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Chapter 19 - The Triple Interface: Findings and Future Directions

Margaret Chon

19 The Triple Interface: Findings and Future Directions

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The foregoing chapters explore and analyze key areas of public–private partnership (PPP) involvement across a variety of development fields – or what we have termed the 'triple interface' of PPPs, intellectual property (IP), and the sustainable development goals (SDGs). They represent diverse perspectives on the ways in which this triple interface can advance both public and private interests toward the realization of the SDGs, on multiple levels: practical, policy, and conceptual.

This final chapter provides a partial synthesis, situating the contributions within a global *knowledge governance* framework: evaluating whether and how PPPs encourage innovation, build innovation capacity, engage in technology transfer or sharing, or otherwise ensure wide dissemination and diffusion of innovation results across borders to advance the progress of the SDGs. Based on the evidence presented in this book, this chapter summarizes findings according to four thematic sections and illustrates these findings with references to specific chapters: (1) aligning with public policy objectives; (2) coordinating with other knowledge governance efforts; (3) managing the partnership boundaries; and (4) enhancing sustainable development. Because so many of the book's contributions touch upon all four themes, any references are meant to be illustrative rather than comprehensive. After this thematic tour, the chapter concludes with suggestions for a future policy and research agenda.

I Aligning with Public Policy Objectives

The public policy objectives of knowledge governance include not only the generation of IP-protected inventions and works but also the dissemination and diffusion of these innovations, and the knowledge embedded within them. These are not just goals in and of themselves, but also function to further other public policy ends, such as promoting better health, education, or climate conditions. PPPs implement these various policies through the IP management and choices of private partners as well as through the regulatory and public policies of public partners.

A *IP Management and Policies*

A number of authors touch upon IP licensing issues as a key subset of IP management and choices. These include licensing models (exclusive and nonexclusive licensing),

approaches (humanitarian and dual licensing), and policies (e.g., global access policies, as well as the transparent licensing policy discussed in the case of the Medicines Patent Pool (MPP)).[1] Not surprisingly, this discussion about IP licensing is most developed in the public health section of the book.[2] For example, the case study of the MPP outlines its approaches with respect to IP management, with origins in the practical application of access-oriented licensing to HIV, and subsequent expansion into hepatitis C and TB. Its current policy of transparent voluntary licenses with industry arguably can be replicated in other areas of pharmaceutical research and development (R&D).[3] The examination of the World Intellectual Property Organization (WIPO) Re:Search partnership offers 'Guiding Principles' for pharmaceutical R&D PPPs.[4] And the study of the Innovation Medicines Initiative (IMI) explains the various ways in which background and foreground IP can be licensed and managed to promote collaborative R&D, especially in the precompetitive biomedical research space.[5]

Also notable in this regard is the case study of the Health InterNetwork Access to Research Information (HINARI), which is the World Health Organisation's (WHO) PPP for providing access to scientific information to researchers in least developed countries. This initiative has been able to address multiple issues of for-profit publishers in making their works more accessible to developing country researchers. In this PPP, for-profit publishers are incentivized to participate enthusiastically in initiatives directed at scientists in least developed countries, in part by ensuring that profitable markets are fenced off from areas of nonprofit access to scientific information.[6]

In bilateral clean energy research partnerships such as the US–China Clean Energy Research Centre, IP agreements have been concluded between the partners. In the case of this specific PPP, a 'Technology Management Plan' for each sector fleshes out IP arrangements for technologies developed by each partner separately and jointly.[7] As the discussion of WIPO GREEN documents, by contrast, its licensing agreements are entirely left to the individual technology providers and seekers.[8] Citing to a plethora of recent humanitarian licensing guidelines and proposals, another chapter focusing on climate change-related technologies advances a crucial framework for PPPs of innovation

[1] See Esteban Burrone, chapter 5, *supra*.
[2] See Frederick M. Abbott, chapter 2, *supra*; cf. Peter K. Yu, chapter 18, *supra*.
[3] Esteban Burrone, chapter 5, *supra* at 93 ("MPP is the first patent pool in public health designed to enhance access to affordable medicines in developing countries through the negotiation of access-oriented and transparent voluntary licences with the pharmaceutical industry.").
[4] Anatole Krattiger et al., chapter 3, *supra* at 64 ("Members will provide royalty-free licenses for R&D related to NTDs, malaria, and tuberculosis; Members will provide a royalty-free license for any product developed through WIPO Re:Search that is used and sold in LDCs; Members will consider the issue of access and affordability to these products for all developing countries, including those that do not qualify as LDCs; and Users will retain ownership of any new IP developed, but are encouraged to make new inventions available to other Members of WIPO Re:Search.")
[5] Hilde Stevens & Isabelle Huys, chapter 6, *supra*.
[6] Jens Bammel, chapter 7, *supra*.
[7] Ahmed Abdel-Latif, chapter 11, *supra*.
[8] Abdel-Latif, *id.*, at 233 ("It is thus interesting to note that WIPO GREEN has no specific prescriptive licensing arrangements or terms in place (though offers a Licensing Checklist; see later). The technologies uploaded to the WIPO GREEN database remain the property of the rights holder. It is then up to them and the collaborating parties to structure agreements in the manner they feel is most appropriate and effective.")

policy and management, viewing private management mechanisms to be as important as the public policy levers wielded by public partners.[9]

These and other chapters raise the vital question of how to further foster the uptake of a broader range of key IP policy and management levers, such as IP licensing practices, across different sectors in order to facilitate progress towards the numerous public policy goals set forth by the SDGs.

B *Technology Sharing and Innovation Capacity-Building*

Technology transfer is an important part of knowledge governance from the perspective of many developing countries. The chapter reviewing existing models and future institutional designs contributes to a conceptual understanding of this critical activity by coining the term 'technology sharing' to denote a less unilateral relationship between partners in international PPPs.[10] Yet with a few exceptions, most international PPPs described in the extant literature are not particularly oriented either toward technology sharing or innovation capacity building. This observation corroborates the findings of a study of climate change and related partnerships, based upon PPPs formed after the 2002 World Summit on Sustainable Development (post-WSSD PPPs).[11] And the on-going absence of robust mechanisms for 'technology transfer' (now understood to include technology collaboration and facilitation) is still apparent in the green technology space under the United Nations Framework Convention on Climate Change (UNFCCC)[12] as well as the climate change goals under the 2030 Agenda.

These converging observations raise the obvious question of what more can be done to implement technology sharing and innovation capacity building goals more broadly and effectively throughout the SDGs and within PPPs. These include not just the clearly related goals of SDG 9 and SDG 17, but other SDGs as well.

C *The 'Three A's' of Accessibility, Availability, and Affordability*

Dissemination and diffusion activities of knowledge governance are critical to sustainable development and could be described as the 'three A's' of accessibility, availability, and affordability. The global debate over the importance of the three 'A's' to IP policy

[9] Joshua D. Sarnoff & Margaret Chon, *supra* at 271–72 (suggesting that "upstream owners [] retain the power to authorize experimental uses (to the extent that any jurisdiction lacks such restrictions on patent rights) and []permit "humanitarian" uses (at low or no cost) for climate mitigation and adaptation needs . . ." and changing "the default resort from exclusive to non-exclusive licensing (unless the former has been demonstrated to be needed)."

[10] Padmashree Gehl Sampath, chapter 15, *supra* at 334. According to her, "if one were to provide incentives for access and use of technology, as well as learning, and building upon it, the partners should all be treated as equal and would work towards protecting the knowledge that is common to the PPP. *Technology sharing* therefore is the more apropos term that reflects this kind of equal partnership with an equally important responsibility to contribute and build on the knowledge.").

[11] Ayşem Mert & Philipp Pattberg, chapter 13, *supra*.

[12] Ahmed Abdel-Latif, chapter 11, *supra* at 227 ("a Technology Facilitation Mechanism (TFM) was launched to support the implementation for the SDGs . . . [and] is tasked with facilitating multi-stakeholder collaboration and partnerships through the sharing of information, experiences, best practices and policy advice among Member States, civil society, the private sector, the scientific community, and United Nations entities "); see also Joshua D. Sarnoff & Margaret Chon, chapter 12, *supra*.

underlies each of the contributions in the public health section, all of which address the question of access to R&D or the fruits of R&D on poverty-related neglected diseases (PRNDs).

Outside of the global health arena, advocates of greater access to knowledge point to digitization as a crucial technological development underpinning the potentially inexpensive, rapid, and geographically inclusive dissemination of many works, whether under copyright or in the public domain. For instance, the analysis of the WIPO Accessible Books Consortium (ABC) looks at the advantages of an initiative that promotes partnerships with for-profit publishers to provide materials to communities of visually impaired persons (VIPs).[13] This chapter, however, documents the very real challenges in providing digital works in accessible formats, which require accompanying and compatible software, hardware, and/or technical know-how. Similarly, the HathiTrust case study asserts that this US-based PPP has increased not only accessibility of works to all readers, including VIPS in other countries, but also furthered preservation and therefore availability of works that might otherwise have been lost due to degradation of the paper medium on which they were stored.[14]

This aspect of global knowledge governance is often framed in terms of simply increasing the 'public domain' or encouraging 'open access' models over proprietary models of knowledge transfer. Yet these and other pieces in the book show that barriers to dissemination could be defined and addressed with more granularity. They raise the issue of how to encourage more PPPs to include explicit goals addressing the 'three A's.' Furthermore, they illustrate how dissemination might potentially be furthered by harnessing knowledge governance goals to the private sector's resources and cross-border reach.

II Coordinating with Other Knowledge Governance Efforts

PPPs often contend with the IP-intensive nature of knowledge governance activities. And knowledge governance is often conflated simply with IP. But innovation activities go much further than simply generating IP (whether patents, copyrights, or other formal kinds of IP) and/or licensing IP. This section links the activities of PPPs, including the IP management and policies described above, with other knowledge governance efforts – particularly those in multilateral treaty frameworks such as those administered by WIPO or the WTO. And given the emphasis on goals, targets, and indicators within the current sustainable development paradigm, it also addresses the kind of metrics appropriate to measure progress in these efforts.

A *Relationship to Other Forms of Regulatory Coordination, Harmonization, and Oversight within IP Legal Regimes*

Within the public health domain, the WIPO Re:Search initiative illustrates some mechanisms for collaborative governance and regulatory coordination, specifically between an intergovernmental organization (INGO) such as WIPO and other PPP stakeholders.

[13] Susan Isiko Štrba, chapter 9 (describing the Marrakesh Treaty to Facilitate Access to Published Works for Persons Who Are Blind, Visually Impaired, or Otherwise Print Disabled (VIP Treaty)).

[14] Melissa Levine, chapter 10, *supra*.

On the one side is the partnership hub – BIO Ventures for Global Health (BVGH) – that functions to organize and promote the activities of various R&D efforts;[15] on the other side is the INGO – WIPO – that engages in evaluation, oversight, and possible steering of partnership.[16] Important to note in the public health arena, moreover, is the relationship of PPPs to compulsory licensing provisions in multilateral agreements; the activities of these PPPs are not necessarily intended to be a substitute for these harmonized multilateral licensing mechanisms.[17]

Likewise, in the arena of education and libraries, the activities of WIPO's ABC are viewed as complements to rather than substitutes for exceptions and limitations to copyright such as those authorized by multilateral treaties because even PPPs affiliated with an INGO such as WIPO are limited in their impact compared to the potential reach of INGOs through their treaty-making activities.[18] And as argued in the case study of HathiTrust, the multilateral treaty framework for copyright exceptions and limitations is crucial to facilitate increased cross-border access to copyrighted works and therefore should be expanded to increase harmonization for public domain works.[19]

Similarly, with green technologies, international efforts to encourage the development and diffusion of new technologies under the UNFCCC are intertwined with national (including private) efforts. However, much more work is needed to develop the role of PPPs within the institutional framework of the UNFCCC. Bilateral collaborative PPPs may provide models for further efforts at collaborative partnerships.[20]

A comparative case study on geographical indications (GIs) finds no optimal degree or balance of involvement by the public sector *vis-à-vis* the private sector in partnerships. Both sectors operate necessarily hand-in-hand, and its authors conclude that jurisdictions should choose the correct balance according to national goals, culture, customs, and agricultural practices.[21]

Thus, experts across different development domains posit that optimal knowledge governance necessarily involves coordination between public and private sectors, as well as across local, national, and multinational levels. The question is how to make this cross-cutting and multi-level coordination involving PPPs more consistent and effective.

B *Effectiveness Metrics, Such as Demonstrated Output, Outcomes, and Impact on the Production and Distribution of Knowledge Goods*

Work in biomedical R&D PPPs such as IMI suggests a large number of metrics other than formal IP to evaluate the effectiveness of these PPPs;[22] similarly, the WIPO

[15] Katy M. Graef et al., chapter 4, *supra*.
[16] Anatole Krattiger et al., chapter 3, *supra*.
[17] Esteban Burrone, chapter 5, *supra*.
[18] Susan Isiko Štrba, chapter 9, *supra*.
[19] Melissa Levine, chapter 10, *supra*.
[20] Ahmed Abdel-Latif, chapter 11, *supra*.
[21] Irene Calboli & Delphine Marie-Vivien, chapter 14, *supra*.
[22] Hilde Stevens & Isabelle Huys, chapter 6, *supra* at 132 ("Performance of scientific research, and in particular the evaluation of IP in PPPs, is quantitatively demonstrated by key performance indicators (KPIs), often tangible deliverables such as number and impact of publications, number of citations, or number of patents. However, a patent application is far from being the only value-critical step in drug R&D . . . KPIs should also capture the development of, and access to technologies, capability, and talent, as well as the provision of improved rules for decision making or to reduce costs (impact on R&D

Re:Search activities including the development of indicators and metrics to measure progress in knowledge governance, in lieu of standard IP metrics such as patent filings.[23] Many authors also point to the value of networking *per se* in the advancement of knowledge generation and, ultimately, innovation: for example, the growing support of individual research scientists who travel to other laboratories in order to conduct collaborative research.[24] And as observed with respect to IMI, "knowledge gathered in the different IMI projects exceeds pure scientific results" and can also include standardized templates and protocols as well as other ways to maximize cooperation across separate laboratories.[25] The case study of Open Air also underlines the importance of providing a platform for a continent-wide research network, and asserts that this approach is superior to a top-down approach for generating R&D from the actual needs and capacities of those affected.[26]

Not only do the SDGs enumerate goals, but they also articulate targets and indicators. Sustainable development is now overtly a goal-driven process based on measurable progress. In that context, it is important to continue to develop metrics for knowledge governance that do not over-rely on IP filings and that instead acknowledge and cover a more capacious range of knowledge generation and dissemination activities.

C *Relationship to Overall Global Governance Theory and Practice, Including Accountability, Inclusivity, and Transparency*

Arguably the most thorough discussion of global governance theory is presented in the chapter on post-WSSD PPPs. This contribution studies "three hypothetical global governance deficits that partnerships are supposed to address"[27] and its findings indicate

productivity).). They further note that "[s]ome researchers have identified seven domains to monitor different types of organizations' progress: a) funding, b) talent, c) dissemination, d) collaboration, e) output, f) validation, and g) external uptake. (citing Robert Pozen & Heather Kline, *Defining Success for Translational Research Organizations*, 3 Sci. Translational Med. 94cm20, 3–4 (2011)).

[23] Katy M. Graef et al., chapter 4, *supra* at 88 (For example, the WIPO Re:Search collaboration guidelines require partners to report "(1) Research milestones achieved; (2) Publications and presentations arising from the collaboration; (3) Grants applied for and any funding received; [and] (4) Number of students or postgraduates that received training as part of the collaboration.").

[24] Anatole Krattiger et al., chapter 3, *supra* (Appendix).

[25] Hilde Stevens & Isabelle Huys, chapter 6, *supra* at 131 ("An enormous number of templates, harmonized protocols, and standardization endeavors for information exchange has been developed within and between consortia. It took the consortium members considerable efforts and time to come to these harmonized and standardized templates and protocols. Therefore any assessment of effectiveness should valorize these knowledge assets.").

[26] Chidi Oguamanam & Jeremy De Beer, chapter 17, *supra* at 390–91 ("insights arising from Open AIR inquiries may inspire other PPPs to implement R&D efforts that tap Africa's factor endowments through a combination of on-the-ground practices of open and collaborative innovation, as well as informal and formal interface and apprenticeship models, to produce or scale to a substantially African-made version of any of these knowledge products. Such an example represents a model of innovation capacity building as sustainable development.")

[27] Ayşem Mert & Philipp Pattberg, chapter 13, *supra* at 300 ("... [T]he regulatory deficit, the implementation deficit, and participatory deficit. First, partnerships are expected to confront the regulatory deficit in current sustainability governance by providing avenues for cooperation and joint problem-solving in areas where intergovernmental regulation is largely non-existent. A second deficit that partnerships are believed to fill is an implementation deficit in sustainability governance. That is, partnerships could help implement intergovernmental regulations that do exist but that are only poorly implemented, if at all. Third,

that post-WSSD PPPs did not effectively address these deficits. On the other hand, a number of contributions point to evolving practices of accountability, inclusivity, and transparency within PPPs. One example from the pharmaceutical R&D space is the WIPO Re:Search Guiding Principles, as well as its collaboration guidelines for partners.[28]

HINARI, the PPP supported by the WHO, also illustrates how issues among partners can be handled relatively openly and informally despite the absence of any detailed agreements.[29] And while demonstrating that PPPs can be transparent regarding their governing legal frameworks, the HathiTrust initiative reinforces the importance of clear contractual mechanisms between participating partners, within a national US context.[30]

Within knowledge governance practice, legitimate concerns have been voiced among observers regarding the degrees of accountability, inclusivity, and transparency within PPPs – and some pieces in this book echo these concerns. This is true, for example, of the case study of the WIPO's Access to Research for Development and Innovation (ARDI) initiative.[31] As with global governance more generally, these profound challenges are certain to continue in search of viable solutions, based upon ongoing evaluation and revision of the policies and practices of PPPs.

III Managing the Partnership Boundaries

As hybrid arrangements, PPPs are necessarily complex. The degree of alignment among partners can vary within and across PPPs, with respect to either partners' incentives, interests, or goals. Within a global knowledge governance framework, the internal and external dynamics and decision making within PPPs can be viewed as a type of joint governance or co-governance toward shared goals. As the introductory chapter notes, global knowledge governance is a two- or even three-dimensional process: partnerships require some type of effective internal governance or management to coordinate the differing approaches of partners internally, and they also require mechanisms to manage boundaries with external stakeholders within their networks. Finally, individual PPPs are stakeholders themselves within decentralized governance models; as such, they necessarily interact with are constrained by both national and multilateral funding and regulatory institutions. The interaction of the various actors, whether partners or stakeholders, are expected to result in specified outcomes. In that regard, it is important to discern what attributes of PPPs result in successful collaboration towards intended goals, and what mechanisms fruitful PPPs use to manage their relationships. This aspect of the triple interface deserves careful attention.

partnerships are often expected to assist in solving a participation deficit in global governance. In this view, intergovernmental negotiations are seen as dominated by powerful governments and international organizations, while partnerships, by contrast, might ensure higher participation of less privileged actors.").

[28] Anatole Krattiger et al., chapter 3, *supra*; Katy M. Graef et al., chapter 4, *supra*.

[29] Jens Bammel, chapter 7, *supra*.

[30] Melissa Levine, chapter 10, *supra*.

[31] Sara Bannerman, chapter 8, *supra*.

A *Relationships among Various Partner and Stakeholder Goals, e.g., Mission, Profit, and Public Policy*

Almost all of this book's contributions grappled with the challenges of managing hybridity within PPPs, but some were more explicit than others in addressing this foundational issue. Some case studies identify ingredients for such success in balancing the differing agendas of public and private partners. For example, the study of collaborative engagement within the pre-competitive pharmaceutical research partnerships, such as the IMI, finds that trust and flexibility are essential qualities in responding to uncertainties within the PPP relationship.[32] As the case study of Open AIR shows, collaborative knowledge governance should include mechanisms for inclusion and participation by a broad range of stakeholders; specific attributes contribute to the success of this partnership (in the view of its main architects), which operates with an expansive geographic scope such as the African continent.[33]

On the other hand, the case study on post-WSSD PPPs shows that many of these PPPs fell short of expectations to achieve consensus regarding the partnership goals in public policy areas prioritized within multilateral environmental governance. While documenting efforts that fell short of goals rather than successes, this chapter also suggests best practices for PPPs moving forward such as screening mechanisms for accountability.[34]

Internal governance arrangements ideally should lower transaction costs among partners. Various contributions to the book highlight partners engaged in constructive and ongoing relationships accompanied by relatively transparent expectations of the shared partnership goals, and dynamic management of potentially conflicting or competing public and private interests through contractual or other mechanisms. They raise the possibility of disseminating best practices for PPPs, based upon documented successes and lessons learned from failures.

B *Inclusivity of Partnerships*

The post-WSSD PPPs not only often suffered from a lack of clarity regarding the nature of the relationship between the partners as well as the expected output from the partners' efforts but also only took symbolic and limited gestures towards ensuring full participation by partners in developing countries.[35] Similarly, the case study of the ARDI partnership housed within WIPO finds that this PPP requires greater inclusivity and participation by a broader range of stakeholders than is currently the case.[36] Along the

[32] Hilde Stevens & Isabelle Huys, chapter 6, *supra* at 119 (the "level of trust among stakeholders will determine the capability of precompetitive PPPs to become effective networking platforms. . . . Flexible arrangements, whereby room to renegotiate well-defined issues when pre-defined milestones have been reached or certain deliverables have been accomplished is provided, can anticipate uncertainties in the negotiation process. This stepwise approach, also sometimes referred to as the stage-gate process, could facilitate trust building.").

[33] Chidi Oguamanam & Jeremy De Beer, chapter 17, *supra* (discussing multiple attributes).

[34] Ayşem Mert & Philipp Pattberg, chapter 13, *supra* at 305 ("We want to stress in particular the necessity for a critical screening mechanism that could ensure transparency, accountability, co-benefits, and fit with the 2030 Agenda, as well as ensuring adequate levels of participation for marginalized actors in this multi-stakeholder institutional framework.")

[35] Ayşem Mert & Philipp Pattberg, chapter 13, *supra*.

[36] Sara Bannerman, chapter 8, *supra*.

same lines, the chapter examining effective partnerships implementing the Millennium Development Goals (MDGs) emphasizes that cross-sector PPPs can and should be more intentionally inclusive of the developing country (public) partners that often constitute the end beneficiaries of a partnership's efforts.[37]

These contributions, among others, caution us that PPPs may fall short of full inclusivity of potential partners and stakeholders without careful and intentional processes to facilitate coordination and inclusion. Integral to the question of accomplishing this partner inclusion, in addition to accommodating the potentially different approaches of partners within PPPs, is the specific blueprint of a PPP's governance mechanisms, including those for partner match-making, participation, and ongoing evaluation.

C *Funding Models, Including Evaluation of Long-Term Sustainability*

The role and extent of public funding of development efforts relative to private investment, whether through PPPs or other institutions, is a controversial topic, which is far from resolved. In the interim, however, nonprofit stakeholders have catalysed and subsidized many PPPs in the public health space. For example, the study addressing PPPs as models for new drug R&D builds upon the role and out-sized presence of foundation-funded PPPs in the public health arena. It posits that such PPPs could lead to a sustainable alternative funding model of pharmaceutical R&D, by forming a bridge from a profit-driven model to one that would broadly delink profits from R&D.[38]

A different contribution emphasizes that public sector funding remains essential to the operation of climate change-related PPPs, and it outlines a comprehensive range of approaches to public sector support and funding, which the authors consider to be integral to innovation policy choices within PPPs.[39] These studies and others demonstrate that much more work can and should be done to elucidate different funding models and their impact on the sustainability of PPPs' efforts within knowledge governance.

IV Enhancing Sustainable Development

The coverage of Agenda 2030 is ambitious and holistic. Knowledge governance arguably contributes to the realization of all the SDGs. The links between the PPPs described in this book and the SDGs are occasionally quite obvious. For example, SDG 3, which is to "[e]nsure healthy lives and promote well-being for all at all ages"[40] has a specific target 3B, which addresses the multilateral IP framework and states that R&D should be "in accordance with the Doha Declaration on the TRIPS Agreement and Public Health, which affirms the right of developing countries to use to the full the provisions in the Agreement on Trade-Related Aspects of Intellectual Property Rights regarding flexibilities to protect public health, and, in particular, provide access to medicines

[37] David J. Maurrasse, chapter 16, *supra*.
[38] Frederick M. Abbott, chapter 2, *supra*.
[39] Joshua D. Sarnoff & Margaret Chon, chapter 12, *supra*.
[40] Sustainable Development Goal 3: Ensure Healthy Lives and Promote Well-Being for All at All Ages, Sustainable Development Knowledge Platform, https://sustainabledevelopment.un.org/sdg3 (last visited Nov. 16, 2017).

for all."[41] In many other instances, the links between the SDGs and knowledge governance are less evident and are still in the process of being discerned and integrated within the work of PPPs.

A *Extent to which Partnership Framework within Knowledge Governance Adds Value or Contributes to Other Sustainable Development Goals*

All of the chapters address the SDGs in some way, shape, or form. At the same time, many of the authors felt challenged in making the connections more salient. Arguably this is because of the relative lack of policy discourse or scholarly literature to support the linkage of knowledge governance activities to global governance via the SDGs. The study on PPPs and technology sharing, for example, systematically addresses the published literature on the impact of PPPs on technology transfer and development, and finds very little work to date.[42] This finding shows that the relevant linkages are in need of much greater understanding, both in the policy arenas and scholarly communities.

B *Differences in Approaches within and toward Least Developed Countries, Middle-Income Countries, and Industrialized Countries*

Agenda 2030 is intended to deemphasize the previous MDGs' dichotomy between developed and developing countries. Yet in the global health discussions, the very term 'PRND' implies a unilateral approach, in which the countries that are rich in R&D, technological capacity, and advanced markets will confer knowledge upon those countries lacking those attributes. The efforts described on the WIPO Re:Search initiative are attempts to overcome this typical construct by emphasizing the inclusion and participation of developing country partners. And the study on PPP models for new drug development takes this impulse several steps further, by positing a major restructuring of the global model for pharmaceutical R&D.[43]

In the copyright-related PPPs described in the book, beneficiaries are often located in developing countries. As noted, for example, one challenge in the WHO's HINARI is the transition "from aid to trade."[44] A different challenge facing WIPO's ARDI is the greater inclusion of beneficiary stakeholders within the PPP's governance structure and decision-making processes.[45] And, as also documented, is the difficulty facing WIPO's

[41] *Id.* ("Support the research and development of vaccines and medicines for the communicable and non-communicable diseases that primarily affect developing countries, provide access to affordable essential medicines and vaccines, in accordance with the Doha Declaration on the TRIPS Agreement and Public Health, which affirms the right of developing countries to use to the full the provisions in the Agreement on Trade-Related Aspects of Intellectual Property Rights regarding flexibilities to protect public health, and, in particular, provide access to medicines for all.") Similar concerns has been raised by the UN Secretary-General's High Level Panel on Access to Medicines, Promoting Innovation and Access to Health Technologies, 2016. U.N. Secretary-General's High-Level Panel on Access to Medicines, *Report of the U.N. Secretary-General's High-Level Panel on Access to Medicines: Promoting Innovation and Access to Health Technologies* (Sep. 14, 2016), www.unsgaccessmeds.org/final-report/.

[42] Padmashree Gehl Sampath, chapter 15, *supra*; David J. Maurrasse, chapter 16, *supra*.

[43] Frederick M. Abbott, chapter 2, *supra*.

[44] Jens Bammel, chapter 7, *supra* at 144.

[45] Sara Bannerman, chapter 8, *supra*.

ABC, particularly that developing countries may lack technology required to access texts in so-called 'accessible formats.'[46]

In the comparison of three different jurisdictions varying in development status (France, Singapore, and India), the case study of GIs claims that a one size fits all approach to co-governance does not exist.[47] This and other contributions illustrate that distinctions among levels of development remain relevant and persistent.

C *Relation to Human Rights, Intergenerational Equity, and Distributive Justice*

The SDGs incorporate a number of human rights measures, which in turn raise the critical question of whether and how private sector partners (particularly those operating for-profit) can be subject to human rights obligations. The study on PPP and human rights surveys three examples to make the case for "PPPs for human rights (P3s4HR) in the intellectual property arena."[48] In doing so, the chapter's author reiterates that the human rights discourse in knowledge governance has become a critical part of the IP policy equation, while acknowledging at the same time that asking for-profit partners to adopt human rights obligations is fraught with obstacles.

Intergenerational equity is profoundly embedded within the concept of sustainable development.[49] The contributions on climate change-related technologies include intergenerational equity as their implicit or explicit baseline. In the case of climate change, moreover, major distributional justice issues are implicated across geographic sectors,[50] which in turn affect the goals of technology sharing and innovation capacity building. Arguably, global geographic disparity in knowledge governance inputs and outcomes affects many development sectors beyond those addressing climate change.

Essential to the work envisioned by Agenda 2030, the concepts of human rights, intergenerational equity, and distributional justice need much more elucidation within the accompanying knowledge governance framework examined in this book.

V Suggestions for a Policy and Research Agenda

The various contributions to this book urge us to consider more deeply the extent and quality of involvement of PPPs in knowledge governance toward the SDGs. They raise numerous issues, including but not limited to:

[46] Susan Isiko Štrba, chapter 9, *supra*.
[47] Irene Calboli & Delphine Marie-Vivien, chapter 14, *supra*.
[48] Peter K. Yu, chapter 18, *supra*.
[49] The foundational Brundtland Report defined sustainable development as "development that meets the needs of the present without compromising future generations to meet their own needs." U.N. World Commission on Environment and Development, Our Common Future (1987). SDGs 10 and 16 refer to "Reduced Inequalities" and "Peace, Justice and Strong Institutions," respectively. Sustainable Development Knowledge Platform, *Sustainable Development Goal 10*, U.N. Dep't of Econ. of Soc. Affairs, www.un.org/sustainabledevelopment/inequality/; Sustainabe Development Knowledge Platform, *Sustainable Development Goal 16*, U.N. Dep't of Econ. of Soc. Affairs, www.un.org/sustainabledevelopment/peace-justice/.
[50] Joshua D. Sarnoff & Margaret Chon, chapter 12, *supra*.

- fostering the uptake of a broader range of key IP policy and management levers, including licensing practices, across different sectors to facilitate progress towards the SDGs;
- implementing technology sharing and innovation capacity building goals more widely and effectively throughout the SDGs, and not just with regard to Goals 9 and 17;
- encouraging more PPPs to include goals involving dissemination aspects of knowledge governance and policy, including the 'three A's' of accessibility, availability, and affordability;
- coordinating between INGO partners and other partners more consistently and effectively;
- developing metrics for knowledge governance that do not over-rely on IP filings and that include a more capacious range of knowledge generation and dissemination activities;
- promoting accountability, inclusivity, and transparency both within PPPs and with regard to their external stakeholders;
- encouraging the implementation of best practices for PPP internal management and external relations;
- generating information regarding internal governance attributes and mechanisms of PPPs, including those for promoting full participation by partners and stakeholders;
- evaluating different funding models and their impact on PPP sustainability and/or the sustainability of their underlying goals;
- documenting better how PPPs operate within knowledge governance to contribute to the SDGs through technology transfer, technology sharing, or other means;
- understanding when degrees of development and/or differences in cultural perceptions, economic systems, and political priorities matter in the joint governance or co-governance models of PPPs; and
- internalizing the SDG's concepts of human rights, intergenerational equity, and distributive justice within knowledge governance PPPs.

The case studies, policy analyses, and scholarly work in this book represent pioneering efforts at analysing the triple interface, which is at its early stages of description and evaluation. Relatedly, this emerging area of policy analysis and scholarly research faces numerous challenges. Because many PPP initiatives are new, it is difficult to explore them thoroughly or even sometimes to gather preliminary data at this point. Moreover, the hybrid nature of PPPs can throw a cloak of privacy over their operations, and the diversity and range of PPPs can make it impossible to generalize across them. Transnational lawmaking practices via PPPs are types of informal regulation or 'soft law' and therefore difficult to document and analyze. The various challenges associated with this stream of policy analysis and scholarly research could be viewed by some as a deterrent. Yet others might see the presence of so many unanswered questions about these relatively new and untested "means of implementation"[51] as ripe with possibilities for further policy analysis and scholarly inquiry.

As stated in the introductory chapter to this book, one certainty is that the knowledge gaps about the triple interface far outweigh what is known. The continuing definitional

[51] Sustainable Development Knowledge Platform, *Sustainable Development Goal 17*, U.N. Dep't of Econ. of Soc. Affairs, www.un.org/sustainabledevelopment/globalpartnerships/.

and functional ambiguities around PPPs involved in global knowledge governance have reflected lack of consensus around basic goals and implementation practices. Yet the analyses and case studies provided by the various contributors herein arguably provide evidence of an emerging if tentative consensus toward some common themes, shared goals, and acknowledged best practices. Considered together, the chapters begin to coalesce towards a clearer picture of the overall framework of the knowledge governance PPPs currently involved in sustainable development. And these contributions not only describe the current situation but also provide normative suggestions for future directions about this triple interface from either a policy or an academic standpoint. Looking forward, the hope is that they can provide a springboard for further inquiry along these and other lines, in order to "transform[] our world"[52] for the benefit of ourselves and our coming generations.

[52] Sustainable Development Knowledge Platform, *Transforming Our World: The 2030 Agenda for Sustainable Development*, U.N. Dep't of Econ. and Soc. Affairs, https://sustainabledevelopment.un.org/post2015/transformingourworld.