Trade Rules as Regulatory Tools for Inclusive Innovation: Connecting Digital Trade and Clean Technology to Achieve Sustainable Development Goals

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Working Paper 27
April 2024

openAIR
AFRICAN INNOVATION RESEARCH

Contents

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Abstract

This paper explores the regulatory role of trade agencies and institutions, such as the African Continental Free Trade Area (AfCFTA), in supporting innovation for sustainable, inclusive economies. The paper explores the interactions among different types of trade agreements (global, regional, bilateral) and assesses the mechanisms and capacities essential for ensuring that global and African continental economic governance supports Sustainable Development Goals. In this exploration, two key areas are identified and connected as emerging issues in international trade. First, inclusion in the 21st century economy requires inclusion in the digital economy. This paper scopes out research questions related to international digital trade, global e-commerce, and the regulation of cross-border data flows. Second, sustainable economies require widespread diffusion of clean, i.e., low greenhouse gas-emitting, technologies. Thus, this paper also addresses questions around regulatory regimes that promote or hinder innovations towards greener economies and low-carbon production and consumption. We identify the digitisation of genetic resources, from food crops to viruses, as a common denominator across frameworks governing both digital trade and clean technology. Connecting issues of digital and ecological innovation provides paths for future research into how trade rules contribute to sustainable, inclusive economies.

Keywords

international trade, digital trade, data governance, clean technology, innovation, sustainability, inclusion, Sustainable Development Goals

Acknowledgements

This working paper was developed under the auspices of the Open African Innovation Research (Open AIR) network, a partnership among the University of Ottawa, the University of Cape Town, the University of Johannesburg, Strathmore University in Nairobi, the Nigerian Institute of Advanced Legal Studies, and The American University in Cairo. The paper draws on findings from an Open AIR scoping study, supported by a grant from the International Development Research Centre (IDRC), which was published in late 2022 as *Regulation for Innovation: Conceptualising a Development Research Agenda for Inclusive and Sustainable Economies in Lower-Income Countries* (de Beer et al., 2022). This work is based on research supported in part by the National Research Foundation (NRF) of South Africa (Grant number: 115716). The authors acknowledge the contribution of Research Assistant Ngonidzaishe Gotora at the University of Cape Town.

I. Introduction

This paper examines trade rules as regulatory tools for sustainable and inclusive innovation. To do so, it identifies the under-explored intersections of two key areas—digital trade and clean technology innovation—as emerging issues. The core content of this paper was prepared as a component of a scoping study conducted for the International Development Research Centre (IDRC) in 2022 (de Beer et al., 2022).

Creating *inclusive* economies in the 21st century requires recognition of the centrality of data, the digital economy, and e-commerce to innovation. Creating *sustainable* economies can only be done with widespread diffusion of "clean" technologies throughout low- and middle-income countries. While those topics may, at first glance, seem unrelated, a closer look shows they are connected by interwoven regulatory threads. Trade law and policy—as key sets regulatory mechanisms in networked global knowledge governance—impact both *inclusive* digital innovation and *sustainable* clean innovation.

Accordingly, in the context of more sustainable, equitable, and inclusive economies with expanded, lasting, and high-quality economic opportunities for women and youth (IDRC, 2021a), this paper's enquiry is best summarised as: How does trade interact with and impact the regulation of innovation and, ultimately, achievement of Sustainable Development Goals (SDGs)? While a case can be made for the relevance of all 17 SDGs to this question and the chapter's focus area, the following SDGs are the most relevant: 1 (no poverty), 2 (food security), 3 (health and well-being), 5 (gender equality), 8 (decent work and economic growth), 10 (reduced inequalities) 13 (climate action), 14 (life below water), and 15 (life on land). health and well-being (SDG 3). Accordingly, the regulatory issues set out in this chapter will pertain mainly to these SDGs.

Section II of this paper maps out some of the institutional and regulatory stakeholders relevant to these issues. This section also teases out from recent literature the main aspects of such regulation as they pertain to the creation and facilitation of sustainable, inclusive economies at national, regional and international levels.

Regulating an *inclusive* digital economy via trade lies at the intersection of innovation, intellectual property and data governance, and it is a priority in global contexts (Lippoldt, 2022)—as evidenced by ongoing WTO adaptation to the digital (Smeets, 2021) and the e-commerce negotiations that are underway (WTO, 2019). Digital economy regulation is also a priority within regional trading blocs such as the African Continental Free Trade Area (AfCFTA) (Stuart, 2022). Based on the global commitment to the SDGs, it should be a common objective of most states to attain inclusive digital innovation via appropriate regulation. Section III of the paper elaborates on these issues.

Regulating a *sustainable* clean economy via trade lies at the intersection of innovation, intellectual property and climate action. International negotiations and agreements to reduce greenhouse gas emissions are deeply affected by IP issues (Consilvio, 2011; Rimmer, 2011, 2018; Sarnoff, 2016). While IP offers incentives to invent clean technologies, appropriate IP rules embedded in international economic and trade law are essential for adoption and diffusion (Menell & Tran, 2014; Suzuki, 2015). After seeing policy debates around IP and access to COVID-19 vaccines play out, clean technology transfer issues are now being discussed in a different light than they were previously (Sarnoff, 2020). We identify the digitisation of genetic resources, from food crops to viruses—which increasingly drives science, technology, and innovation for development—as a common denominator amongst new rules governing both digital trade and clean technology. Section IV elaborates on these issues.

Section V summarises connections amongst trade rules for inclusive digital and ecological innovation through SDG-related outcomes in particular fields, specifically health, agriculture, and climate action. Examining connections amongst these areas opens up new avenues for original research exploring how trade rules contribute to sustainable, inclusive economies.

II. Literature Review and Institutional, Regulatory and Stakeholder Mapping

The literature and state of knowledge on IP, trade and innovation are considered here with a view to identifying the key issues and research directions relevant to sketching a research agenda to inform ongoing and future work in the field. Much of the literature referred to in this paper, and in our series of related Open AIR Working Papers, has sought to assess the formal positions, arrangements, and undertakings encapsulated in trade agreements which regulate digital trade. There is a wide range of such agreements, including regional trade agreements (RTAs, including the so-called "mega-RTAs"), free trade agreements (FTAs), and bilateral trade agreements (BTAs). Several of them include chapters on digital trade, as will be highlighted below. We consider trade agreements across the globe, but concentrate analysis "substantially in Sub-Saharan Africa", in keeping with IDRC's Strategy 2030 (IDRC, 2021a, p. 10), so as to "focus where needs are greatest around the world". The African Union's AfCFTA, as an evolving agreement with phase II negotiations currently underway, serves as a key example for several points made in this paper (UNCTAD, 2022).

Our literature survey, which aimed to be illustrative and not exhaustive, was a collaborative keyword-driven search of academic databases and online repositories. Conventional academic platforms included published databases of scholarly works, peer-reviewed articles, books, etc. We also paid specific attention to grey or use-based literature generated by the key institutions working in this focus area. Supplementary review methods included footnote-trailing and citation-chasing. Additionally, some literature was sourced via referrals during our consultations.

The keywords and phrases for the literature searching this focus area, in line with the identified key areas outlined above, were combinations of the following words and terms: trade, trade agreement, regulation, data, innovation, intellectual property (IP), climate change, health, agriculture, food security, secrecy, artificial intelligence (AI), regulation, data localisation. The literature identified can be classified as follows:

- *Analyses of regulatory approaches for agreements under development*: This literature presents arguments for certain principles to underpin the substantive provisions of trade agreements. Such literature is aimed at agreements that are being formulated—such as the Transatlantic Trade and Investment Partnership (Krajewski & Hoffmann, 2016) and the AfCFTA (Ncube et al., 2019)—so its

purpose is to inform and guide norm-setting as well as the processes used in the norm-setting exercise. Therefore, the literature posits legal positions and process/procedural aspects.

- *Analyses of provisions of existing trade agreements*: This literature undertakes ex-post facto reviews of agreements to identify opportunities and challenges. Where shortcomings and gaps are identified, the literature presents possible solutions (Adinolfi, 2020). Works also reflect on the strategic significance and opportunity costs of such agreements (Amadichukwu, 2021; Narayanan & Khorana, 2017).
- *Analyses of the impact of the agreements on lives and livelihoods*. Such literature probes, for example, the extent to which an agreement supports attainment of SDGs.
- *Issue-specific analysis*: Examples include literature critiquing trade approaches to data localisation, or examining the impact of trade agreement provisions on access to medicines and health (Manu, 2015).
- *Comparative analysis of several agreements to identify commonalities and divergences*.
- *Infrastructure- and capabilities-focused literature*: This literature assesses the mechanisms and capacities essential for ensuring global economic governance that supports the SDGs, especially in respect of environmental sustainability, "clean" innovation, and technology transfer.

The literature also varies in terms of its target audience. For example, some items are aimed at a technical audience, some for researchers and the scholarly community, and some for policymakers and trade negotiators.

A high-level, non-exhaustive review of this broad range of literature found that the knowledge and research on the issues surveyed is in a state of flux, and constantly growing in response to both technological developments and evolving trade relations between states. For example, as states continue to enter into mega-RTAs seeking to account for the latest issues, the literature follows. And where the issues are contested, the literature evidences divergent views. For example, scholars' and commentators' understandings of what constitutes regulation are not universal. Meanwhile, there is much that remains unknown, and even where at first glance it appears that there is convergence, closer analysis often uncovers divergence.

We also conducted an institutional, regulatory and stakeholder mapping, and the findings from the mapping inform this paper. The elements identified in the mapping included: relevant legal/regulatory/policy instruments; relevant regulatory agencies, departments, intergovernmental organisations; and relevant non-governmental organisations, think tanks, other entities. The identified entities interact regularly in norm-setting fora, at national level between different branches and agencies of government on innovation and trade, or international level between states in the context of global, regional or bilateral trade agreements.

Amongst the newest forums of low- and middle-income countries (LMICs) at the intersection of trade and innovation is AfCFTA. Through the AfCFTA Agreement and ongoing negotiations on its protocols, AU Member States are creating "the largest free trade area in the world measured by the number of countries participating [and encompassing] 1.3 billion people across 55 countries with a combined gross domestic product (GDP) valued at US$3.4 trillion" (World Bank, 2020). This is the outcome of decades of policy positioning and planning by the AU within its successive developmental blueprints, the latest iteration of which is Agenda 2063 (AU, 2015). The AfCFTA is a special project of Agenda 2063. It is a massive norm-setting exercise grounded and founded in the AfCFTA Agreement, which came into force on 30 May 2019 and has been signed by 54 AU Member States (as of June 2022), with 43 ratifications (as of July 2022) (AU, 2018). The AfCFTA Agreement currently has the following protocols, which form, along with their annexes and appendices, an integral part of the Agreement:

- Protocol on Trade in Goods;
- Protocol on Trade in Services; and

- Protocol on Rules and Procedures of the Settlement of Disputes.
- Protocol on Intellectual Property Rights;
- Protocol on Investment;
- Protocol on Competition Policy;
- Protocol on Digital Trade (formerly E-Commerce); and
- Protocol on Women and Youth in Trade.

The first three protocols were concluded in the first round of negotiations, and the rest were concluded in the second phase of the negotiations. The outcomes of the Phase II negotiations were critically important because they completed the regulatory framework for enablement of trade in the AfCFTA. The original deadline for the completion of these negotiations was December 2020 (AU Assembly, 2020a), but this was pushed forward to 31 December 2021 due to restrictions on meetings during the period 2019–2021. When that latter deadline was not met, a deadline of 30 September 2022 was set (AU Assembly, 2020b).

Open AIR researchers began work to support regional integration of the continent's IP systems years before the AfCFTA and its protocols were adopted. (Ncube et al., 2017; 2019). Early conceptualisation of opportunities for IP-related aspects of African trade focused on both process and substance issues to create fair and balance IP systems. It was recommended that an agreement on IP must overcome challenges on three level, including the existence of multiple sub-regional organisations, the proliferation of IP matters in regional economic communities (RECs), and misalignment with the contintent's overall development agenda.

The protocols on Intellectual Property Rights, Investment and Competition Policy were adopted in February 2023 at the 36th Ordinary Session of the AU Assembly (Heads of State and Government) and the protocols on Digital Trade and Women and Youth in Trade were adopted in February 2024 at the 37th Ordinary Session of the AU Assembly (Heads of State and Government). Another important development was the creation of the AfCFTA Secretariat, which began its work in August 2020 and rapidly had to consolidate, and in some cases reconceptualise, previous work done on the negotiations by other organs and sectors of the AU.

Following their adoption by the AU, the protocols form part of the AfCFTA Agreement "single undertaking" and will be binding on signatory AU Member States once the necessary ratifications are achieved (Art. 8 of AfCFTA Agreement). The necessary subsidiary instruments (known as Annexes) to the protocols will be negotiated. For instance, under the Protocol on Intellectual Property Rights a series of Annexes on the different Intellectual Property Rights such as patents, designs and copyright will be developed. Once these protocols acquire binding force, the next hurdle will be their implementation by AU Member States.

III. Inclusion: Trade Regulation for Inclusive Digital Economies

The IDRC Strategy 2030 (2021a, p. 18) emphasises that the desired general outcome is that "people in developing countries benefit from more sustainable, equitable, and inclusive economies with expanded, lasting, and high-quality economic opportunities for women and youth". This outcome is articulated in mega-RTAs, for instance the AfCFTA Agreement has a particular emphasis on the informal sector, women and youth (Ncube, 2022). At the time of our scoping study, the IDRC was already supporting a project on Driving a Gender-inclusive African Continental Free Trade Agreement (IDRC, n.d.-a), and there are numerous additional issues that can be considered under the umbrella of IDRC's Sustainable, Inclusive Economies programme. As stated above, we identified the intersections between trade, data, intellectual property and

both *inclusive digital innovation* and *sustainable clean innovation* as the sources of cutting-edge regulatory issues that will need to be the focus of research for a considerable period of time.

A. Data as a Resource/Opportunity and Constraint/Challenge

The digital economy and its regulation are inextricably linked to data because, as rightly noted by the Secretary-General of the United Nations, António Guterres, in the foreword to the UNCTAD *Digital Economy Report 2021*:

> A key challenge is how to govern and harness the surge in digital data for the global good [...]. Data have become a key strategic asset for the creation of both private and social value. How these data are handled will greatly affect our ability to achieve the Sustainable Development Goals. Determining what is the best way forward will be difficult but necessary. Data are multidimensional, and their use has implications not just for trade and economic development but also for human rights, peace and security. (UNCTAD, 2021, p. iv)

The fundamental challenge here is who has access to, and the ability to regulate, data. States with limited resources have constrained access to data, which means their regulatory ambit is similarly limited and, by extension, so is their capacity to harness data and the digital economy for the public good. Recognition of these constraints has, correctly, motivated national, regional and global digital transformation efforts, and spurred significant research and literature on the topic (Ciuriak & Ptashkina, 2018). These efforts' key goal is to leverage the opportunities that data presents by transforming the status quo.

An example of such initiatives at regional level is the African Union's Digital Transformation Strategy for Africa (2020-2030), which expressly states that "Digital Transformation is a driving force for innovative, inclusive and sustainable growth. Innovations and digitalization are stimulating job creation and contributing to addressing poverty, reducing inequality, facilitating the delivery of goods and services, and contributing to the achievement of Agenda 2063 and the Sustainable Development Goals"(AU, 2020, p. 1). Consequently, the strategy's main objective is "to harness digital technologies and innovation to transform African societies and economies to promote Africa's integration, generate inclusive economic growth, stimulate job creation, break the digital divide, and eradicate poverty for the continent's socio-economic development and ensure Africa's ownership of modern tools of digital management"(AU, 2020, p. 2).

The European Commission also has a digital strategy, which aims for a "climate neutral Europe by 2050" (EC, n.d.). Being set in a more resourced environment, the EC strategy largely assumes the existence of digital transformation (to overcome significant challenges) and focuses on leveraging opportunities with emphasis on climate change. Its approach has been considered in some of the literature. Looking at these African and European approaches together support makes clear that data and the digital economy are critical issues regardless of socio-economic context.

B. Digital Trade, Data and Innovation

Another key question is how the regulation of trade in data within the digital economy impacts innovation, and by extension development and the achievement of the SDGs. For example, the regulation of digital trade, typically included in trade agreement provisions, invokes issues of:

- regulation of big data;
- privacy/protection of personal data flows and developmental aspects of cross-border data flows (UNCTAD, 2016); and
- regulation of AI, including IP protection of AI's outputs and access-related IP tools such as exceptions and limitations.

A fundamental gateway issue is access to data and the uses that can then be made of the data for innovation and follow-on trade (Burri, 2021). For instance, AI's reliance on data raises questions about the regulation of data (Gervais, 2021; Seuba, 2021; Yakovleva & van Hoboken, 2021) and the treatment of the topic in trade agreements (Goldfarb & Trefler, 2019).

A significant aspect of data governance relates to "the free flow of data, the adoption of open data regimes, and cyber security" (Hlomani & Ncube, 2022, p. 2). Hence the growing body of research on cross-border data flows, data localisation laws, open data, data privacy, and data security (UNCTAD, 2016). The IDRC is already supporting work in some of these areas through its Open Data for Development (OD4D) programme, which in its third phase is focused on improving gender equality and inclusion; good governance; and economic growth (Davies et al., 2019; IDRC, n.d.-b).

Leveraging data for development brings to the fore contemporary IP regulatory puzzles on facilitating access through text and data mining. Much work is being done, and will continue to be done, on exceptions and limitations that enable TDM. An instance of such research is the consideration of TDM exceptions for scientific research and other purposes (Geiger et al., 2018; Margoni & Kretschmer, 2022).

Several trade agreements include efforts to facilitate and enhance digital trade integration (Mitchell & Mishra, 2020). E-commerce chapters in agreements such as the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTTP), the EU-Japan Economic Partnership Agreement, and the Canada-United States-Mexico Agreement (CUSMA) have assessed in terms of their practical implications on issues from labor (McCann, n.d.) to IP (de Beer, 2020a). AfCFTA Phase II negotiations engaged some of these aspects in the context of the aforementioned Protocol on Digital Trade, which needs to be informed by lessons learnt from other trade agreements (Banga et al., 2021) and, based on recent work at the UN Economic Commission for Africa (ECA), needs to factor in a human rights perspective (UN ECA, 2019).

There is evidence in the literature that effective regulation can enhance the benefits reaped from digital trade, by rendering more sustainable and inclusive outcomes (Joubert, 2021). This entails a focus on marginalised constituents such as women, youth, the informal sector, and small-scale farmers, and consideration of the full range of digital trade modalities, including, for example, fintech (Musewe & Hiebert, 2022).

IV. Sustainability: Trade Regulation for Sustainable, Clean Economies

A. Trade, Climate Change and Innovation

Trade agreements typically include climate change actions (Dent, 2021) or environment- related provisions (Berger et al., 2020). The AfCFTA Agreement, for example, includes biodiversity provisions (Benson & Judd, 2021). Climate action is major, topical issue that has been the focus of research for several years and will continue to occupy a pole position on the research agenda as climate change adaptation and mitigation remain critical priorities. The IP dimension is a strong and fundamental one in development of clean technology innovations, due to the IP protection that is extended to related technologies (Kansal, 2021). The impact of such protection on further innovation is a core consideration addressed in the literature, which posits that it can be both an incentive and a hinderance/impediment, and that the existence of IP rights over climate technologies serves as an indicator/measure (albeit imperfect) of innovation (de Beer, 2020b). Knowledge synthesis work on intersections between IP and clean tech innovation is ongoing (de Beer et al., 2022).

Illustrative topics canvassed by the peer-reviewed and use-oriented literature surveyed so far include work on: trade, climate change and innovation (e.g. Rimmer, 2020); clean technology innovation (e.g. Lane, 2009); IP, cooperation and clean technology (e.g. Xiang, 2019); and IP, renewable energy and climate change (e.g. Jones, 2022).

Whilst this is a broad range of scholarship, there are some gaps. Based on preliminary assessments, the literature, written mostly by experts and technicians, does not fully represent the views of persons whose lives are directly impacted by the technologies and climate action, raising the concern that policies, regulations and trade agreements may not adequately factor in their circumstances. More research is, thus, needed on the intersection between human rights, clean technology and IP, and more research is needed on the intersection between IP rights, gender and clean technologies.

There is also a clear data dimension to the trade issues intersecting IP and clean tech transfer. Increasingly, control over and access to data are driving clean innovation. The links are most obvious in respect of environmental data, including meteorological, hydrological, soil microbial, crop yield, and similar data.

Understanding these data dimensions segues into discussion of two development goals impacted by trade: food security (SDG 2) and health and well-being (SDG 3). Our scoping review suggests that these two "sustainability" topics are, in turn, closely connected with another cluster of SDGs related to climate action and biodiversity (SDGs 13, 14 and 15). The common denominator is the digitisation of genetic resources—from food crops to viruses—that increasingly drives science, technology, and innovation for development.

B. Digital Genetic Resources Driving Environment, Food, and Health Science

Trade, Data, and IP: Impacts on Agriculture

Trade agreements serve as powerful tools to enhance trade in agricultural commodities (Falsetti et al., 2022), and the manner in which these agreements regulate agriculture is receiving increasing scholarly scrutiny (Tripp et al., 2006) and policy attention (FAO, 2017). At the same time, development outcomes related to the environment and agriculture are nearly inseparable. Network governance of innovation in agriculture is, in many ways, deeply intertwined with environmental policy, rural economic development, and energy supply (de Beer, 2016a). International trade law around biofuels has been one of the major regulatory and policy issues of the past decade (de Beer & Smyth, 2012), following on from international trade-related regulatory challenges around genetically modified organisms that dominated policy discourse in the last part of the 20th century (Cordonier Segger et al., 2013; Kakooza, 2018; Zarrilli, 2005).

The emerging major trade-related regulatory challenges for sustainable agriculture, our scoping suggests, relate to digital and data-driven agriculture. Technological innovation has led to the widespread uptake of what is variously called "precision agriculture" or "smart farming" driven by big data (Bronson & Knezevic, 2016). Published reviews of literature in this field are begin to emerge, identifying research gaps and priorities (Foster et al., 2021; Navarro et al., 2020; Wolfert et al., 2017).

It is not, however, only the "downstream" or "on farm" use of data that is triggering regulatory challenges. At least as important for science, technology, and innovation are the upstream "dematerialisation" and digitisation of plant genetic resources for food and agriculture. The generation of, and control over, data on-farm, and the dematerialisation of genetic resources for upstream R&D and plant breeding, are two sides of the same coin—because without appropriate regulation, big data in both domains will likely lead to increased marginalisation of farmers and exacerbate inequity (de Beer et al., 2023). In the context of plant genetic resources for food and agriculture, the international regulatory conversation around "digital sequence information" (DSI) is coalescing around multilateral or hybrid governance approaches (Hartman Scholz et al., 2022).

More generally, the impact of big data on agriculture, trade and food security is a critically important subject with a clear linkage to SDG 2 (zero hunger). The IP linkage is also very evident and important in respect of agricultural big data, and trade secrets, patents and plant variety rights (PVRs) are all highly relevant to agricultural value chains (Adebanjo, 2020). Ownership of "open" data is a major issue with many unresolved implications (de Beer, 2016b). Preserving a role for, and facilitating full engagement, in trade by small-scale farmers is a key concern. For example, at the Food and Agriculture Organisation (FAO), work on access and benefit-sharing and digital sequencing clearly implicates plant breeders' rights (FAO, 2021). Consequently, there is a growing body of literature on this dimension (Aubry, 2019; Wynberg et al., 2021), including work directed at policymakers (Karger et al., 2020).

Trade, Data, and IP: Impacts on Health

The intersection between health and intellectual property is an entrenched area of study that considers many dimensions, including human rights and the impact of including health-related IP provisions in trade agreements (Akonumbo, 2022; Barlow et al., 2017; Ruxin, 2010; Westerhaus & Castro, 2006). Technological advances and big data are making their mark on health technologies in a variety of ways. Examples include data-driven systems that trace infections and remote delivery of medical advice through apps, and critical assessment and monitoring functions are now increasingly reliant on data-intensive technologies. For example, monitoring viral loads in wastewater has proven to be a powerful tool for monitoring and evaluating the spread of COVID-19 through populations.

Furthermore, vaccine, therapeutic and diagnostic innovations can be enhanced by access to data. Hence the South Africa–India TRIPS waiver proposal included trade secrets and test data exclusivity. The resultant WTO declaration of June 2022 excludes these elements (WTO, 2022b), but their inclusion in the proposal is instructive as to the extent of their importance to innovation. Test data access remains a critical issue, particularly given that the policy space that states have to work with remains subject to narrowing through trade agreements. A significant body of literature addresses this link between trade, data, IP, and health (Cottier et al., 2017; Fukuda-Parr & Treanor, 2018; WHO, 2017a, 2017b; P. Yu, 2019; P. K. Yu, 2018). Much of the scholarship on health and IP is written from a human rights perspective that centers on the rights to life and health, as shown by another literature review of the topic (Velásquez et al., 2020).

IDRC's Global South AI4COVID Program supported some work on data-driven health responses, such as an Africa-Canada Artificial Intelligence and Data Innovation Consortium (ACADIC) project that has provided data for policymakers (IDRC, 2021b). As the health landscape evolves and more pandemic and endemic diseases emerge, such research will continue to be relevant and timely.

V. Conclusions and Agenda for Future Research and Engagement

The literature surveyed in this working paper has afforded insights into two broad themes that can be expected to remain topical for the next 5-10 years and thus are worthy of inclusion in a forward-looking agenda for research and engagement on regulation of innovation. These are:

- digital trade, data, and IP for inclusive innovation; and
- clean tech trade, data, and IP for sustainable innovation.

The case for the inclusion of each of these has been made above and will not be repeated here, save for one illustration, using the first issue. As shown above, digital trade remains under negotiation at both the WTO and AfCFTA levels. Access to and use of data are critical to successful, inclusive and sustainable trade, and

thus regulatory initiatives that support open data, free flows of data—and exceptions that permit uses of data—are required. Therefore, research of the various kinds described above continues to be essential to give both normative and procedural guidance to regulatory developments and to critique existing regulatory instruments. This points to the need for an agile and responsive research agenda that feeds directly into engagement with trade negotiations and regulatory developments—for example, research that informs engagement with the outcomes of the Phase II AfCFTA negotiations and the digital trade negotiations at the WTO.

In addition to such responsive and agile, just-in-time research efforts, the research agenda should include more static research projects that pertain to each of the key issues, taking care to emphasise the human rights and gender perspectives that have been identified as needing strengthening. The target of each of these efforts, and of the research agenda as a whole, ought to be to support and facilitate an enabling regulatory and trade environment for states and role players to harness trade for sustainable development—with specific attention paid to marginalised constituencies such as women, youth, the informal sector, and small-scale farmers.

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Open AIR is carried out with financial support from the International Development Research Centre (IDRC), Canada's Social Sciences and Humanities Research Council (SSHRC), and the Universities Canada Queen Elizabeth Scholars – Advanced Scholars (QES-AS) programme. More information about Open AIR's current and previous supporters can be found at https://openair.africa/supporters. The views expressed herein do not necessarily represent those of Open AIR's funders.