D printed goods in global manufacturing rise to 5 percent over the next two decades—a significant increase from the current share of 0.1 percent—and the greater extent of manufacturing closer to final consumption would at most decrease global trade flows by a modest rate of 0.2 percentage points less trade growth per year.[38] Thus, a growing market for 3D printing would bring positive economic benefits to importing countries but would not necessarily reduce trade flows. In fact, digital manufacturing technologies such as 3D printing could cause international trade flows to increase by enabling the creation of new and innovative products for export. For instance, a 2019 study by the World Bank's Caroline Freund, Alen Mulabdic, and Michele Ruta finds that the use of 3D printing in the hearing aid industry increased trade in that field by 58 percent over nearly a decade compared with what would otherwise have been expected. As with industrial robots, 3D printers represent a device ripe for ITA-3 inclusion, and the manufacturers that have access to the lowest-cost, most-innovative 3D printers will find themselves at a competitive advantage.

Drones for Commercial and Personal Use

The global unmanned aerial vehicle (UAV) marketplace stands at $27.4 billion and is projected to reach $58.4 billion by 2026, at a 16.4 percent CAGR. But far from being playful toys, drones represent a productivity-enhancing tool that is already delivering beneficial impacts across a range of industries, from agriculture to energy to medicine.

The United Nations Food and Agricultural Organization projected that global food production will need to increase by 70 percent by 2050 to meet the world's food needs.[39] Precision agriculture leverages a variety of ICTs including GPS-enabled UAVs, Internet of Things, AI, and big data to enable targeted interventions designed to enhance agricultural output and quality.[40] Indeed, UAVs are increasingly enabling a sustainable agriculture-management approach that allows agronomists, agricultural engineers, and farmers to help streamline their operations, using robust data analytics to gain effective insights into their crops. For instance, drones can facilitate the monitoring of large areas of farmland, considering factors such as slope and elevation, to identify the most suitable seeding prescriptions or to identify regions where irrigation needs to be provided, fertilizer applied, or crops pruned.[41] Drones are much more efficient and cheaper than the satellites or manned aircraft traditionally used to monitor agriculture, and can produce high-quality imagery over a wide expanse of terrain more safely, efficiently, and regularly. As such, analysts expect the agriculture drone market alone to reach $32.4 billion by 2025, indicating a growing global technology platform ripe for ITA inclusion.

Drones have also proven instrumental in the real-time delivery of urgent medical supplies. In October 2016, the start-up Zipline partnered with the Rwandan government to facilitate the real-time delivery of urgent medical supplies, such as blood and vaccines, to patients in remote locations via drones (named "Zips").[42] The Zips, which have a 75-kilometer service radius and can carry 1.5 kilograms of payload per sortie and operate in most weather conditions, seamlessly fly over treacherous terrain in as little as 30 minutes—a trip that traditionally took as much as four hours to cover in a vehicle.[43] By May 2017, Zipline averaged more than 20 weekly deliveries, providing near-real-time access to life-saving medical supplies for more than 8 million Rwandans, or nearly two-thirds of the country's total population of 12 million.[44]

SUPPORTING DIGITAL TECHNOLOGIES IN THE GLOBAL TRADING REGIME

The global trade regime can be reformed to accommodate digital technologies and achieve efficiencies and economic growth while reducing global emissions and helping developing economies transition from carbon-intensive, export-oriented growth to digital trade and development. Revisions to both national and multilateral trade policy are critical to realizing the potential benefits. Speeding adoption of cross-border trade documents in electronic form alongside verification, tracking, and signatures is a near-term policy win that all nations can take to facilitate greater trade.[45] While G7 nations have agreed among themselves to advance the Model Law on Electronic Transferable Records, a UN Commission on International Trade Law-supported framework, growth, and mutual recognition among trading partners for how to recognize and trust electronic trade documents is still in its infancy.

Data interoperability and misalignment regarding data standards and privacy between trading partners can make trade harder and shut countries out of global trade. While regional trade agreements such as the United States-Mexico-Canada Agreement include uniform data taxonomy and interoperability requirements, many multi- and plurilateral trade agreements still treat data

flow issues as secondary concerns to larger issues of market access. Alongside growing national data localization requirements that can hamper and undermine trust between trading partners, cross-border data concerns are likely to undermine the nondiscriminatory treatment of traded products.

It is also imperative that nations maintain the WTO E-commerce customs duty moratorium. Since 1998, WTO member countries have periodically agreed to renew the moratorium every two years, motivated by recognizing that the growing global digital economy should be kept tariff-free.[46] Keeping the moratorium in place fosters certainty and predictability for both domestic digital economic activity and global production networks and supply chains. It is unclear whether it's even technically feasible to administer a fair, predictable, and efficient system to identify and collect digital duties.[47] Either way, any effort to collect customs on every digital transaction would disrupt the seamless global flow of information and data via software, digital content, and any number of other Internet-based processes, which would inevitably impact broader economic output as well as the levels of global productivity and innovation.[48]

Applying customs duties on electronic transactions would have multiple negative repercussions for the global economy. Countries impacted by digital levies would retaliate with tit-for-tat measures, thus undermining digital trade and e-commerce. By preventing the duty-free flow of information and digital goods and services, governments charging such duties would only increase their own industries' costs of accessing a wide array of technologies and data sources critical to growth and innovation, business operations, and the transfer of technology.[49] Services affected would include the Philippines' National Telehealth Center, which, alongside American telecommunications service provider Qualcomm, has collected electronic medical records to track patient data, generate reports, and record outbreaks.[50] Moreover, introducing such customs duties would only harm countries' domestic exporters and jobs supported in those firms. Under this scenario, tech clusters such as Argentina's Polo IT Buenos Aires, Kenya's Silicon Savannah, and Nigeria's Yabacon Valley would be damaged.

Global trading partners and the WTO can support trade in digital technologies that will further environmental and sustainable development goals. By reinvigorating the WTO Environmental Goods Agreement (EGA) negotiations among 18 participants, members can reduce barriers to trade and increase deployment of energy-saving technologies, as long as key stumbling blocks to a deal can be resolved. While disagreements around classification of environmental goods remains, countries should explicitly recognize the role of digital technologies, including those previously detailed, as critical products covered in any final negotiated EGA.[51] While developing nations have largely stayed out of the EGA negotiations, they would likely benefit the most from increased global trade and access to clean energy products, services, and supportive digital technologies. Negotiators need only look at the success of the ITA, and the push to expand it, as an indication of how successful an EGA among the world's developed and developing nations could be. Ultimately, what is needed to reinvigorate the EGA negotiations is for participants to see tackling trade barriers not as an end in and of itself, but rather as a means to continuing to raise global standards of living, using Earth's resources in an environmentally sound and efficient manner, and growing global innovation through increased trade channels.

CONCLUSION

Digital technologies have improved global economic growth and performance, while also lifting standards of living. The challenges of the 21st century require the application of novel technologies supported by the unencumbered flow of data across borders and interoperability of processes and standards. Global trade rules sit at the center of facilitating greater adoption, consumption, and innovation of digital technologies, which can advance development goals by increasing trading opportunities for small and large firms alike. Yet, this potential may remain underutilized should Global North and Global South trading partners not agree to reforms and updates to global trade rules. The WTO and partner nations should not miss the opportunity to reinvigorate the trade discussion for the digital technologies that have proven to be a vital part in tackling climate change and improving development opportunities.

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About the Authors

Stephen Ezell is vice president for global innovation policy at the Information Technology and Innovation Foundation (ITIF) and director of ITIF's Center for Life Sciences Innovation. He also leads the Global Trade and Innovation Policy Alliance. His areas of expertise include science and technology policy, international competitiveness, trade, and manufacturing.

Stefan Koester (@skoester8) is a senior policy analyst at ITIF's Center for Clean Energy Innovation. He has a background in energy and environmental policy and has worked on carbon pricing, corporate sustainability, energy efficiency, electricity markets, and issues related to the electric power sector and renewable energy at the state, regional, and federal levels.

About ITIF

The Information Technology and Innovation Foundation (ITIF) is an independent 501(c)(3) nonprofit, nonpartisan research and educational institute that has been recognized repeatedly as the world's leading think tank for science and technology policy. Its mission is to formulate, evaluate, and promote policy solutions that accelerate innovation and boost productivity to spur growth, opportunity, and progress. For more information, visit itif.org/about.

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