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Antony Taubman, *Framing a Multilateral Trade and Innovation Agenda to Advance the Sustainable Development Goals: The Intellectual Property Dimension*
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FRAMING A MULTILATERAL TRADE AND INNOVATION AGENDA TO ADVANCE THE SUSTAINABLE DEVELOPMENT GOALS: THE INTELLECTUAL PROPERTY DIMENSION

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The Sustainable Development Goals (SDGs) establish a framework for a broad-based and ambitious approach to multilateral cooperation for development. Even to approach fulfilment of these goals will require innovation and the effective application of the fruits of innovation in many areas of technology — notably energy, health and agriculture. Equally, the SDGs foresee an open trading system as integral to sustainable development. Linking trade and innovation with sustainable development represents, thus, a pressing priority for international cooperation, and raises direct practical questions about the effective use of the intellectual property (IP) system that is expected to serve at once as an element of a socially beneficial trading system, and as an element of an effective innovation system. Therefore, fulfilling the SDGs foresees an effective three-way linkage between trade policy, the innovation ecosystem, and the IP system. Innovation opens up new and more accessible avenues for international trade by, for instance, enabling some Small and Medium Enterprises (SMEs) to reach out to global markets for the first time. Equally, international trade can contribute to the development of innovative capacity, for instance, through knowledge spill overs and access to inputs for innovation. Additionally, IP systems can contribute to a positive interaction between trade and innovation in support of economic and social development. These linkages are complex, in constant evolution, and show great diversity across different sectors and economies, while also requiring extensive collaborative networks across national jurisdictions. Given that the SDGs are

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> *established as a framework for multilateral cooperation, meeting them will not only require technological innovation and effective access to the fruits of innovation, but also continuing innovation in multilateral cooperation and governance. The COVID-19) pandemic has thrown into sharp relief the critical role of innovation systems for fundamental public welfare, and has highlighted the diversity of policy measures countries have deployed to ensure both innovation and effective access to the fruits of innovation.*

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I. INTRODUCTION

> Innovations come in many forms, but one thing they all have in common, and which they share with biological innovations created by evolution, is that they are enhanced forms of improbability… Innovation, like evolution, is a process of constantly discovering ways of rearranging the world into forms that are unlikely to arise by chance – and that happen to be useful.[1]

[1] MATT RIDLEY, HOW INNOVATION WORKS: AND WHY IT FLOURISHES IN FREEDOM (2020).

As an ambitious, wide-ranging framework for multilateral cooperation on development leading up to 2030, the SDGs express fundamental aspirations for, and expectations of, the multilateral system and how it can and should service the material and social well-being of humanity. Without restraining or defining the scope for sovereign governments to determine their own course of action, the recognition of common goals serves as a practical foundation for more coherent and effective cooperation when governments seek to work together on policy priorities in the interests of their populations.

Innovation policies and trade policy settings are integral components of the policy toolkit required to work towards the attainment of the SDGs, but equally, the promotion of innovation has come into focus as a development objective in itself. Policymakers have, over the past generation, come to understand the critical role of innovation for both economic growth and development in its broadest sense, and for initiatives to address public policy challenges ranging from public health to climate change. Just as technological knowledge and human capital have come to be understood as endogenous to theories of economic growth,[2] innovation — initially, technological innovation, and subsequently, innovation in a wider sense — has become truly 'endogenous' to policymakers' thinking about, and planning for, sustainable development. This critical frame shift is epitomised by the unprecedented recognition of innovation not only as a means to attain other policy goals, but as a goal in itself within the SDGs on their adoption in 2015.[3] Yet, harnessing innovation to development in a systematic way entails greater understanding and more robust measurement of its complex linkages with a number of other, more established and more clearly-defined policy domains; these include international trade — which fosters innovation and dissemination of the fruits of innovation through multiple forms of interaction — and the intellectual property (IP) system,[4] which is devised as a means of encouraging innovation,

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[2] Paul Romer, *The Origins of Endogenous Growth*, 8(1) J. ECON. PERSP. 3 (1994).

[3] G.A. Res. 70/1, Transforming Our World: The 2030 Agenda for Sustainable Development (Oct. 21, 2015), https://www.un.org/en/development/desa/population/migration/generalassembly/docs/globalcompact/A_RES_70_1_E.pdf [hereinafter 2030 Agenda].

[4] 'Intellectual property' is typically used in this context not in a strictly legal sense, but as a metonym for a bundle of more or less well-defined intangible ingredients for innovation, typically comprising patentable inventions for products and processes, knowhow and trade secrets, branding through distinctive signs and other less conventional means, and novel designs. Much of this content can give rise to legally recognised IP rights, and the recognition and deployment of those rights serves to facilitate innovation (for instance, in helping to structure and define collaboration between firms, and between firms and public sector institutions) but the notion of 'IP' in the consideration of innovation policy need not be limited only to those rights.

structuring innovative partnerships, smoothing the passage of knowledge and intangible value through trade channels, and promoting the diffusion of innovation outcomes.

The domains of trade policy and innovation policy are both characterised by the in-principle or theoretical prospect of positive-sum benefits accruing from interaction beyond national boundaries. Equally, there is a risk of an impulse towards a knowledge-economy form of zero-sum, mercantilist thinking which would prioritise short-term relative gains in an atomistic world over longer-term and sustained benefits from mutually beneficial trade and innovation policy settings. The distinctive characteristic of the knowledge economy, or more precisely the economics of knowledge, is that the benefits of new knowledge are inherently non-rivalrous in character. The economist Paul Romer, in his Nobel acceptance speech in 2018, linked a positive-sum mindset with the inherent character of ideas as such:

> In my paper "Endogenous Technological Change" … all I did was make the trivial observation that ideas belong to neither of the standard analytical categories: private goods and public goods. So my contribution? I showed that this observation has consequences; big consequences; the biggest possible consequences. The unique characteristics of ideas make material progress possible, but that's not all. Ideas matter not just for what humans have, but also for how they are. During the Pleistocene, human nature evolved in a Malthusian world of objects. We developed an ugly tendency to split humanity into "us" and "them." A world that also includes ideas justifies a new mindset that treats all humans with the dignity and respect that we offer to "us." It is a world in which we may derive net material benefits from the presence of others.[5]

Linking trade and innovation with sustainable development in a practical, productive, and equitable way therefore represents a pressing priority for international cooperation, alongside the continuing efforts to understand and measure the role of the IP system in trade and in development. On the one hand, innovation opens up new and more accessible avenues for international trade, for instance, by enabling some SMEs to reach out to global markets for the first time

[5] Paul Romer, *Nobel Lecture: On the Possibility of Progress*, PAUL ROMER, https://paulromer.net/prize/ (referring to Paul Romer, *Endogenous Technological Change*, 98(5) J. POL. ECON. S71 (1990)) [hereinafter Nobel Lecture].

through engagement in electronic commerce and digital trade.[6] Thus, innovation supports the policy goals of trade policy. On the other hand, international trade contributes to the development of innovative capacity, for instance, through knowledge spillovers and access to inputs for innovation: thus, trade supports the policy goals of innovation policy. The IP system is intended to contribute to the positive interaction between trade and innovation in support of economic and social development for the mutual benefit of producers and users of technological knowledge, according to the objective for the IP system that is articulated in the World Trade Organization (WTO) Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS Agreement)[7]. In a striking synchronicity, the draft negotiating text of the TRIPS Agreement circulated in 1990 — the year of publication of Romer's seminal article — incorporated the following proposed principles for non-zero-sum management of the knowledge economy (this text ultimately contributed substantially to the formulation of the objective of IP protection now formalised in Article 7 of the TRIPS Agreement):

> …[I]ntellectual property rights are granted not only in acknowledgement of the contributions of inventors and creators, but also to assist in the diffusion of technological knowledge and its dissemination to those who could benefit from it in a manner conducive to social and economic welfare and agree that this balance of rights and obligations inherent in all systems of intellectual property rights should be observed…
> …[T]he protection and enforcement of intellectual property rights should contribute to the promotion of technological innovation and enhance the international transfer of technology to the mutual advantage of producers and users of technological knowledge.[8]

Yet, in practice, these linkages are highly complex and in constant evolution, and show great diversity across different sectors and economies. Equally, the collaborative search for global solutions calls for new forms of cross-jurisdictional collaboration for innovation and technology diffusion. Hence, when seeking to articulate a multilateral agenda on trade, innovation and IP, there is a palpable risk

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[6] Antony Taubman, *The Shifting Contours of Trade in Knowledge: The New 'Trade-Related Aspects' of Intellectual Property*, *in* TRADE IN KNOWLEDGE (Antony Taubman & Jayashree Watal eds., forthcoming 2020).

[7] Agreement on Trade-Related Aspects of Intellectual Property Rights, art. 7, Apr. 15, 1994, Marrakesh Agreement Establishing the World Trade Organization, Annex 1C, 1869 U.N.T.S. 299, 33 I.L.M. 1197 (1994) [hereinafter TRIPS Agreement].

[8] Negotiating Group on Trade-Related Aspects of Intellectual Property Rights, including Trade in Counterfeit Goods: Status of Work in the Negotiating Group, Chairman's Report to the GNG MTN.GNG/NG11/W/76 (July 23, 1990), at Article 8.

— even a likelihood — that discussion and analysis will take place at a generalised, aspirational and abstracted level, and not shape and energise movement towards the delivery of concrete innovation outcomes that translate into social and economic welfare gains. The sudden, devastating global impact of the 2020 COVID-19 pandemic, posing an unprecedented, urgent demand for containment, treatment, and prevention technologies, has underscored, in the most dramatic way, the essentially practical, tangible character of the challenge for innovation systems. Thus, the Global Innovation Index Report for 2020 (GII Report 2020) acknowledged that:

> … the world is struggling to cope with the economic and social implications of the coronavirus disease (COVID-19) crisis. Now more than ever, innovation — primarily in finding treatments and a vaccine — is humanity's best hope to overcome the economic lockdown. … [T]his pandemic is a potent reminder that health-related research and development (R&D) and health system innovations are not a luxury, but a necessity.[9]

This recognition was apparent as soon as governments first convened multilaterally to address the pandemic, some three months after it had been identified as such. In a resolution of the World Health Assembly in May 2020, they undertook "… to collaborate to promote both private sector and government-funded research and development, including open innovation, across all relevant domains, on measures necessary to contain and end the COVID-19 pandemic, in particular on vaccines, diagnostics, and therapeutics, and to share relevant information with WHO."[10]

They also instructed inter-governmental organisations:

> …to work collaboratively at all levels to develop, test, and scale-up production of safe, effective, quality, affordable diagnostics, therapeutics, medicines and vaccines for the COVID-19 response, including, existing mechanisms for voluntary pooling and licensing of patents in order to facilitate timely, equitable and affordable access to them, consistent with the provisions of relevant international treaties, including the provisions of the Agreement on Trade-Related Aspects

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[9] CORNELL UNIVERSITY ET AL., THE GLOBAL INNOVATION INDEX 2020: WHO WILL FINANCE INNOVATION? (2020), https://www.insead.edu/sites/default/files/assets/dept/globalindices/docs/GII-2020-report.pdf [hereinafter GII Report].

[10] COVID-19 RESPONSE, WHA73.1, WORLD HEALTH ORG. (May 19, 2020), https://apps.who.int/gb/ebwha/pdf_files/WHA73/A73_R1-en.pdf.

> of Intellectual Property Rights (TRIPS Agreement) and the flexibilities within the Doha Declaration on the TRIPS Agreement and Public Health.

Yet, at a time when the common well-being of humanity was so clearly linked to effective innovation on an exceptional timescale, the need to find urgent, practical, diverse and equitable ways of bridging the potential yawning gap between such aspirational language and the actual delivery of tangible results of innovation has never been so immediately evident. The urgency of the innovation challenge, the need for equity in access to innovation outcomes, and the broad basis of innovation was subsequently affirmed in the report of the 2020 United Nations High Level Forum on Sustainable Development:

> The [COVID-19] crisis has reconfirmed that international cooperation in science, technology and innovation is essential, and that investments should be made in building capacity, as well as recognizing and fully utilizing existing capacity in developing countries, so that no one is left behind.
>
> Science, technology and innovation must be harnessed to promote equity and sustainability. Access for vulnerable groups should be prioritized, and solutions should incorporate diverse sources, including local and traditional knowledge, community - generated knowledge and the social sciences.[11]

This article delves into the intersection between trade, innovation and sustainable development, and addresses the need to harness and channel innovation in a clear and systematic fashion. It does so by analysing, in Part II, the problem in arriving at a single understanding for innovation policy on account of its complex and multi-faceted nature, as well as attempts towards measuring the same. Part III then considers how innovation is placed within the sustainable development framework, and what multilateral institutions must do to deliver on the trade, innovation, and developmental agenda. Part IV describes how the TRIPS Agreement sets the IP system in an innovation policy framework, and the means through which individual WTO Members have pursued diverse measures to advance the innovation agenda within its contours. The related need for system-wide coherence and focus on innovation in public governance is explored in Part V, which also considers the more immediate challenge of innovation as a vital response to the impact of the COVID-19 pandemic. Part VI concludes the article by underscoring

[11] Economic and Social Council, Report of the High-Level Political Forum on Sustainable Development Convened Under the Auspices of the Economic and Social Council at its 2020 session, E/HLPF/2020/6 (Aug. 10, 2020).

the need for international cooperation in the development of a robust innovation policy towards the attainment of the SDGs.

II. DEFINING AND MEASURING INNOVATION

At the level of principle, even defining the core elements of innovation policy and framing its very scope can be problematic if they are to guide policymakers and shape cooperation in a systematic manner. After all, the notions of 'innovation' and 'development', and even that of 'trade', are irreducibly complex, multifaceted, and changeable concepts, elusive for policymakers to frame coherently, other than at the most general level, let alone effectively to achieve or to measure in a consistent, inclusive and comprehensive manner. The focus of analysis may be directed towards individual firms and institutions, to cover broader governmental and society-wide policy settings, and even innovation in international cooperation and governance.

The International Organization for Standardization (ISO) Standard 56000 on Innovation Management – Fundamentals and Vocabulary was adopted in 2020 with the goals of helping "organizations use the correct terminology for innovation management and communicate consistently about their processes, achievements and learning paths" and providing "the vocabulary, fundamental concepts and principles of innovation management, and is useful for organizations wanting to make their innovation management activities visible and credible".[12] The standard defines innovation in terms of an outcome – a "new or changed entity … realizing or redistributing value",[13] distinguishing from innovation as such from activities or processes resulting in, or aiming for, innovation. The general scope of innovation is underscored by the definition of 'entity' as "anything perceivable or conceivable",[14] and addressing organisations with a scope embracing public, private, governmental, non-governmental, national and international entities. For those framing the standard,

> [i]nnovation is about creating something new that adds value; this can be a product, a service, a business model or an organization. And the value that is added is not necessarily financial, it can also be social or environmental, for example … [an] organization's ability to innovate

[12] Clare Naden, *Inspiring Successful Innovation with New International Standard*, INT'L. ORG. FOR STANDARDIZATION (Feb. 19, 2020), https://www.iso.org/news/ref2481.html [hereinafter Naden].
[13] INT'L. ORG. FOR STANDARDIZATION, INTERNATIONAL STANDARD 56000:2020 INNOVATION MANAGEMENT — FUNDAMENTALS AND VOCABULARY, s.3.1.1 (2020).
[14] *Id.*

> is recognized as a key factor for sustained growth, economic viability, increased well-being and the development of society.[15]

The ISO standard is built on a well-established foundation of policy dialogue and analysis. Notably, the Organization for Economic Cooperation and Development (OECD) – Eurostat Oslo Manual[16] forms part of a systematic effort to improve the measurement of innovation in recognition that "[s]ound measurement of innovation and the use of innovation data in research can help policy makers better understand economic and social changes, assess the contribution (positive or negative) of innovation to social and economic goals, and monitor and evaluate the effectiveness and efficiency of their policies". Its 2005 edition defined an 'innovation' as "the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organisational method in business practices, workplace organisation or external relations".[17] Four types of innovation are identified within this avowedly 'broad definition', even though limited to the role of individual firms:

- product innovations;
- process innovations;
- marketing innovations; and
- organisational innovations.

Consciously confined, as it is, to the activities and characteristics of firms, the 2005 OECD-Eurostat definition does not embrace public sector innovation and innovation in systems of governance, which may nonetheless be key determinants of whether, and how, innovation contributes to broader development goals. This limitation is not unreasonable in itself: the definition is framed not for policy advocacy, but expressly for the measurement of innovative activity at the firm level. Indeed, it is only when efforts are made to create systematic metrics of innovation that definitions come into practical focus. Even so, in its 2010 report, 'Measuring Innovation: A New Perspective', the OECD discussed the need to broaden the scope of the innovation being analysed, recognising the role of innovation in the public sector — not merely publicly funded research and development, but also the functioning of the public sector.

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[15] Naden, *supra* note 12.

[16] ORG. ECON. COOPERATION AND DEV. & STAT OFF. OF THE EUR. COMMUNITIES, OSLO MANUAL, GUIDELINES FOR COLLECTING AND INTERPRETING INNOVATION DATA (3d ed. 2005).

[17] *Id.* at 46.

> Governments, including central and local government and various agencies, provide services to people and to businesses. They also define the boundaries within which innovation takes place through regulation of domestic activity and trade, and they play a major role in fostering innovation. Yet while universities and firms are covered by conventional indicators, current measures do not fully take account of the roles of individuals, consumers and government in the innovation process. There are several compelling reasons for developing metrics and definitions for innovation in the public sector and measures of policy efforts to foster innovation. There is a need to account for the use of public funds for innovation, improve learning outcomes and the quality of the provision of education or other public services.[18]

The notion of the public sector, in this context, can and surely must be extended beyond the level of national governments and the national public sector, to encompass the intergovernmental system and international programmes and initiatives as well. As discussed below, the SDGs themselves call for innovation in international cooperation, and the multilateral system is experimenting with new forms of governance and coherent interaction in policy domains such as public health.

The work of the OECD on innovation policies and their measurement led to the production of the 2010 report titled 'OECD Innovation Strategy: Getting a Head Start on Tomorrow'[19] which, while considering the Oslo Manual definition, recognises that innovation "thus defined, is clearly a much broader notion than R&D and is influenced by a wide range of factors, some of which can be affected by policy. Innovation can occur in any sector of the economy, including government services such as health or education." It acknowledges that the "current measurement framework applies to business innovation … even though innovation is also important for the public sector" and that the methodology — and thus, again, the implicit definition of invention — should be extended to "public sector innovation and social innovation, so as to correspond to the reality of innovation today".

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[18] ORG. ECON. COOPERATION & DEV., MEASURING INNOVATION: A NEW PERSPECTIVE 14 (2010).

[19] ORG. ECON. COOPERATION & DEV., OECD INNOVATION STRATEGY: GETTING A HEAD START ON TOMORROW (2010).

The OECD Council, meeting at the ministerial level in June 2015, considered an 'Agenda for Policy Action' [20] on innovation as an update to the 2010 OECD Innovation Strategy. This updated approach recognised the broadening and diversifying scope of innovation policy analysis, and thus, the wider range of measures called for in a "comprehensive and action-oriented approach to innovation … in the context of fiscally constrained economies". The Agenda advocates (i) strengthening investment in innovation and fostering business dynamism; (ii) investing in and shaping an efficient system of knowledge creation and diffusion; (iii) seizing the benefits of the digital economy; (iv) fostering talent and skills and optimising their use; and (v) improving the governance and implementation of policies for innovation. These recommendations are drawn from observations on the contemporary characteristics of innovation, including:

- a scope beyond science and technology;
- a wide and expanding range of actors;
- a strong and ever-expanding basis in the digital economy; and
- a growing role of emerging economies and an increasingly global context, noting that "production is increasingly occurring in value chains where both production and innovation are fragmented across countries".

Moreover, critically for policymakers, the Agenda highlights "the joining of some of these features – the spread of global value chains, the increasing importance and mainstreaming of knowledge-based capital (KBC), and rapid technological progress, including the rise of the digital economy – that are leading to the emergence of a "next production revolution". It recognises that there are growing demands on innovation "not only to support growth and job creation, and the efficient delivery of public services, but also to address specific social and global challenges, including green growth, health, food security and the fight against poverty".

Subsequently, the 2016 OECD Blue Sky Forum on Science and Innovation Indicators identified the need for a broader set of innovation metrics to cover the economy and indeed society in general.[21] Accordingly, the fourth, i.e., 2018 edition of the Oslo Manual was proposed to "become a platform for future experimentation and guidance by discussing key innovation concepts in a broader sense and by providing a general definition of innovation, as requested by many

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[20] ORG. ECON. COOPERATION & DEV., INNOVATION STRATEGY 2015: AN AGENDA FOR POLICY ACTION (2015) https://www.oecd.org/sti/OECD-Innovation-Strategy-2015-CMIN2015-7.pdf.

[21] *Org. Econ. Cooperation & Dev. Blue Sky Forum on Science and Innovation Indicators*, ORG. ECON. COOPERATION & DEV., http://oe.cd/blue-sky.

stakeholders".[22] Along with other refinements and developments, the fourth edition sought to provide:

> … a conceptual framework and a general definition of innovation that is applicable to all sectors in the economy (Business, Government, Non-profit institutions serving households and Households). These are necessary for developing future guidelines for measuring innovation in sectors other than business and eventually building up an economy- and society-wide statistical view of innovation, as recommended in the 2016 OECD Blue Sky Forum.[23]

The 2018 Oslo Manual sets out the context for innovation in the following terms:

> Innovation is more than a new idea or an invention. An innovation requires implementation, either by being put into active use or by being made available for use by other parties, firms, individuals or organisations. The economic and social impacts of inventions and ideas depend on the diffusion and uptake of related innovations. Furthermore, innovation is a dynamic and pervasive activity that occurs in all sectors of an economy; it is not the sole prerogative of the Business enterprise sector. Other types of organisations, as well as individuals, frequently make changes to products or processes and produce, collect, and distribute new knowledge of relevance to innovation.[24]

In recognition of the need for innovation to be understood in all of the four broad sectors of an economy, as defined by the United Nations' (UN) System of National Accounts (SNA) – namely business enterprises (or the corporate sector), general government, households, and non-profit institutions serving households – the 2018 Oslo Manual proposed a broader definition of innovation, referring to the key actors as 'units' to extend the scope beyond private sector firms: "An innovation is a new or improved product or process (or combination thereof) that differs significantly from the unit's previous products or processes and that has been made available to potential users (product) or brought into use by the unit (process)."[25]

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[22] ORG. ECON. COOPERATION AND DEV. & STAT OFF. OF THE EUR. COMMUNITIES, OSLO MANUAL 2018: GUIDELINES FOR COLLECTING, REPORTING AND USING DATA ON INNOVATION, THE MEASUREMENT OF SCIENTIFIC, TECHNOLOGICAL AND INNOVATION ACTIVITIES 29 (4th ed. 2018).
[23] *Id.* at 22.
[24] *Id.* at 44.
[25] *Id.* at 60.

Hence, while the 2018 Oslo Manual continues to focus on business innovation, it seeks to promote consideration of innovation in this broader context. The key distinction for innovation in the government sector is that it "does not charge economically significant prices" for goods and services which are instead "based on political and social considerations rather than on profit-maximisation or related business objectives", in turn influencing the types of product innovation developed and often pursuing "redistributive or consumption-related goals that are unique to government".[26] In turn, the lack of market signals affects both, the public sector's incentives for innovation and the way it is measured, with a reliance on "subjective, self-reported measures, such as an increase in efficiency or improved user satisfaction". [27] Similar questions arise in attempts to capture and measure innovation outcomes in the non-profit and household sectors, even though their significance is recognised.

The Oslo Manual definition was also a starting point for the Global Innovation Index (GII), which, in its annual iterations since 2007, has established, elaborated and refined an integrated and composite measurement — and thus, rankings — at the country level in terms of capacity to support and engender innovation. The GII "aims to capture the multi-dimensional facets of innovation and provide the tools that can assist in tailoring policies to promote long-term output growth, improved productivity, and job growth … [and] helps to create an environment in which innovation factors are continually evaluated".[28] The GII has not, therefore, hazarded a further attempt at formal definition, but has acknowledged that, "the definition of innovation has broadened – it is no longer restricted to research and development (R&D) laboratories and to published scientific papers. Innovation could be and is more general and horizontal in nature, and includes social innovations and business model innovations as well as technical ones."[29] In its recent editions, the GII Report has recognised the broader definition of 'innovation' as developed in the latest edition of the Oslo Manual.[30]

In effect, the wide range of indicators that the GII integrates amount to a definition of the ingredients for a national environment conducive to successful innovation, and a definition of what such innovation looks like when actually

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[26] *Id.*

[27] *Id.*

[28] *History of the Global Innovation Index*, GLOBAL INNOVATION INDEX, https://www.globalinnovationindex.org/about-gii.

[29] Global Innovation Index, 2016, GLOBAL INNOVATION INDEX, https://www.globalinnovationindex.org/userfiles/file/reportpdf/gii-full-report-2016-v1.pdf.

[30] GII Report, *supra* note 9, at 203.

delivered. Accordingly, innovation was cast as comprising five 'input pillars', or "elements of the national economy that enable innovative activities" – specifically institutions, human capital and research, infrastructure, market sophistication, and business sophistication – and two 'output pillars', which are viewed as providing actual evidence of innovation outputs, categorised as knowledge and technology outputs and creative outputs. Such an integrated index — currently comprising some 80 individual indicators — represents a necessary maturing of innovation discourse from overly simplistic proxies for innovation, such as spending, science and technology graduates, or patent filings. However, a particular strength of the GII is its consciously self-critical and recursive methodology, which recognises the need for a positive feedback loop and continuing guidance from research on innovation metrics, and transparently reports on successive adaptations to the methodology. Equally, this process recognises that the purpose of measurement and ranking on such an index is to help promote and frame debate and analysis about innovation policy and innovation metrics, and does not serve as an end in itself, despite the inevitable value placed on the final national rankings.

The most recent edition of the GII expressed this dynamic, recursive approach in the following terms:

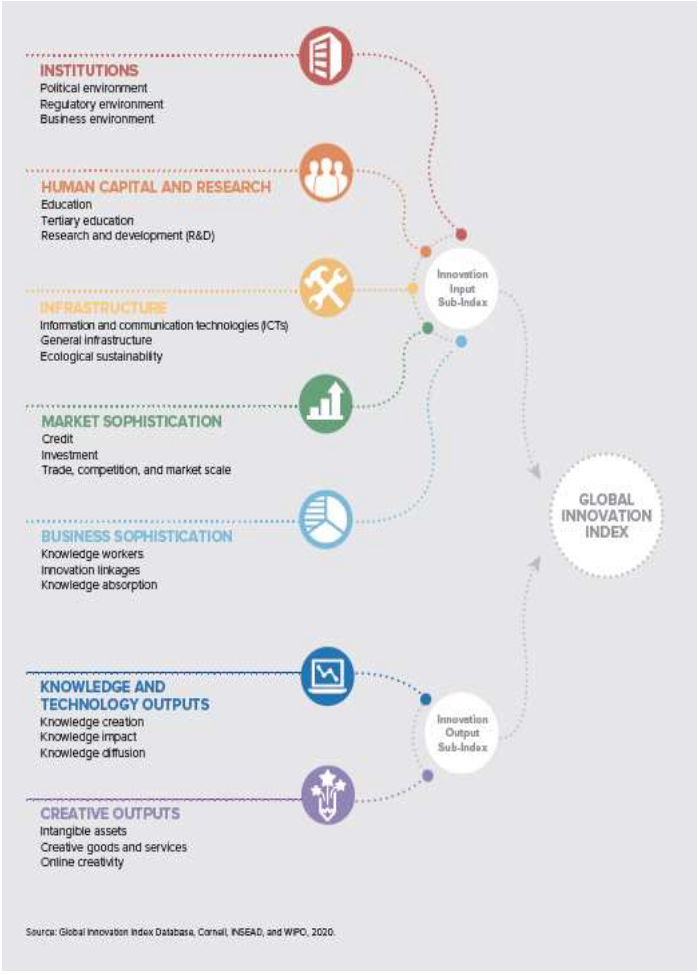
> [T]he GII helps to create an environment in which innovation factors are under continual evaluation. It provides a key tool for decision-makers and a rich database of detailed metrics for refining innovation policies. The GII is not meant to be the ultimate and definitive ranking of economies with respect to innovation. Measuring innovation outputs and its impact remains difficult, hence great emphasis is placed on measuring the climate and infrastructure for innovation and on assessing related outcomes. Although the end results take the shape of several rankings, the GII is more concerned with improving the "journey" to better measurement, understanding innovation, and in identifying targeted policies, good practices, and other levers that foster innovation.[31]

Figure 1 illustrates the structure of the Index as the combination of an innovation input sub-index, comprising five pillars that define aspects of the environment conducive to innovation within each economy, and an innovation output sub-index, measuring the results of an economy's innovative activities within two pillars, knowledge and technology outputs and creative outputs. The evolving character of the GII is exemplified in the innovative measures introduced in recent editions, ranging from a broader assessment of the political environment for innovation to include an index on political, legal, operational or security risks

[31] *Id.* at 204.

(reflecting a more uncertain environment), to an indicator on mobile app creation that captures the downloads of apps by origin of the headquarters of the developer or firm, with a view to offering "more insight into how innovation, production, and trade of digitized creative products and services are evolving in an innovation-based economy".[32]

Figure 1: Framework of the Global Innovation Index 2020



Source: The Global Innovation Index 2020[33]

[32] *Id.* at 208.

[33] GII Report, *supra* note 9.

The Information Technology and Innovation Foundation (ITIF), a private think-tank based in the United States of America (US) with an active market-oriented policy advocacy role, has deployed innovation metrics to support its advocacy of a range of trade and innovation policies, and to take aim against 'innovation mercantilism'. The 2012 ITIF Global Innovation Policy Index expressly links trade policy with innovation, arguing that "[a]s innovation and trade policy have become increasingly intertwined, openness to trade characterized by open market access and receptivity to foreign direct investment has become a bedrock pillar of a country's innovation capacity".[34] This Index therefore stresses openness to trade, foreign direct investment (FDI), and voluntary, market-led, global standards, on the basis that openness to trade enables specialisation in innovation in areas of 'comparative or competitive advantage'. Trade policy is ranked alongside indicators on science and R&D, domestic competition, IP, digital policies, government procurement, and high-skill immigration. It is a conception of innovation that embeds key postulations about the contribution of open trade and procurement policy, skilled immigration, and competition to innovation outcomes, and serves in turn to provide a foundation for advocacy of those policy settings.

This approach, linking formulation of innovation metrics with policy advocacy, was taken further with the recent publication of an ITIF report seeking to rank individual countries' contributions to, and detractions from, 'global innovation'.[35] Such an approach contrasts a positive-sum view of global innovation with 'innovation mercantilism'. This methodology examines fourteen indicators of 'contributors' that it argues "constructively spill over to contribute to global innovation, grouped into three categories – taxes, human capital, and R&D and technology", thirteen indicators of 'detractors' that it assesses to "inhibit greater levels of global innovation, also grouped into three categories – balkanised production markets, IP protection, and balkanised consumer markets".[36] In turn, this metric yields a clustering of countries into eight categories, based on the analysts' findings of their comparative contributions to, or detractions from, global innovation: Adam Smithian, Advanced Asian Tiger, European Union (EU) Continentalist, EU Up and Comer, Innovation Follower, Innovation Mercantilist, Schumpeterian, and Traditional Mercantilist.[37] This approach is therefore expressly

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[34] INFO. TECH. AND INNOVATION FOUNDATION & KAUFFMAN FOUNDATION, GLOBAL INNOVATION POLICY INDEX (Robert D. Atkinson, et al. eds. 2012), http://www2.itif.org/2012-global-innovation-policy-index.pdf.

[35] INFO. TECH. AND INNOVATION FOUNDATION, CONTRIBUTORS AND DETRACTORS: RANKING COUNTRIES' IMPACT ON GLOBAL INNOVATION (Stephen J. Ezell et al. eds., 2016), http://www2.itif.org/2016-contributors-and-detractors.pdf?_ga=1.266766669.23420955.1456571414.

[36] *Id.* at 4.

[37] *Id.* at 21-25.

harnessed for policy advocacy, including at the inter-governmental level, based on a number of specific policy desiderata advocated by the ITIF, with an emphasis on open markets.

Drawing on the evolution of efforts to define, measure and advocate for 'innovation', several themes emerge: it is not a stand-alone policy domain, but is inherently cross-cutting; it is conceptually broader in scope than just technological advancement, and can extend even into forms of governance and organisational management. Resultantly, innovation is an ingredient not merely for economic growth and employment, but also for addressing wider policy challenges: looking beyond the firm and institutional levels, and an immediate focus on funding and incentives for R&D, innovation policy can entail consideration of a nation's policy on trade, public procurement and investment. Further, it is difficult to conceive of an effective and sustainable innovation program that is planned and implemented without an inherent component of cross-border collaboration and exchange of knowledge and expertise, and indeed cross-border participation in the production process and in delivery of services. Additionally, the IP system, broadly construed, is one ingredient of the innovation system but not in itself a proxy for it: a balanced and effective IP system is necessary, but far from sufficient for a sustainable and productive innovation policy.

III. TOWARDS A NEW AGENDA ON INNOVATION, TRADE AND INTELLECTUAL PROPERTY

It is against this complex, evolving, and still contested policy background that the SDGs establish a framework for international cooperation on innovation, and their expected contribution to a wide range of development goals. Given the inherently dynamic and diverse character of innovation policy, how can international policymakers and multilateral organisations develop an agenda on innovation, trade and IP which is at once inclusive, realistic, and holistic? It must be inclusive, for fundamental reasons of equity and the need for widespread engagement to achieve the necessary practical outcomes; it must be realistic, in the sense of being grounded in empirical evidence and reasonably likely to deliver concrete results, while recognising political and institutional constraints and realities; and it must be holistic, in the sense of understanding and engaging the full range of interlocking drivers for innovation and in the sense of providing coherent solutions that are consistent with policy objectives in such fields as health, food, environment, and education.

The SDGs lay out a framework for international cooperation and for domestic capacity building that elaborates and aims to implement just such an innovation agenda. The SDGs are unprecedented in ambition and scope. The pivotal notion of 'development' itself — a concept that is inherently broad and nebulous in

character, and the subject of intense debate in multilateral fora, yet foundational for national policy settings of many countries and pivotal for international cooperation — is given a broad reading, as the foundation for a broad, inclusive, and holistic framework for practical cooperation for development. Criticism of the SDGs for being "too broad",[38] "too general",[39] or "too much for anyone"[40] is at least, in a sense, a backhanded recognition that the conception of development that they express is diverse and multi-dimensional.

Consciously built upon the foundation of the Millennium Development Goals, the SDG framework — alongside its other, more widely discussed innovations[41] — pointedly adds innovation as an objective in itself. This was a striking frame shift at that time: by contrast, the OECD Innovation Strategy 2015 took the view that "[w]hile not a goal in itself, innovation provides the foundation for new businesses, new jobs and productivity growth, and is thus an important driver of economic growth and development". Innovation has typically been viewed instrumentally, as a source of solutions for policy challenges, and not as an end in itself. There is also no question about the need for innovation as a vital contribution not only to economic growth, job creation, and sustainable development in general, but also as a source of solutions for global policy challenges. Certainly, the SDGs overall will not be achieved with a toolkit that only contains technologies already created and available at the time when the SDGs were framed in 2015. It is inconceivable that SDGs on food, climate, health, energy, sanitation, and environmental protection could practically be achieved without new and adapted technologies: the applied fruits of innovation. The application of innovative technologies is already facilitating the building of institutions and the partnerships that are goals in themselves (SDGs 16 and 17 respectively), and are also indispensable means towards achieving and sustainably maintaining the other SDGs. Accordingly, in 2019, the United Nations General Assembly (UNGA) recognised that "science, technology and innovation, including environmentally-sound technologies and information and communications technologies, are critical in the pursuit of sustainable development and are one of the key means of implementation of the inter-governmentally agreed development outcomes, including the 2030 Agenda

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[38] Danielle Renwick, *Sustainable Development Goals*, COUNCIL FOREIGN REL. (Sept. 24, 2015), https://www.cfr.org/backgrounder/sustainable-development-goals.

[39] Henrik Selin, *The Risk of UN's Sustainable Development Goals: Too Many Goals, Too Little Focus*, THE CONVERSATION (Sept. 25, 2015), https://theconversation.com/the-risk-of-uns-sustainable-development-goals-too-many-goals-too-little-focus-48083.

[40] *Unsustainable Goals*, THE ECONOMIST (Mar. 26, 2015), https://www.economist.com/international/2015/03/26/unsustainable-goals.

[41] Sanjiv Kumar et al., *Millennium Development Goals (MDGs) to Sustainable Development Goals (SDGs): Addressing Unfinished Agenda and Strengthening Sustainable Development and Partnership*, 41(1) INDIAN J. COMMUNITY MED. 1 (2016).

for Sustainable Development and its Sustainable Development Goals"[42] and reaffirmed

> …its commitment to continue promoting the use of science, technology and innovation in facilitating efforts to address global challenges, such as efforts to eradicate poverty; achieve food security and nutrition; increase agricultural productivity; enhance access to affordable, reliable, sustainable and modern energy for all; fight diseases; improve education; protect the environment and address climate change.[43]

What does it mean, however, to establish innovation as a conceptually distinct (but necessarily not isolated) goal in itself within the SDGs? Current work on innovation policy suggests that several approaches should be avoided: an overly abstracted approach, which addresses innovation in lofty aspirational terms but provides no guidance for practical programmes; an approach that adopts certain accessible but narrow metrics — such as R&D spending or patent findings — as proxies not merely for measuring, but effectively defining innovation; and an approach that isolates innovation from its wider policy and practical environment. One lesson from the elaboration of innovation indices is the need to avoid following policies that aim to increase innovation metrics without consideration of the linkages between the results of innovation. An obvious, but still not infrequent, instance of this risk is the continuing difficulty of translating patentable inventions into viable, market-ready technologies, and converting patent filings by public research institutions into practical technology transfer and diffusion in areas of policy interest: patent filings are one, reasonably helpful, if far from exhaustive, proxy for measuring innovative activity in fields of technology, but an exclusive focus on lifting the quantity – the mere headcount – of patent filings is scarcely sufficient to sustain progress towards reaping the expected benefits of innovation.

A number of SDGs include sectoral targets that are also, effectively, targets for innovation – for instance, 2.A on agricultural research; 3.B on medicines R&D; 7.3, 7.A and 7.B on energy technology; 12.A on environmentally sound technology; and 14.A on marine technology.[44] And the progress report on SDG 11 (cities and human settlements) observes that 'well-managed' cities can be incubators for innovation.[45] But Target 9.5 expressly frames "encouraging innovation" as such, in

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[42] G.A. Res. 74/229, Science, Technology and Innovation for Sustainable Development (Dec. 19, 2019).
[43] *Id.*
[44] 2030 Agenda, *supra* note 3.
[45] U.N. Secretary-General, *Progress towards the Sustainable Development Goals*, E/2016/75 (2016) [hereinafter 2016 SDG Report].

the context of both scientific research and upgrading industrial technological capacity.[46] The indicators set for innovation are precise, and focussed on specific innovation inputs: R&D as a proportion of Gross Domestic Product (GDP), and researchers per million inhabitants. Target 9.B aims to "support domestic technology development, research and innovation in developing countries, including by ensuring a conducive policy environment for, inter alia, industrial diversification and value addition to commodities".[47] The sole indicator set for this target measures innovation by downstream industrial output, i.e., the proportion of medium and high-tech industry value added in total value added.

The 2016 SDG progress report sets out the scale of the challenge in achieving Target 9.5:

> Innovation and the creation of new and more sustainable industries are spurred by investments in research and development. Global expenditure on research and development as a proportion of GDP stood at 1.7 per cent in 2013. However, this figure masks wide disparities. expenditure on research and development was 2.4 per cent of GDP for developed regions, 1.2 per cent for developing regions, and below 0.3 per cent for the least developed countries and landlocked developing countries. The number of researchers per 1 million inhabitants showed a similar pattern. While the global average was 1,083 researchers per 1 million inhabitants, the ratio ranged from 65 per 1 million in the least developed countries to 3,641 per 1 million in developed regions.[48]

The first UN Sustainable Development Goals Report, noting the low average R&D expenditure for least developed countries (LDCs) and landlocked developing countries concludes on this target simply that, "more concerted efforts are urgently needed to enhance research capabilities in these countries."[49] The corresponding 2019 report observed that the proportion of global GDP invested in R&D increased from 1.52% in 2000 to 1.68% in 2016, in that period rising from $739 billion to $2 trillion (purchasing power parity).[50] However, continuing wide

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[46] 2030 Agenda, *supra* note 3.

[47] *Id.*

[48] 2016 SDG Report, *supra* note 45.

[49] U.N. Dep't. Econ. & Soc. Aff., The Sustainable Development Goals Report 2016 (2016), https://unstats.un.org/sdgs/report/2016/The%20Sustainable%20Development%20Goals%20Report%202016.pdf.

[50] U.N. Secretary-General, *SDG Progress 2019*, (2019), https://sustainabledevelopment.un.org/content/documents/24978Report_of_the_SG_on_SDG_Progress_2019.pdf.

disparities between regions — in Europe and Northern America, 2.2% of GDP was spent on R&D in 2016, compared to 0.42% in Sub-Saharan Africa, indicating "the continued need for strong policy support for increased financing for R&D in developing regions".[51] Consequently, the UNGA articulated its continued political will to advance a broad-based innovation agenda while recognising the need for absorptive capacity on the part of developing countries, under the theme of harnessing science, technology, and innovation with a greater focus on digital transformation for sustainable development:

> … we will promote research, capacity-building initiatives, innovation and technologies towards advancing the Sustainable Development Goals and promote the use of scientific evidence from all fields to enable the transformation to sustainable development. We will promote and support quality education and lifelong learning to ensure that all children, youth and adults are empowered with the relevant knowledge and skills to shape more resilient, inclusive and sustainable societies that are able to adapt to rapid technological change. We will foster international cooperation to support developing countries in addressing their constraints in access to technologies and education.[52]

Other forms of multilateral review have pointed to the need for inclusiveness and strengthened international coordination, while cautioning that science, technology and innovation must "be responsive to the needs of the [SDGs] and should be conceived as means of achieving them, not as ends in themselves".[53]

Given the diverse character of policy interventions, the distinct mandates of multilateral institutions, the continuing challenges of multilateral coordination and cooperation, and the continuing risk of abstraction from realistic and achievable objectives, how can multilateral agencies contribute to delivering on a trade, innovation and development agenda, with a view to addressing questions as to what are their distinctive objectives, how they are fulfilling those objectives, and the actual impact on communities? To create a positive agenda on trade,

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[51] *Id.*

[52] G.A. Res. 74/4, Political Declaration of the High-Level Political Forum on Sustainable Development Convened Under the Auspices of the General Assembly (Oct. 2, 2019).

[53] Econ. & Soc. Council, Report of the High-Level Political Forum on Sustainable Development Convened Under the Auspices of the Economic and Social Council (July 11–20, 2016), https://sustainabledevelopment.un.org/hlpf; Multi-stakeholder Forum on Science, Technology and Innovation for the Sustainable Development Goals: Summary by the Co-Chairs, E/HLPF/2016/6 (June 24, 2016) (this Forum reportedly also ensuring "innovative seating arrangements") [hereinafter STI Forum].

innovation, and development and its practical implications for potential for achieving the SDGs will require digging deeply into these issues on the basis of close analysis of actual experience, but also understanding and accepting that these are inherently complex ideas, irreducibly diverse in character. The diversity and complexity of ideas of innovation and development have been discussed above;[54] yet even the notion of what constitutes 'trade' – and consequently its opportunities and implications for innovation and development – has been transformed in the past two decades. The 2016 United Nations Economic and Social Council (ECOSOC) multi-stakeholder forum on innovation observed that the SDGs are "disruptive … [and] imply a radical departure from business as usual", and that the "current technological revolution is having an impact on all disciplines, industries and the world's economy".[55] This effect is manifestly the case for trade, with two obvious instances of technological disruption that in turn offer opportunities for innovation to support development: the advent of trade in pure content, or knowledge products, dispensing with physical media as vehicles or proxies for trade in such material as software, publications, music and audio-visual works;[56] and the development of dispersed global value chains (GVCs) in which value addition to the production process is distributed geographically across jurisdictions and includes contribution of intangible inputs alongside traditional material inputs to production. Critically, the IP system is integrally involved in both developments: trade in knowledge products is, largely, trade in IP licences; and the links that hold GVCs together include IP transactions – assignments and licensing of intangible inputs to production.[57] The IP dimension is therefore an immediate practical concern in realising the SDG 9.B.1 indicator of "medium and high-tech industry value added in total value added", which for many developing countries would be largely unattainable without significant engagement with GVCs.[58]

IV. INNOVATION MODELS AND THE TRIPS AGREEMENT

This consideration — the complex linkage of development, innovation, trade and IP, and the disruptive transformation of each of these domains in the past twenty-five years brings into the frame the WTO TRIPS Agreement. The TRIPS Agreement itself frames the IP system, at a policy level, squarely within an

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[54] *See supra* Part II.

[55] STI Forum, *supra* note 53.

[56] Antony Scott Taubman, *TRIPS Encounters the Internet: An Analogue Treaty in a Digital Age, or the First Trade 2.0 Agreement? in* TRADE GOVERNANCE IN THE DIGITAL AGE (Burri & Cottier eds. 2012).

[57] Antony Taubman, *IP as a Link in the Chain Adding Value or Adding Cost to Global Value Chains?*, FUNG INST. PRESENTATION (Feb. 14, 2014).

[58] *See, e.g.*, VALUE CHAINS: LINKING LOCAL PRODUCERS FROM DEVELOPING COUNTRIES TO INTERNATIONAL MARKETS (Meine Pieter van Dijk & Jacques Trienekens eds., 2011).

innovation policy setting, in an instrumental sense: IP should "contribute to the promotion of technological innovation and to the transfer and dissemination of technology, to the mutual advantage of producers and users of technological knowledge and in a manner conducive to social and economic welfare …". Over the two decades since it entered into force, the TRIPS Agreement has, particularly by its critics, been identified or even stigmatised as representing just one innovation model, in a binary sense — one can pursue the TRIPS innovation model (typically characterised as market-driven, private-sector oriented, and highly reliant on exclusivity in the exercise of IP rights); or one can pursue alternative innovation models, favouring collaboration, public funding and public domain strategies. In this debate, 'TRIPS' has at times served as a metonym for the IP system altogether, as well as specific innovation policies such as the Bayh-Dole Act,[59] or even an entire set of values and assumptions about innovation.[60] This restrictive structuring of the diverse ways of deploying IP tools within the innovation ecosystem misses the point — the deployment of IP is one element, one ingredient of a diverse multifactorial innovation ecosystem, and IP rights can be exercised, or waived, in dramatically different ways, depending on the specific pathway to innovation that is being pursued. Figure 2 illustrates the range of choices that can be applied in practice, considering variation across two axes: the degree of public or private engagement, and the extent of exclusivity or leverage exercised over technologies.[61] There are circumstances when publicly funded research is exclusively licensed, and circumstances when private research is consciously put in the public domain — the critical insight intended is not to apply ex ante assumptions about the role of IP without considering its full potential range of functionality within a broader innovation strategy.

Figure 2: Mapping Diversity in IP Management for Innovation

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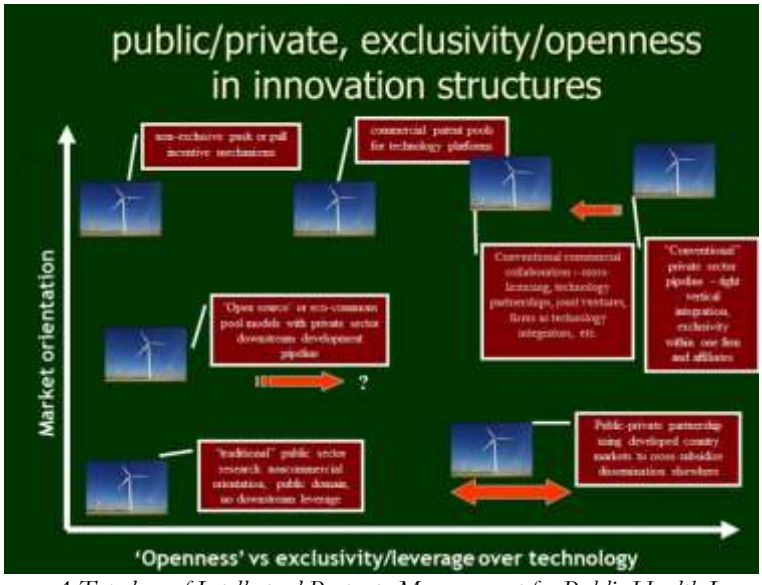
[59] Implemented through the United States *Patent and Trademark Law Amendments Act* (Pub. L. 96-517, December 12, 1980) and codified at 94 Stat. 3015, and in 35 U.S.C. § 200–212, the *Bayh Dole Act* engineered a paradigm shift in the approach to publicly funded research, permitting contractors to retain ownership of IP resulting from such research and permitting government agencies to grant exclusive licences to publicly held inventions, as a response to the perceived shortcomings in implementation and commercialisation of publicly funded technology. Variations on this approach have since been implemented in other jurisdictions, sparking a continuing debate over the most effective and equitable means of deriving practical benefit and welfare outcomes from publicly funded research.

[60] Antony Scott Taubman, *TRIPS Jurisprudence in the Balance: Between the Realist Defense of Policy Space and a Shared Utilitarian Ethic*, *in* ETHICS AND LAW OF INTELLECTUAL PROPERTY: CURRENT PROBLEMS IN POLITICS, SCIENCE AND TECHNOLOGY (Lenk et al. eds., 2007).

[61] This typology is discussed and elaborated in a public health context in Antony Taubman, *A Typology of Intellectual Property Management for Public Health Innovation and Access: Design Considerations for Policymakers*, 4(1) OPEN AIDS J. 4 (2010).



Source: A Typology of Intellectual Property Management for Public Health Innovation and Access [62]

At the international level, the first challenge is to understand this inherent complexity in how innovation policy tools may be deployed, and to recognise the diverse range of actual choices available for any innovation pathway, while at the same time working internationally in a way that is holistic, realistic, and inclusive in a global context.

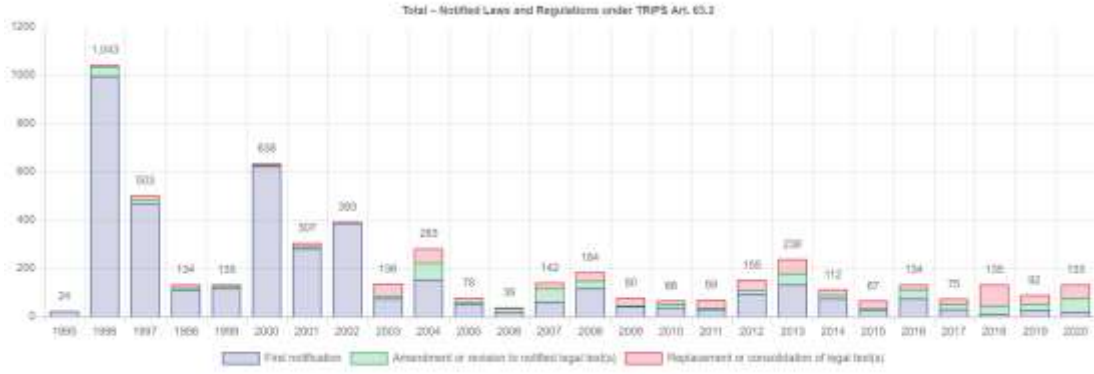
Such an approach entails, firstly, basing work on an empirical foundation of actual reported experience. In considering the TRIPS Agreement and innovation, therefore, attention needs to broaden from what could be called the 'bound regime', the general principles of the TRIPS, or what the international rules say, or what TRIPS could or should say if it were rewritten, to consider also the lessons of the 'applied regime' of TRIPS: how WTO Members have operated in diverse ways within the TRIPS framework to progress innovation policy and innovation goals. Amidst the numerous sources of such information that are now available, the TRIPS Agreement having been implemented in over 130 different national systems over two decades, three specific sources of data generated by the TRIPS Agreement itself merit further systematic study:

- The notification of almost five thousand three hundred legislative and other legal instruments[63] in the field of IP, critical elements of the legal

[62] *Id.*

and policy context for innovation in some 137 WTO Members,[64] the accumulated record of these materials charting the evolution of this field over twenty-five years (see Figure 3).

Figure 3: Intellectual Property Laws Notified to the WTO TRIPS Council



Source: e-TRIPS Gateway[65]

- Some 350 reports on file concerning technology transfer measures provided by developed country WTO Members in connection with their obligations under the TRIPS Agreement (Article 66.2) to "provide incentives to enterprises and institutions in their territories for the purpose of promoting and encouraging technology transfer to least-developed country Members in order to enable them to create a sound and viable technological base".
- Recent years have seen a series of discussions in the WTO TRIPS Council on different aspects of the interplay between the IP system and the policy and practice of innovation, which have covered a wide range of national experiences in developing and applying innovation policy, and the related use of the IP system as a means to promote such policies.[66] These discussions have covered diverse aspects of the interplay between IP and innovation, and represent a wide-ranging set of reports on policy mechanisms and practical programs on aspects of innovation relating to the objective of promoting innovation, covering in particular:

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[63] As on Oct. 20, 2020.

[64] WTO documents in the series IP/N/1… and IP/N/6… in particular.

[65] *E-TRIPS Gateway*, WORLD TRADE ORGANIZATION, e-trips.wto.org.

[66] An outline and links to key materials are available at: *Innovation Policy and the TRIPS Agreement*, WORLD TRADE ORGANIZATION, https://www.wto.org/english/tratop_e/trips_e/inovationpolicytrips_e.htm.

- IP and innovation in general;[67]
- micro, small, and medium enterprises;[68]
- cost-effective innovation;[69]
- contribution of IP to facilitate the transfer of environmentally rational technology;[70]
- university technology partnerships;[71]
- innovation incubators;[72]
- promoting awareness: case studies;[73]
- women and innovation;[74]
- the role of IP in financing innovation;[75]
- entrepreneurialism and new technologies;[76]
- education and diffusion;[77]
- sustainable resource and low emission technology strategies;[78]
- regional innovation models;[79]
- inclusive innovation and MSME collaboration,[80] growth and trade;[81]
- innovative approaches to assisting in branding and promotion and the creative industries;[82]
- the societal value of IP in the new economy;[83] and
- public-private collaborations in innovation and IP commercialisation.[84]

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[67] Council for Trade-Related Aspects of Intellectual Property Rights, *Minutes of Meeting - Held in the Centre William Rappard* [hereinafter TRIPS Minutes], WTO Doc. IP/C/M/71, at 39 (Feb. 12, 2013).
[68] TRIPS Minutes, *supra* note 67, WTO Doc. IP/C/M/72, at 41 (May 13, 2013).
[69] TRIPS Minutes, *supra* note 67, WTO Doc. IP/C/M/73/Add.1, at 49 (Sept. 17, 2013).
[70] TRIPS Minutes, *supra* note 67, WTO Doc. IP/C/M/74/Add.1, at 28 (Nov. 28, 2013).
[71] TRIPS Minutes, *supra* note 67, WTO Doc. IP/C/M/75/Add.1, at 53 (Apr. 16, 2014).
[72] TRIPS Minutes, *supra* note 67, WTO Doc. IP/C/M/76/Add.1, at 37 (Aug. 18, 2014).
[73] TRIPS Minutes, *supra* note 67, WTO Doc. IP/C/M/77/Add.1, at 59 (Feb. 19, 2015).
[74] TRIPS Minutes, *supra* note 67, WTO Doc. IP/C/M/78/Add.1, at 30 (May 4, 2015).
[75] TRIPS Minutes, *supra* note 67, WTO Doc. IP/C/M/79/Add.1, at 33 (Sept. 2, 2015).
[76] TRIPS Minutes, *supra* note 67, WTO Doc. IP/C/M/80/Add.1, at 57 (Feb. 22, 2016).
[77] TRIPS Minutes, *supra* note 67, WTO Doc. IP/C/M/81/Add.1, at 24 (Apr. 27, 2016).
[78] TRIPS Minutes, *supra* note 67, WTO Doc. IP/C/M/82/Add.1, at 25 (Sept. 1, 2016).
[79] TRIPS Minutes, *supra* note 67, WTO Doc. IP/C/M/83/Add.1, at 50 (Jan. 30, 2017).
[80] TRIPS Minutes, *supra* note 67, WTO Doc. IP/C/M/85/Add.1, at 49 (June 7, 2017); *see also* TRIPS Minutes, *supra* note 67, WTO Doc. IP/C/W/622 (Jan. 27, 2017) and TRIPS Minutes, *supra* note 67, WTO Doc. IP/C/W/625 (Feb. 10, 2017).
[81] *See, e.g.*, TRIPS Minutes, *supra* note 67, WTO Doc. IP/C/M/87/Add.1 (Feb. 7, 2018) and TRIPS Minutes, *supra* note 67, WTO Doc. IP/C/M/90/Add.1 (Jan. 15, 2019).
[82] TRIPS Minutes, *supra* note 67, WTO Doc. IP/C/M/92/Add.1, at 22 (July 22, 2019).
[83] TRIPS Minutes, *supra* note 67, WTO Doc. IP/C/M/90/Add.1, at 39 (Jan. 15, 2019); WTO Doc. IP/C/M/91/Add.1, at 24 (Apr. 2, 2019).
[84] TRIPS Minutes, *supra* note 67, WTO Doc. IP/C/M/93/Add.1, at 47 (Dec. 9, 2019).

These domestic programs, reported and discussed on the record by a wide range of governments, offer a unique and authoritative survey of innovation programs across the spectrum of themes set out above. The accounts of innovation policies, and their application through adaptations and more effective use of the IP system, demonstrate considerable diversity and opportunity within the conventional policy framework that is shaped, in part, by the TRIPS Agreement and the application of its principles in domestic law. These reports touched on initiatives to adapt the IP system to promote and facilitate new forms of innovation in digital environment unforeseen at the time of the TRIPS negotiations, such as Singapore's introduction of coverage of graphical user interfaces (GUIs) as designs under the Registered Designs Act with effect from December 2014.[85] They also presented data on impact of intellectual property rights (IPRs) or IP-intensive industries to GDP, employment and trade.[86] For example, the EU reported that from 2011-2013, 28% of all jobs in the EU were generated by IPR-intensive industries, and the US reported that IP-intensive industries contributed more than 38.2% of US GDP. To give a sense of the substance of these exchanges, the following sub-parts seek to summarise some of the trends and initiatives discussed under several broad themes.

A. Innovation Support for Micro, Small and Medium Sized Enterprises

Support for innovative MSMEs has been adopted by many governments as part of a national strategy for innovation-led development: for example, Guatemala reported on the support for MSMEs as a strategic focus in its 2016/2021 Economic Policy.[87] Governments reported on a wide range of steps taken in recognition of the common challenges faced by innovative MSMEs such as underutilisation of the IP system due to the cost, duration and complexity of procedures,[88] and limited human capital and institutional capacity.[89] In response, governments have facilitated MSMEs' use of IP systems through tailored measures tailored, such as awareness-raising, assistance with searches, digital filing platforms, and lower fees for MSMEs,[90] as well as *pro bono* patent application programmes.[91] They have sought to provide a stable and predictable environment for MSMEs to innovate, for instance, through programmes to help such enterprises to access capital, tax incentives for SMEs, and innovation resources and incubation centres

[85] TRIPS Minutes, *supra* note 67, WTO Doc. IP/C/M/80/Add.1, at 60 (Feb. 22, 2016).
[86] TRIPS Minutes, *supra* note 67, WTO Doc. IP/C/M/88/Add.1, at 65 (June 7, 2017).
[87] TRIPS Minutes, *supra* note 67, WTO Doc. IP/C/M/85/Add.1, at 49 (June 7, 2017).
[88] TRIPS Minutes, *supra* note 67, WTO Doc. IP/C/M/88/Add.1, at 16, 24 (June 7, 2017).
[89] TRIPS Minutes, *supra* note 67, WTO Doc. IP/C/M/72, at 41-56 (May 13, 2013).
[90] TRIPS Minutes, *supra* note 67, WTO Doc. IP/C/M/88/Add.1, at 32, 36 (June 7, 2017).
[91] TRIPS Minutes, *supra* note 67, WTO Doc. IP/C/M/85/Add.1, at 49 (June 7, 2017).

specifically for MSMEs,[92] especially start-up firms. More generally, a range of activities and programmes were reported which identify and support innovative sustainability technology, such as innovator networks and targeted strategic support, as well as the establishment of government institutions such as a national secretariat for science, technology and innovation. An example of this is the Panama and Botswana Innovation Hub, which operates a science and technology park and a technology entrepreneurship development programme.[93]

Specific programs were reported that facilitate financing for start-ups and emerging innovation entrepreneurs, such as the Indian Aspiration Fund (with initial funding of about $300 million), launched by the Small Industries Development Bank of India, a 'fund of funds' investing in venture capital funds for meeting the equity requirement of MSME start-ups, and New Zealand's support for an accelerated programme to promote the rapid formation of early-stage information and communication technology (ICT) and digital technology start-ups. [94] Other initiatives included physical centres places for MSME development, collaboration and innovation, such as the Australian Government's Landing Pads Program which is an initiative set up under the National Innovation and Science Agenda to connect export-ready Australian start-ups with access to some of world's most renowned innovation and start up ecosystems in Berlin, San Francisco, Shanghai, Singapore, and Tel Aviv.[95]

B. Cost-Effective Innovation

Under the theme of policies to promote cost-effective innovation, governments described a wide range of measures that sought to minimise the use of resources in the innovation and delivery cycle with the aim of reducing costs and barriers to innovation, while improving the innovative product or service and its suitability to address tangible needs. These measures included programmes for access to the knowledge and expertise available at Canada's universities to support short-term, R&D projects that solve a problem specific to the company's needs, and the Republic of Korea's program surveying technological needs of a local population, then collaborating with experts to develop and adapt technology to address those needs.[96]

C. University Partnerships

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[92] TRIPS Minutes, *supra* note 67, WTO Doc. IP/C/M/72, at 41-56 (May 13, 2013).
[93] TRIPS Minutes, *supra* note 67, WTO Doc. IP/C/M/76/Add.1, at 41, 47 (Aug. 18, 2014).
[94] TRIPS Minutes, *supra* note 67, WTO Doc. IP/C/M/80/Add.1, at 68, 72 (Feb. 22, 2016).
[95] TRIPS Minutes, *supra* note 67, WTO Doc. IP/C/M/85/Add.1, at 50 (June 7, 2017).
[96] TRIPS Minutes, *supra* note 67, WTO Doc. IP/C/M/73/Add.1, at 10 (Sept. 17, 2013).

A particular focus of innovation policies reported were university technology partnerships, given that university research frequently serves as the first stage in the innovation lifecycle, so that Member governments discussed the deployment of the IP system as an enabler of university partnerships to facilitate development, scaling up and eventual commercialisation of research output. Initiatives to improve partnerships and technology transfer with universities, included helping with the development of IP management tools and strategies (e.g., IP licensing templates as is undertaken by Canada); and establishing dedicated teams for knowledge transfer within universities and subsidies for universities to expand and increase knowledge transfer activities (as was outlined by Hong Kong, China). [97]

D. Gender Equality and Innovation

Member governments generally called for greater recognition of the need for gender equality in innovation and discussed programmes to promote equity. These included policies designed to support women entrepreneurs and innovators, and innovative women-led enterprises, such as facilitating access to credit and capital, building women entrepreneurship networks, taking initiatives to get young women more involved in science, technology, engineering and mathematics (STEM) disciplines, offering prizes for women innovators, and, in the case of Chile, establishing a Ministry of Women with the aim of coordinating government and private actors to develop gender research and programmes.[98]

E. Knowledge Diffusion

Innovation support programmes reported extended to wider public awareness and education programmes, such as to promote greater practical understanding of the functioning of the IP system. These included nationwide educational programmes to enhance media competency, including IP management, and programmes and courses on the use of the IP system in higher education beyond the traditional focus of law and business studies (reported by Switzerland); programmes by IP offices to inform children, for instance, through open house days for children (reported by Japan); competitions for children on journalism and promotion of awareness of the IP system (such as in Peru); IP summer schools and academies (reported by Singapore); and IP offices undertaking outreach and awareness-raising programmes (as in Costa Rica).[99]

F. Sustainable Resource and Low Emission Technology

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[97] TRIPS Minutes, *supra* note 67, WTO Doc. IP/C/M/75/Add.1, at 58 (Apr. 16, 2014).
[98] TRIPS Minutes, *supra* note 67, WTO Doc. IP/C/M/78/Add.1, at 44 (May 4, 2015).
[99] TRIPS Minutes, *supra* note 67, WTO Doc. IP/C/M/81/Add.1, at 24-26, 35, 41 (Apr. 27, 2016).

As discussed above,[100] innovation is essential for addressing many of the SDGs, and specifically for enabling the transition to a low-carbon economy. Member governments reported on a wide range of innovation promotion programmes to support and accelerate local innovation for sustainable resource usages and the development of low emission technologies. These included increasing competition among those developing new technologies (promoting an environment conducive to licensing IP and investment); addressing the 'matching problem' (enhancing coordination between licensor and licensee and addressing the need for technology to adapt to local environment, enabling the licensee to adapt and apply technology in the light of specific applications), including through enhanced used of patent databases, and programmes to accelerate processing of patent applications for green technology. Members stressed the need to promote specific identify areas in priority need for research and innovation cooperation, and reported a disproportionate increase in innovative activity in green technologies: "since TRIPS, patenting rates for clean energy technologies have increased by approximately 20% per year, which far outpaces patenting rates for fossil fuel technologies."[101]

G. Regional Innovation Models

Members discussed the role of regional approaches to innovation policies. The EU outlined the role of regional IP systems in Europe, including the unitary patent, the European Patent Office and the EU Intellectual Property Office (IPO) in promoting and facilitating innovation across the region. Other regional programmes aimed at promoting region-wide research partnerships, such as the Regional Collaborations Programme that enables Australian researchers and enterprises to strengthen links with their counterparts across the Asia-Pacific region. Regional innovative networks include Euresearch, a network agency mandated by the Swiss Government to provide targeted information, hands-on advice and transnational partnering related to European research and innovation programmes: in cooperation with the EU's Horizon 2020 Programme for Research and Innovation, Euresearch mobilised support to develop a vaccine against Ebola. Members cited initiatives to promote regionwide coordination and interoperability of IP systems. The Inter-American Development Bank has financed by the Forum for the Progress and Development of South America, The Forum for the Progress and Development of South America (PROSUR) — a harmonised IP system in South America among Argentina, Brazil, Chile, Colombia, Ecuador, Paraguay, Peru, Suriname and Uruguay — is also of relevance. Under this initiative, common software for interconnection of domestic IP offices has been adopted, and a tool

[100] *See supra* Part III.

[101] TRIPS Minutes, *supra* note 67, WTO Doc. IP/C/M/82/Add.1, at 29 (Sept. 1, 2016).

for cooperation in patent examination and a common regional form for filing trademark applications have been developed.[102]

H. Public-Private Collaboration in Innovation

Under SDG 17, target 17.7 aims to "encourage and promote effective public, public-private and civil society partnerships, building on the experience and resourcing strategies of partnerships". Programmes reported to the TRIPS Council aimed at promoting public-private partnerships for innovation. Thus, Singapore's National IP protocol lays out options and best practices for these government agencies to work with relevant private sector bodies to commercialise these inventions while ensuring public interests are upheld. Sectoral-specific projects included Canada's Agricultural Clean Technology Program, which provides non-repayable, federal contributions to implement and deliver clean technology projects that support activities across the innovation continuum. Support for partnerships also included government assistance for IP valuation, such as the establishment of a qualified IP-valuation institute in the Republic of Korea, aiming to enhance the quality of technical valuation. The Korean IP Office (KIPO) has also provided assistance in terms of the cost of valuation for SMEs so that SMEs can gain easy access to IP financing.[103]

I. Limitations on IP and Innovation Policy

The TRIPS Council's discussion of innovation policy also included cautions not to conflate the protection of IP rights with innovation policy, with the IP system and the patent system in particular seen as just one element of the innovation ecosystem, and some Member governments underscored the role of alternative approaches. Frequently cited was a section from the World Health Organisation (WHO), World Intellectual Property Organisation (WIPO), and the WTO Trilateral Study (WHO, WIPO & WTO Trilateral Study) on innovation and access to medical technologies, discussing patent law in the context of medical innovation:

> Patent law is not a stand-alone innovation system. It is only one element of the innovation process, and one which can be deployed differently in diverse innovation scenarios. Patent law has little bearing on many other factors that lead to the successful development of technologies, for example, the nature and extent of demand, commercial advantages gained by marketing and ancillary services and support, commercial and technical viability of

[102] TRIPS Minutes, *supra* note 67, WTO Doc. IP/C/M/83/Add.1, at 59 (Jan. 30, 2017).
[103] TRIPS Minutes, *supra* note 67, WTO Doc. IP/C/M/93/Add.1, at 59-60 (Dec. 9, 2019).

> production processes, and compliance with regulatory requirements, including through effective management of clinical trials data.[104]

Some Member governments maintained that there was a tenuous or uncertain link between IP and innovation, especially for LDCs. Thus, Bangladesh pointed out that, "if we examine the status and investment of MSMEs in the LDCs, we see that establishment and securing an IP regime may or may not play a role for their development". [105] The potential for proliferating patent portfolios to impede innovation was stressed in particular by India: "The co-sponsors of the agenda item on 'IP and Innovation' have argued that increasing patent monopolies would drive greater innovation. However, the evidence does not support this assertion. On the contrary, the view gaining ground is that increasing patent monopolies would actually stifle innovation." [106] Brazil recalled the value of the Council's exploration of innovation policies as a contribution to an understanding of the policy role of the IP system as set out in Article 7 of the TRIPS Agreement.[107] Brazil also stressed the importance of balance in the IP system, again as set out in Article 7: "We are convinced that, along with universal high-quality education and other elements, a balanced and effective IP System in line with the objectives set forth in Article 7 of TRIPS is key to achieving the sustainable innovation environment."[108]

J. Towards a Broader View of TRIPS and Innovation

Apart from the sheer bulk of empirical data on policy settings and practical initiatives available from these three sources only, connected with a single Council's operations within one organisation, and notwithstanding numerous other sources, the diversity, breadth and complexity of the material available means that it is impossible to consider convergence on specific policy prescriptions applicable to all nations, but there are clear, broad principles that can usefully apply internationally. Indeed, this is what TRIPS arguably has achieved: the objectives, general principles and rules of TRIPS provide for balance of national IP systems and essential interoperability between national systems, rather than providing a specific model or prescription for innovation capacity. Former WTO Deputy Director-General Harsha Singh has proposed an additional global principle for IP

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[104] World Health Org., World Intellectual Prop. Org., & World Trade Org., Promoting Access to Medical Technologies and Innovation: Intersections Between Public Health, Intellectual Property and Trade 168 (2d ed. 2020) [hereinafter Trilateral Study].
[105] TRIPS Minutes, *supra* note 67, WTO Doc. IP/C/M/85/Add.1, at 70 (June 7, 2017).
[106] *Id.*
[107] TRIPS Minutes, *supra* note 67, WTO Doc. IP/C/M/90/Add.1, at 52 (Jan. 15, 2019).
[108] TRIPS Minutes, *supra* note 67, WTO Doc. IP/C/M/83/Add.1, at 71 (Jan. 30, 2017).

and innovation: that of equitable benefit sharing,[109] and it could be argued that this is consistent with the existing objective of IP protection that TRIPS articulates, the idea of a positive-sum, 'mutual advantage' for both producers as well as users of technological knowledge, conducive to 'a balance of rights and obligations'.[110]

Certainly, a narrow or prescriptive conception of innovation is more likely to hobble fulfilment of SDGs than to achieve it: innovation can be construed along a spectrum from individual, quirky perspicacity to a highly collaborative, interactive process of networking and pooling knowledge; the models range from an 'Apollo project' to grass-roots innovation within indigenous knowledge systems. Diversity in innovation models is matched by diversity in development goals: ranging from major infrastructure projects to development of human capital, research capacity and sustainable knowledge systems. Giving due recognition to this diversity, and working from an empirical base, compel a holistic and comprehensive perspective: a necessity confirmed by the ambition, range and depth of the SDGs.

To the wide swathe of technological innovation called for in the SDGs can be added the contribution of the innovative technologies that will be required to support the institution building, development and implementation of partnerships that are identified in SDGs 16 and 17 both as goals in themselves and in an instrumental sense as means of achieving the goals in general. The demand for innovation will be felt, therefore, in forms of collaboration, national and multilateral governance, and monitoring and reporting.[111]

In the absence of likely adaptations or updating of the existing international framework as represented by TRIPS, innovation at the multilateral level will presumably need to take place within the existing framework, raising the question of how the existing tools can be used effectively to achieve the forward-looking 2030 Agenda for Sustainable Development and its Sustainable Development Goals (2030 Agenda). This question arises, for instance, in considering the applicability of the principles of the TRIPS to the current trade and development environment which includes trade in digital content and IP transactions forming part of GVCs — when the TRIPS Agreement was drawn up in an analogue era before real

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[109] Int'l. Ctr. Trade & Sustainable Dev., Conference on Innovation and Development in the Evolution of Global Trade and Investment Cooperation, https://ictsd.iisd.org/field-collection/field-programme/1266.

[110] TRIPS Agreement, *supra* note 7, art. 7.

[111] See, for instance, the country case studies discussing the challenges of measuring some SDG indicators at national and subnational levels, in U.N. Dev. Prog., *The Sustainable Development Goals Are Coming to Life: Stories of Country Implementation and UN Support* (2016), https://www.undp.org/content/undp/en/home/librarypage/sustainable-development-goals/the-sustainable-development-goals-are-coming-to-life.html.

understanding of what digital trade would look like. Accounts of the negotiators of the TRIPS Agreement do confirm the point that the negotiations did not take account of the concurrent developments such as the invention, fifteen minutes away at the European Organization for Nuclear Research (CERN), of the World Wide Web,[112] let alone the emergence of trade in IP as such in the form of knowledge products shorn of their carrier media, [113] exemplified by the development of the 'app economy', which in principle offers access for lone innovators or microenterprises to global markets that did not exist ten years ago.

This transformation of trade itself was not foreseen during the TRIPS negotiations, when IP was largely seen as embedded in trade in goods (recalling the roots of the TRIPS Agreement in earlier General Agreement on Tariffs and Trade work on trade in counterfeit goods). Even so, the fact that many WTO Members have updated and developed their IP rules to respond to the opportunities, and the new parameters produced by the digital economy – and notified these developments to the TRIPS Council – does provide a broad-based illustration of how national IP systems are being adapted and refined within the framework of the TRIPS Agreement, even in the absence of parallel adaptation of the provisions of the TRIPS Agreement itself. In any event, there is considerable scope for the broad principles of the Agreement to remain compatible with the exploration of diverse and nationally tailored policy options in relation to innovation: this interplay between domestic diversity within a rules based framework resonates with the principle espoused in the resolution adopting the the 2030 Agenda concerning respect for "each country's policy space and leadership to implement policies for poverty eradication and sustainable development, while remaining consistent with relevant international rules and commitments".[114]

V. INNOVATION IN GOVERNANCE: A COHERENCE AGENDA ON PUBLIC HEALTH

Given the emphasis in the same resolution on "system-wide coherence and coordination" and on "system-wide strategic planning, implementation and reporting in order to ensure coherent and integrated support to the implementation" of the 2030 Agenda, the process of implementation naturally creates expectations of improved, more coherent forms of governance, including

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[112] Lars Anhell, *Keynote Speech at the TRIPS Symposium*, *in* THE MAKING OF THE TRIPS AGREEMENT: PERSONAL INSIGHTS FROM THE URUGUAY ROUND NEGOTIATIONS (Jayashree Watal & Antony Taubman eds., World Trade Org. 2015).

[113] Cathy Field, *Negotiating for the United States*, *in* THE MAKING OF THE TRIPS AGREEMENT: PERSONAL INSIGHTS FROM THE URUGUAY ROUND NEGOTIATIONS (Jayashree Watal & Antony Taubman eds. World Trade Org. 2015).

[114] 2030 Agenda, *supra* note 3.

at the multilateral level. This observation chimes in with the increasing attention in the innovation policy literature, noted above, to innovation in forms of governance and public institutions. An example of such innovation in multilateral governance, with direct bearing on the fulfilment of SDG 3, has been the experience, since 2010, of the WHO, WIPO and the WTO engaging in coordination and policy dialogue for more coherent and effective discharge of their responsibilities in the overlapping policy domains of public health, intellectual property and trade.[115]

Figure 4: Mapping the Policy Intersections: Key Areas of Law and Policy for Innovation and Access

Source: WHO, WIPO & WTO Trilateral Study[116]

The conceptual backbone of the approach is to set the policy goals at centre — in this instance, building the collaborative base upon the goals of access to, and innovation of, needed medicines and other medical technologies, akin to SDG Target 3.B. Then expertise and capacity building programs in the three overlapping policy domains — public health, as the predominant area, intellectual property, and trade — are pooled, from the point of view of both conceptual coherence and practical programme delivery. In turn, this provides a framework for the coherent

[115] Antony Taubman et al., *Policy Coherence for Improved Medical Innovation and Access*, 91 BULLETIN WORLD HEALTH ORG. 315 (2013); Trilateral Study, *supra* note 104.
[116] Trilateral Study, *supra* note 104.

integration of distinct specialist areas of expertise with direct bearing on the access/innovation equation (see Figure 2), ranging from the human rights dimensions and pricing and procurement policies, to patent law and trade policy settings. By setting each of these areas in context conceptually, and in the planning and delivery of technical assistance and policy support programmes, this coherent structure enables policy dialogue and practical support to be systematically guided and informed by key policy and legal drivers, such as epidemiologically-based determination of future priority needs for medical innovation, and the human rights aspect of the right to health, while also ensuring that technical expertise in specific domains is not deployed in a narrow, self-contained way but rather makes a coherent contribution to the overarching policy objectives.

This coherent and integrated structure also forms a framework for collaboration, coordination and policy dialogue with a wide range of policy actors and experts — from across the multilateral system, civil society, the philanthropic sector, and the private sector — again enabling the challenges of access and innovation to be considered from the full breadth of policy perspectives and practical experience, and addressing the kind of partnerships and cross-sectoral collaboration and cooperation that are set out under SDG 17. This approach has borne fruit in the form of a trilateral publication, serving to promote transparency in programme content and to inform and structure an integrated, systematic, factually based approach to multilateral cooperation in a critical area.[117] The same approach has guided a series of policy symposia, designed to address emerging issues for innovation and access, and to map out future directions for multilateral cooperation, drawing together multiple stakeholders and promoting interactive dialogue between experts from different domains; these have so far addressed the following themes, laying the groundwork for more concentrated and focussed follow-up at the practical level:

- Opportunities and Challenges of Cutting-Edge Health Technologies (2019);
- Sustainable Development Goals: Innovative Technologies to Promote Healthy Lives and Well-Being (2018);
- Antimicrobial Resistance: How to Foster Innovation, Access and Appropriate Use of Antibiotics? (2016);
- Public Health, Intellectual Property, and TRIPS at 20: Innovation and Access to Medicines; Learning from the Past, Illuminating the Future (2015);
- Innovation and Access to Medical Technologies: Challenges for Middle-Income Countries (2014);
- Medical Innovation — Changing Business Models (2013);
- Access to Medicines: Patent Information and Freedom to Operate (2011); and

[117] *Id.*

- Access to Medicines: Pricing and Procurement Policies (2010)

This holistic and yet practically grounded approach to policy coordination also informs more concrete and direct inputs to policymaking processes, such as the technical assistance and policy support provided to national governments at their request,[118] enabling a more coherent, integrated and broad-based form of support, tailored more effectively to the specific needs and context of the country concerned. Recently, the High-Level Panel on Access to Medicines [119] — established by the United Nations Secretary General in 2016 to "propose solutions for addressing the incoherencies between international human rights, trade, intellectual property rights and public health objectives" — issued its Report on Promoting Innovation and Access to Medical Technologies,[120] which discussed innovation and access in the specific context of achieving SDG 3 (as well as more broadly). Its recommendations covered issues of governance, accountability and transparency; concerning multilateral governance in particular it proposed:

- establishment of an independent review body to assess progress on health technology innovation and access, including under the ambit of the 2030 Agenda;
- convening an interagency task force which would include regular reporting on progress towards system-wide coherence on innovation and access; and
- holding a Special Session of the UNGA to agree on strategies and an accountability framework.

A submission to the High Level Panel by the WTO Secretariat reported on work towards coherence on public health with reference to the SDGs, and analysed the coherence agenda on public health, trade and intellectual property,[121] covering the dimensions of coherence in international law, at the political level, in values, and in the implementation of international law; and legal and institutional coherence, the latter including the level of governance of organisations, and through practical

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[118] *See, e.g.*, Rep. of the WTO Secretariat to Council for Trade-Related Aspects of Intellectual Property Rights, WTO Docs. IP/C/W/618, IP/C/W/608, IP/C/W/600, IP/C/W/590, IP/C/W/577 and IP/C/W/557.

[119] U.N. Secretary Gen. Access Meds., U.N. Secretary General's High-Level Panel on Access to Medicines Report, http://www.unsgacc.essmeds.org/.

[120] U.N. Secretary Gen. High Level Panel on Access Meds., Final Report: U.N. Secretary General's High-Level Panel on Access to Medicines Report, http://www.unsgaccessmeds.org/final-report/.

[121] U.N. Secretary Gen. High Level Panel on Access Meds., Background Note prepared by the Secretariat of the World Trade Org., Building Momentum for the Coherence Agenda on Global Health, http://www.unsgaccessmeds.org/reports-documents/.

cooperation and collaborative program delivery by agencies and programmes within the multilateral system.[122] It observed that, "coherence for public health is an imperative at several levels, ranging from the international legal framework to concrete practical initiatives; encouraging coherence entails addressing each level, as well as promoting positive feedback loops between these distinct levels".

A. Initial Insights from the Response to the COVID-19 Pandemic

The devastating, near-universal impact of the COVID-19 pandemic has underscored in stark terms the interdependence of innovation, and equitable and effective access to the fruits of innovation. The 2020 edition of the WHO, WIPO & WTO Trilateral Study under the theme 'An Integrated Health, Trade and IP Approach to Respond to the COVID-19 Pandemic' outlined the nature and scope of the challenge for cooperation:

> The coronavirus disease 2019 (COVID-19) pandemic constitutes an extraordinary global public health crisis. It has created a pressing need for intensified global cooperation. The pandemic has from its outset raised issues at the crossroads of public health policy, trade policy and the framework for and the management of innovation, including those relating to intellectual property (IP) rights … The COVID-19 pandemic has generated sudden, far-reaching impacts on health systems, and has prompted significant social and economic repercussions around the world. This extraordinary threat to peoples' health and livelihoods has required urgent action:
>
> - to monitor and contain the spread of the virus;
> - to understand relevant virology and epidemiology;
> - to mobilize and coordinate the requisite resources;
> - to deploy the necessary health care system infrastructure;
> - to ensure that health care products, technologies and protective equipment are available and can be accessed equitably in sufficient quantities worldwide; and
> - to develop, test, manufacture and ensure equitable access to diagnostics, vaccines and therapeutics, medical devices and other relevant technologies.[123]

At the time of writing, the response to the pandemic was marked by new forms of government support for urgent innovation and product development and approval,

[122] Annex: Dimensions of Coherence illustrated by the Doha Declaration.
[123] Trilateral Study, *supra* note 104, at 7.

and by a range of initiatives to share, pool, openly license or not to assert IP rights. The WIPO COVID-19 IP Policy Tracker [124] records numerous IP office administrative measures, legislative and regulatory interventions and voluntary actions to promote innovation as part of the pandemic response. A central collaborative platform for innovation was the WHO-sponsored 'Access to COVID-19 Tools (ACT) Accelerator',[125] launched in April 2020, to enable "global collaboration to accelerate development, production, and equitable access to COVID-19 tests, treatments, and vaccines". Partners included governments, scientists, businesses, civil society, and philanthropists and global health organisations. The ACT Accelerator enabled diverse players to join:

> …forces to speed up an end to the pandemic by supporting the development and equitable distribution of the tests, treatments and vaccines the world needs to reduce mortality and severe disease, restoring full societal and economic activity globally in the near term, and facilitating high-level control of COVID-19 disease in the medium term.

As researchers and product development programmes made progress towards vaccines and therapeutics, the WTO also saw an intensive and urgent debate in the TRIPS Council between WTO Members about the existing standards in the TRIPS Agreement and whether they should be waived altogether.[126] The WTO Secretariat undertook a broad review of existing pandemic response measures across the spectrum of trade policy; [127] this included a note on the TRIPS Agreement and IP related measures that covered voluntary actions, government interventions, administrative measures and initiatives to promote greater transparency.[128]

VI. CONCLUSION

Any objective that is set for innovation and innovation policy is inherently a moving target; it is the very function of innovation to shift the frame; and

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[124] *COVID-19 IP Policy Tracker*, WORLD INTELLECTUAL PROP. ORG., www.wipo.int/covid19-policy-tracker.

[125] *Access to COVID-19 Tools Accelerator*, WORLD HEALTH ORG., www.who.int/initiatives/act-accelerator.

[126] *Members Discuss Intellectual Property Response to the COVID-19 Pandemic*, WORLD TRADE ORG. (Oct. 20, 2020), https://www.wto.org/english/news_e/news20_e/trip_20oct20_e.htm.

[127] *COVID-19 and World Trade*, WORLD TRADE ORG., https://www.wto.org/english/tratop_e/covid19_e/covid19_e.htm.

[128] *The TRIPS Agreement and COVID-19*, WORLD TRADE ORG. (Oct. 15, 2020), https://www.wto.org/english/tratop_e/covid19_e/trips_report_e.pdf.

disruptive technologies do disrupt. As the 2016 ECOSOC Multi-stakeholder Forum observed, the SDGs themselves are disruptive, implying 'a radical departure from business as usual'. This suggests that the 2030 Agenda itself can, and indeed should be viewed as an exercise in innovation in multilateral cooperation and coordination. Plainly, it is inconceivable to imagine attainment of the SDGs without innovation in critical areas such as energy, health, and agriculture; but, equally, innovation is called for in the international system, within the institutional and policy framework that shapes and supports global cooperation. This imperative ties in with the innovation policy literature reviewed above which reinforces the need for a focus wider than technological innovation as such, and recognition of the wider policy framework and governance systems that are essential for the fruits of innovation to reach those most in need.

The COVID-19 crisis has brought into stark relief the interdependence of nations in the domain of public health, setting in an immediate context the words of the WHO Constitution:

> The health of all peoples … is dependent upon the fullest co-operation of individuals and States. The achievement of any State in the promotion and protection of health is of value to all. Unequal development in different countries in the promotion of health and control of disease, especially communicable disease, is a common danger.[129]

The pandemic response exemplifies how innovation and equitable access to the fruits of innovation are indispensable for the attainment of essential public goods, yet the sinews of international collaboration for innovation and equitable access can be tested by the very urgency of the challenge. As the GII reports:

> There are now genuine risks to international openness and collaboration on innovation, however. Yet, if anything, the joint search for medical solutions during the pandemic has demonstrated how powerful cooperation can be. The speed and efficacy of this collaboration shows that internationally coordinated R&D missions can effectively counteract the tendency for increased isolationism and address important societal topics—now and in the future.[130]

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[129] Constitution of the World Health Organisation, 80(12) BULLETIN OF THE WORLD HEALTH ORG. 983 (adopted by the International Health Conference held in New York from June 19 to July 22, 1946, signed on July 22, 1946 by the representatives of 61 States, Off. Rec. World Health Org., 2, 100, and entered into force on April 7, 1948).

[130] GII Report, *supra* note 9, at 29.

> …[T]he crisis might further impact the international openness and knowledge flows so critical to the development of future innovation leaders from emerging economies and, more generally, to international innovation networks. Restrictions in knowledge and technology diffusion, the unravelling of the global economy, and a return to nationalist policies are risks to innovation. Policymakers are well advised to ensure that this scenario of more nationally-oriented innovation systems is averted. [131]

Innovation in support of the SDGs extends beyond the specific domain of innovation within a private sector or business context and requires wider public-private partnerships, which are themselves the subject of innovation in their conception and implementation.[132] Equally, even to approach attainment of the ambitious SDGs entails innovation in forms of international cooperation and the sharing of knowledge and resources through innovative structures, epitomised in the pandemic response. This extends to collaboration to promote transparency and to build a stronger empirical foundation, the lack of which is itself an obstacle to attaining the SDGs. Hence, the UNGA in 2019 has encouraged efforts to increase the availability of data to support the measurement of national innovation systems (such as the existing GII), and empirical research on innovation and development to assist policymakers in designing and implementing innovation strategies.[133]

A stronger empirical foundation for innovation policy would also entail stronger and more inclusive opportunities for mutual learning between governments on the range of measures taken to promote innovation in practice. This article has illustrated the genesis of such a process in the WTO TRIPS Council, and, in the critical public health space, through the trilateral cooperation undertaken by three specialised agencies. Alongside these examples, there are numerous other national, regional and international initiatives addressing these issues both in general and in specific sectors. The stark fact of interdependence and global connectedness — however it is construed in different legal and policy frameworks — will necessitate increased attention to mutual learning and innovation in forms of governance and cooperation, as the international community reflects on the implications of the current pandemic, as the 2030 target date of the SDGs looms into focus and as, one would hope, the prospects for positive-sum welfare outcomes and mutual benefit from tailored and adaptable forms of innovation are better understood and

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131 *Id.* at 9.

132 THE CAMBRIDGE HANDBOOK OF PUBLIC-PRIVATE PARTNERSHIPS, INTELLECTUAL PROPERTY GOVERNANCE, AND SUSTAINABLE DEVELOPMENT (Margaret Chon et al eds., 2018).

133 G.A. Res. 74/229, Science, Technology and Innovation (STI) for Achieving the Sustainable Development Goals (SDGs) (Dec. 19, 2019).

applied by policymakers, ideally realising the aspirations and potentiality for innovation voiced by Romer.[134]

[134] Nobel Lecture, *supra* note 5.