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Governing the Constant Pandemic: Reimagining Technology Transfer through the PABS Framework and the Common Concern of Mankind Doctrine

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ABSTRACT

This paper examines the inequities in the global distribution of vaccines, therapeutics, and health technologies exposed by the COVID-19 pandemic, and the renewed debates these inequities have generated concerning intellectual property, technology transfer, and global health justice. It situates the ongoing negotiations surrounding the World Health Organization Pandemic Agreement and its proposed Pathogen Access and Benefit-Sharing (PABS) system within the broader framework of international law and global health governance, analysing the legal and political deadlocks that have arisen over benefit-sharing obligations, technology transfer mechanisms, and intellectual property protections. Drawing upon the evolving doctrine of the Common Concern of Mankind, and in light of recent developments in international jurisprudence, the paper argues that global health security should be treated as a collective legal responsibility requiring mandatory international cooperation. It analyses the interaction between the proposed PABS framework and existing international legal instruments, including the Nagoya Protocol and the TRIPS Agreement, while examining the challenges associated with pathogen sharing, zoonotic surveillance, and equitable access to health technologies. The paper further connects these debates to the persistent crisis of antimicrobial resistance, highlighting the limitations of existing innovation and technology transfer models, and advocates a harmonised legal framework that combines the PABS architecture with the Common Concern of Mankind doctrine to facilitate equitable peacetime technology transfers, strengthen regional manufacturing capacity, and secure a more resilient and just global health order.

Keywords: *Pandemic Agreement, PABS, Common Concern of Mankind, Technology Transfer, Global Health Governance, TRIPS, Nagoya Protocol, Antimicrobial Resistance, International Law.*

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I. INTRODUCTION

The COVID-19 pandemic exposed one of the most profound contradictions within contemporary international law. On one hand, advances in biotechnology, pharmaceutical innovation, and global scientific cooperation enabled the rapid development of vaccines, therapeutics, diagnostics, and surveillance systems within an unprecedented timeframe. On the other hand, the distribution of these life-saving technologies revealed deep structural inequalities embedded within the global health system. While several high-income countries secured sufficient vaccine supplies to immunise their populations several times over, many developing countries struggled to obtain even minimal access to essential health technologies. This disparity reignited longstanding debates concerning intellectual property protection, technology transfer, global health equity, and the responsibilities of states during transnational health emergencies.[1]

The pandemic demonstrated that scientific innovation alone cannot guarantee effective global health protection. Access to technology, manufacturing capacity, technical know-how, supply chains, and regulatory cooperation are equally important determinants of health security.[2] During the COVID-19 crisis, numerous low- and middle-income countries possessed the infrastructure and willingness to expand vaccine production but lacked access to proprietary manufacturing processes, trade secrets, cell lines, regulatory data, and technical expertise controlled by a small number of multinational pharmaceutical corporations.[3] The international community was consequently confronted with a fundamental question: should life-saving health technologies remain governed primarily by market-based intellectual property regimes, or should international law recognise broader obligations of cooperation during global health crises? These questions have assumed renewed significance in the ongoing negotiations surrounding the World Health Organization Pandemic Agreement.[4] The proposed agreement represents the most ambitious attempt to reform global pandemic governance since the adoption of the International Health Regulations. At the centre of these negotiations lies the proposed Pathogen Access and Benefit-Sharing (PABS) system, which seeks to create a more equitable framework for sharing pathogen materials, genetic sequence data, vaccines, diagnostics, therapeutics, and related health technologies. The PABS framework is intended to address

[1] Sophie Harman et al., Global Vaccine Equity Demands Reparative Justice, 398 THE LANCET 1961 (2021).
[2] UNDP, WHO & UNIV. OF OXFORD, GLOBAL DASHBOARD FOR VACCINE EQUITY (2022).
[3] Frederick M. Abbott & Jerome H. Reichman, Facilitating Access to Technologies for COVID-19 and Future Pandemics, 25 J. INT'L ECON. L. 181 (2022).
[4] CARLOS M. CORREA, INTELLECTUAL PROPERTY, TECHNOLOGY TRANSFER AND ACCESS TO MEDICINES (South Centre 2023).

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concerns raised during the COVID-19 pandemic, when developing countries often shared pathogen samples and epidemiological information without receiving proportionate access to the medical countermeasures subsequently developed from those resources.

Negotiations surrounding the PABS system have, however, exposed deep divisions between developed and developing countries. While many developing states advocate mandatory benefit-sharing obligations and legally enforceable technology transfer mechanisms, several high-income countries and pharmaceutical stakeholders continue to emphasise voluntary cooperation and the protection of intellectual property rights. These disagreements reveal broader tensions concerning the relationship between private innovation incentives and public health imperatives. The challenge extends beyond pandemic preparedness. Similar debates are increasingly visible in relation to antimicrobial resistance (AMR), zoonotic disease surveillance, genomic data governance, and regional pharmaceutical manufacturing capacity. Collectively, these issues highlight the inadequacy of existing international legal frameworks in addressing health threats that transcend national borders. The interconnected nature of modern public health emergencies requires legal approaches that move beyond traditional notions of sovereignty and territorial jurisdiction.[5]

In this context, the doctrine of the Common Concern of Mankind offers a potentially transformative framework for reimagining global health governance. Originally developed within international environmental law, the doctrine recognises that certain challenges are so pervasive and consequential that they require collective international action. Recent developments in international jurisprudence, particularly the advisory opinion of the International Court of Justice concerning the obligations of states in respect of climate change, have significantly strengthened the legal foundations of this doctrine.[6] The evolving interpretation of Common Concern suggests that states may possess positive obligations to cooperate, regulate private actors, and adopt appropriate measures to address global challenges that threaten humanity as a whole. This paper argues that pandemic preparedness, technology transfer, and antimicrobial resistance should be conceptualised as matters of Common Concern of Mankind. Such an approach would provide a stronger legal basis for mandatory international cooperation, equitable technology sharing, and the regulation of private actors whose conduct affects global health security. By integrating the proposed PABS architecture with the Common Concern framework, international law can move toward a more equitable and resilient model

[5] Mark Eccleston-Turner & Hayley Upton, Equity and Benefit Sharing in the WHO Pandemic Agreement Negotiations, 18 GLOBAL HEALTH GOVERNANCE 45 (2024).
[6] Obligations of States in Respect of Climate Change, Advisory Opinion, 2025 I.C.J. (July 23).

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of global health governance capable of addressing both future pandemics and ongoing public health threats.[7]

II. Evolution of global pandemic governance and the technology transfer debate

The contemporary architecture of global health governance has evolved through successive public health crises that exposed the limitations of existing international legal arrangements. Historically, international cooperation in public health was primarily concerned with preventing the cross-border spread of infectious diseases while minimising disruptions to international trade and travel. Early international sanitary conventions focused largely on quarantine measures, disease notification systems, and the coordination of national health authorities.[8] The establishment of the World Health Organization in 1948 marked a significant institutional development in international public health governance. The Organization was entrusted with coordinating international health efforts, developing technical standards, and facilitating cooperation among member states. Over time, it assumed a central role in disease surveillance, emergency response, and global health policy formulation.[9] Nevertheless, the underlying structure of international health law remained largely state-centric, emphasising national sovereignty and voluntary cooperation.

The adoption of the International Health Regulations (IHR) represented an important attempt to strengthen international coordination. Initially focused on a limited number of diseases, the IHR framework was substantially revised following the Severe Acute Respiratory Syndrome (SARS) outbreak in 2003. The revised regulations sought to improve disease surveillance, reporting obligations, and emergency response mechanisms. They also introduced the concept of a Public Health Emergency of International Concern (PHEIC), enabling the Organization to coordinate international responses to significant health threats. Despite these reforms, successive outbreaks revealed persistent weaknesses within the global health system. The H1N1 influenza pandemic, the Ebola outbreaks in West Africa, the Zika virus epidemic, and the COVID-19 pandemic each exposed deficiencies relating to preparedness, financing,

[7] Thomas Cottier, The Common Concern of Humankind: A New Platform for International Cooperation (Cambridge Univ. Press 2021).
[8] David P. Fidler, From International Sanitary Conventions to Global Health Security: The New International Health Regulations, 4 Chinese J. Int'l L. 325 (2005).
[9] Lawrence O. Gostin & Rebecca Katz, The International Health Regulations: The Governing Framework for Global Health Security, 94 Milbank Q. 264 (2016).

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information sharing, and equitable access to medical countermeasures. While scientific collaboration often occurred rapidly, access to resulting technologies remained highly uneven.[10]

The COVID-19 pandemic brought these structural inequities into sharp focus. The rapid sequencing and sharing of the SARS-CoV-2 genome enabled unprecedented scientific collaboration and facilitated the development of multiple vaccines within a remarkably short period. The benefits of these scientific achievements were, however, distributed unevenly. Vaccine nationalism, export restrictions, supply chain disruptions, and intellectual property disputes contributed to significant disparities in access between developed and developing countries. Many developing nations argued that they had fulfilled their responsibilities by sharing pathogen samples, epidemiological information, and genetic sequence data, yet received limited access to the vaccines and therapeutics subsequently developed using those resources. This perceived imbalance undermined trust in existing international frameworks and generated demands for more equitable benefit-sharing mechanisms.[11]

At the centre of these debates lies the issue of technology transfer. Technology transfer encompasses far more than the transfer of patents or intellectual property rights. Effective production of modern vaccines, biologics, and therapeutics requires access to manufacturing know-how, quality control procedures, technical expertise, regulatory data, cell lines, and specialised equipment.[12] In many cases, these critical elements are protected not by patents but by trade secrets and confidential business information. The limitations of existing technology transfer mechanisms became particularly apparent during efforts to expand global vaccine production. Although various initiatives sought to facilitate voluntary licensing arrangements, participation remained limited and uneven. Many pharmaceutical developers were reluctant to share proprietary knowledge, arguing that intellectual property protections were essential for maintaining innovation incentives. Developing countries, by contrast, emphasised the extraordinary public investments that had contributed to vaccine development and argued that public health emergencies justified broader technology sharing obligations.

These competing perspectives continue to shape contemporary negotiations concerning pandemic preparedness and global health governance. The challenge for international law is to develop mechanisms capable of reconciling legitimate innovation incentives with the imperative of ensuring equitable access to life-saving technologies. The emergence of the

[10] UNDP, WHO & UNIV. OF OXFORD, supra note 2.
[11] Abbott & Reichman, supra note 3.
[12] Correa, supra note 4.

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proposed PABS framework represents the latest and most significant attempt to address this challenge through institutional reform and enhanced international cooperation.[13]

III. The WHO Pandemic Agreement and the emergence of the PABS framework

The experience of COVID-19 fundamentally altered international discussions concerning pandemic preparedness and global health governance. While the pandemic demonstrated the extraordinary capacity of scientific communities to develop vaccines and therapeutics at unprecedented speed, it simultaneously exposed the inability of existing legal and institutional frameworks to ensure equitable access to these innovations.[14] As a result, member states of the World Health Organization initiated negotiations for a new international legal instrument designed to strengthen preparedness, prevention, and response mechanisms for future pandemics. These negotiations led to the adoption of the WHO Pandemic Agreement, a framework intended to address many of the governance failures revealed during the COVID-19 crisis.[15]

A central objective of the Pandemic Agreement is to create a more balanced relationship between pathogen sharing and benefit sharing. Historically, countries experiencing disease outbreaks have been expected to provide pathogen samples, epidemiological information, and genomic sequence data to the international scientific community. These resources are essential for surveillance, risk assessment, vaccine development, diagnostic innovation, and therapeutic research. The benefits derived from these shared resources have not, however, always been distributed equitably. Many developing countries argued that, while they contributed valuable biological materials and scientific information, they often lacked timely access to the vaccines, diagnostics, and therapeutics subsequently developed from those resources.[16] The proposed Pathogen Access and Benefit-Sharing (PABS) system seeks to address this imbalance by creating a structured multilateral mechanism linking access to pathogens and genomic sequence data with legally recognised benefit-sharing obligations. Unlike traditional bilateral arrangements, the PABS framework seeks to establish a collective system through which

[13] World Health Organization, WHO Pandemic Agreement and Pathogen Access and Benefit-Sharing (PABS) System: Negotiating Text and Explanatory Materials (WHO 2025).
[14] Id.
[15] World Health Org., Pandemic Agreement, WHA Res. 78.1 (May 20, 2025); see also Eccleston-Turner & Upton, supra note 5.
[16] World Health Organization, Pandemic Agreement: Proposal for the WHO Pathogen Access and Benefit-Sharing System (WHO 2025).

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pathogen information can be shared rapidly while ensuring that resulting benefits are distributed more equitably across the international community.[17]

The significance of the PABS framework extends beyond technical questions of pathogen exchange. It reflects a broader effort to redefine the legal relationship between scientific cooperation and distributive justice within international health law. The framework acknowledges that pathogen samples and genomic data constitute essential global public health resources whose value depends upon widespread scientific access. At the same time, it recognises that unrestricted access without corresponding benefit-sharing obligations can produce significant inequities, particularly for countries that serve as the primary sources of biological materials.[18]

Under the proposed framework, entities seeking access to pathogen materials and genetic sequence data would become subject to specific obligations concerning benefit sharing. These benefits may include access to vaccines, therapeutics, diagnostics, research collaborations, technical assistance, capacity building, and technology transfer arrangements. The overarching objective is to ensure that countries contributing critical scientific resources are not excluded from the benefits generated through their use. The PABS negotiations have therefore become one of the most significant contemporary debates in global health governance.[19] They seek to reconcile competing interests involving scientific openness, intellectual property protection, pharmaceutical innovation, public health equity, and international cooperation. The complexity of these negotiations reflects the broader challenge of designing legal mechanisms capable of addressing collective action problems within a highly unequal international system. One of the most contentious issues concerns the scope of benefit-sharing obligations imposed upon pharmaceutical manufacturers and other commercial users of pathogen resources. Developing countries have consistently argued that access to pathogen materials should generate concrete and enforceable obligations rather than merely aspirational commitments. Their position is shaped by the experience of COVID-19, during which many countries encountered severe difficulties obtaining vaccines despite contributing to global surveillance efforts and scientific research.[20]

As part of the ongoing negotiations, proposals have emerged requiring manufacturers benefiting from the PABS system to contribute a proportion of their production output to the World Health

[17] David P. Fidler, Viral Sovereignty, International Law, and the WHO Pandemic Agreement, 118 AM. J. INT'L L. 85 (2024).
[18] Cottier, supra note 7.
[19] World Health Organization, supra note 13.
[20] Eccleston-Turner & Upton, supra note 5.

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Organization during pandemic emergencies. These proposals generally contemplate a combination of direct donations and affordable supply arrangements intended to ensure that low-income and middle-income countries receive timely access to essential medical countermeasures.[21] Disagreements remain, however, regarding the precise nature, scope, and enforceability of these obligations. These disputes reveal deeper disagreements concerning the role of private actors within global health governance. Pharmaceutical corporations play a critical role in research, development, manufacturing, and innovation. At the same time, their activities directly influence access to life-saving technologies during public health emergencies. The challenge for the PABS framework is therefore to establish a system that preserves incentives for innovation while ensuring that commercial interests do not undermine global health security.[22]

IV. TECHNOLOGY TRANSFER, INTELLECTUAL PROPERTY AND THE LIMITATIONS OF THE TRIPS FRAMEWORK

The debates surrounding the PABS system cannot be understood without examining the broader relationship between intellectual property law and technology transfer. For several decades, international intellectual property governance has been dominated by the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS),[23] which established minimum standards of protection for patents, copyrights, trademarks, and other forms of intellectual property. While the agreement sought to promote innovation and facilitate international trade, it has also generated persistent controversies concerning access to medicines and the transfer of health-related technologies. The tension between intellectual property protection and public health became particularly visible during the COVID-19 pandemic.[24] Many developing countries argued that strict intellectual property protections restricted their ability to manufacture vaccines, therapeutics, and diagnostic technologies. These concerns led to proposals for temporary TRIPS waivers and renewed demands for more effective technology transfer mechanisms. Although some flexibility exists within the TRIPS framework, the pandemic revealed significant limitations in relying exclusively upon traditional intellectual property tools to address global health emergencies.[25]

[21] World Health Organization, supra note 16.
[22] Abbott & Reichman, supra note 3.
[23] Agreement on Trade-Related Aspects of Intellectual Property Rights, Apr. 15, 1994, Marrakesh Agreement Establishing the World Trade Organization, Annex 1C, 1869 U.N.T.S. 299 [hereinafter TRIPS Agreement].
[24] Correa, supra note 4.
[25] WORLD TRADE ORGANIZATION, MINISTERIAL DECISION ON THE TRIPS AGREEMENT, WT/MIN(22)/30 (June 17, 2022).

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One of the most important misconceptions surrounding technology transfer is the assumption that patents constitute the primary obstacle to local production. While patents undoubtedly influence access to technology, modern biopharmaceutical manufacturing depends upon a much broader ecosystem of proprietary knowledge. Contemporary vaccines, biologics, monoclonal antibodies, and advanced therapeutics require access to complex manufacturing processes, specialised equipment, quality control systems, regulatory expertise, and technical know-how that often remain protected through trade secrets rather than patents.[26]

This distinction is particularly significant in the context of mRNA vaccines and other advanced biologics. Unlike conventional small-molecule drugs, which can often be reproduced using information contained within patent specifications, biologics rely upon highly sophisticated production processes that are difficult to replicate without direct technical assistance. Manufacturing capacity depends not only upon legal access to patented inventions but also upon access to tacit knowledge, production protocols, quality assurance systems, and specialised expertise accumulated over years of research and development.[27] Consequently, even where governments possess the authority to issue compulsory licences for patents, such measures may be insufficient to enable effective local production. A compulsory licence may permit the use of a patented invention, but it does not necessarily require the transfer of the trade secrets and manufacturing know-how needed to produce a safe and effective product. This limitation became increasingly apparent during efforts to expand vaccine manufacturing capacity during the COVID-19 pandemic.[28]

The challenges associated with technology transfer are not new. Indeed, technology transfer has long occupied an important place within the broader architecture of international economic law. The TRIPS Agreement itself contains provisions recognising the importance of technological dissemination and capacity building. Article 7 emphasises that intellectual property protection should contribute to technological innovation and to the transfer and dissemination of technology in a manner conducive to social and economic welfare.[29] Similarly, Article 66.2 requires developed countries to provide incentives encouraging technology transfer to least-developed countries.[30] Despite these provisions, many developing countries argue that technology transfer obligations under TRIPS have remained largely aspirational and

[26] Correa, supra note 4.
[27] ELLEN 'T HOEN, PRIVATE PATENTS AND PUBLIC HEALTH: CHANGING INTELLECTUAL PROPERTY RULES FOR ACCESS TO MEDICINES (Health Action International 2016).
[28] Abbott & Reichman, supra note 3.
[29] TRIPS Agreement, supra note 23, art. 7.
[30] Id. art. 66.2.

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insufficiently implemented. While intellectual property protections have become increasingly robust and enforceable, corresponding mechanisms promoting technology dissemination have often lacked comparable effectiveness. This perceived imbalance has contributed to broader dissatisfaction with the existing international intellectual property regime.

The COVID-19 pandemic intensified these concerns by highlighting the concentration of manufacturing capacity within a relatively small number of countries and corporations. Although substantial public funding supported vaccine development, access to resulting technologies remained heavily dependent upon private licensing decisions. Voluntary licensing arrangements played an important role in certain contexts, but their overall impact remained limited compared to the scale of global demand.[31]

These experiences have influenced contemporary discussions surrounding the PABS framework and the Pandemic Agreement. Many developing countries view technology transfer not as a secondary policy objective but as an essential component of equitable pandemic preparedness. From this perspective, access to manufacturing capabilities is necessary to reduce dependence upon external suppliers and strengthen regional resilience during future health emergencies. The broader debate therefore concerns the nature of international cooperation itself. Should technology transfer remain largely voluntary and market-driven, or should international law impose stronger obligations upon states and private actors to facilitate access to critical health technologies? The answer to this question lies at the heart of ongoing negotiations surrounding the Pandemic Agreement and will significantly influence the future trajectory of global health governance. The limitations of existing intellectual property frameworks have encouraged scholars and policymakers to explore alternative normative foundations for international cooperation. Among the most influential of these emerging approaches is the doctrine of the Common Concern of Mankind, which provides a potentially transformative legal basis for reimagining technology transfer obligations within the context of global health security.[32]

V. The Common Concern of Mankind doctrine and its relevance to global health governance

The persistent failures revealed by the COVID-19 pandemic have encouraged scholars and policymakers to search for alternative legal frameworks capable of addressing the structural inequities embedded within contemporary global health governance. Traditional international law has generally relied upon state consent, territorial sovereignty, and voluntary cooperation

[31] Abbott & Reichman, supra note 3.
[32] Eccleston-Turner & Upton, supra note 5.

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as the primary mechanisms for regulating transnational challenges. While these principles remain fundamental to the international legal order, their limitations become increasingly apparent when confronting problems that transcend national borders and affect humanity collectively. Pandemics, antimicrobial resistance, climate change, biodiversity loss, and other global threats cannot be effectively addressed through isolated national responses. Instead, they require sustained international cooperation grounded in shared legal responsibilities.[33] It is within this context that the doctrine of the Common Concern of Mankind has emerged as one of the most significant normative developments in contemporary international law. The doctrine originated within international environmental law as an attempt to conceptualise issues whose consequences extend beyond individual states and affect humanity as a whole. Unlike traditional concepts such as state sovereignty or territorial jurisdiction, the Common Concern approach recognises that certain challenges possess a fundamentally collective character. These challenges threaten interests shared by all nations and therefore require coordinated international action. Over time, the doctrine has evolved from a primarily political concept into a more sophisticated legal framework capable of generating obligations of cooperation, due diligence, and collective responsibility.[34]

A crucial feature of the doctrine is its emphasis upon interdependence. It acknowledges that the actions or omissions of one state may have significant consequences for the welfare of other states and future generations. Consequently, states cannot treat certain global challenges as purely domestic matters. Instead, they possess responsibilities that extend beyond national borders and require participation in collective governance mechanisms. The contemporary significance of the Common Concern doctrine has been reinforced by recent developments in international jurisprudence. In particular, the advisory opinion of the International Court of Justice concerning the obligations of states in respect of climate change has contributed to a broader understanding of international cooperation duties. Although the proceedings primarily concern environmental issues, the underlying principles possess wider relevance for other global challenges, including public health emergencies.[35]

The evolving jurisprudence emphasises that states may possess positive obligations to take reasonable measures aimed at addressing threats that affect the international community as a whole. These obligations extend beyond merely refraining from harmful conduct. They may require states to regulate private actors, cooperate with other nations, exchange information,

[33] Cottier, supra note 7.
[34] Dinah Shelton, Common Concern of Humanity, 13 IUSTUM AEQUUM SALUTARE 59 (2017).
[35] Obligations of States in Respect of Climate Change, supra note 6.

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build institutional capacity, and adopt measures designed to prevent foreseeable harm. Such an interpretation represents a significant departure from traditional approaches that viewed international cooperation largely as a matter of political discretion. The relevance of this doctrine to global health governance is increasingly difficult to ignore. Infectious diseases do not respect national borders. Pathogens spread through international travel, trade networks, migration patterns, environmental changes, and animal-human interactions. A disease outbreak occurring within one region can rapidly evolve into a global emergency affecting every continent. The COVID-19 pandemic provided perhaps the clearest demonstration of this reality, revealing the extent to which public health has become a matter of collective international concern.[36]

The same observation applies to antimicrobial resistance. The emergence of resistant pathogens within one jurisdiction can undermine the effectiveness of antibiotics worldwide. Resistant microorganisms circulate through international food systems, healthcare networks, environmental pathways, and global transportation systems.[37] No state can fully protect itself from antimicrobial resistance through domestic measures alone. Consequently, the challenge possesses precisely the transboundary and collective characteristics that the Common Concern doctrine was designed to address. Applying the doctrine to global health governance would have several important implications. First, it would strengthen the legal basis for international cooperation in pandemic preparedness and response. Rather than treating cooperation as an optional policy preference, the doctrine would frame cooperation as a legal responsibility arising from the shared nature of the threat. States would possess obligations to participate in surveillance systems, exchange relevant information, support capacity-building initiatives, and contribute to collective preparedness mechanisms.[38]

Second, the doctrine would reinforce the legitimacy of benefit-sharing arrangements such as the proposed PABS framework. If pathogen samples and genomic sequence data contribute to the protection of humanity as a whole, then equitable access to resulting benefits becomes a matter of international justice rather than mere charity. The sharing of biological materials would no longer be viewed as a unilateral contribution but as part of a reciprocal system grounded in collective responsibility. Third, the doctrine could provide a stronger legal justification for technology transfer obligations.[39] Technology transfer is often portrayed as a

[36] Thomas Cottier, The Principle of Common Concern and Climate Change, 52 ARCHIV DES VÖLKERRECHTS 293 (2014).
[37] Cottier, supra note 7.
[38] Eccleston-Turner & Upton, supra note 5.
[39] Abbott & Reichman, supra note 3.

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conflict between innovation incentives and distributive equity. However, if global health security is recognised as a Common Concern of Mankind, the analysis changes significantly. The question becomes not whether technology should be shared, but how international law can ensure that technological capabilities are distributed in a manner consistent with collective health security. From this perspective, technology transfer becomes an essential instrument for fulfilling international obligations rather than a purely voluntary act of cooperation. Perhaps most importantly, the Common Concern framework expands the focus of international law beyond states alone.[40] Modern global health governance involves a complex network of actors including pharmaceutical corporations, biotechnology firms, research institutions, philanthropic organisations, international organisations, and civil society groups. Many of these actors possess resources and capabilities that exceed those of individual states. Consequently, effective governance requires legal mechanisms capable of influencing private conduct as well as governmental action. The doctrine therefore supports the argument that states possess due diligence obligations to regulate private actors whose activities affect global health security. This does not necessarily imply the elimination of intellectual property protections or commercial incentives. Rather, it suggests that states must ensure that private rights are exercised consistently with broader public interests. Where the conduct of private actors threatens collective health objectives, states may be required to adopt appropriate regulatory measures.[41]

VI. Reconceptualising technology transfer as an international legal obligation

The most significant contribution of the Common Concern doctrine to global health governance lies in its potential to transform the legal understanding of technology transfer. Traditionally, technology transfer has been viewed primarily through the lens of economic development and commercial transactions. International legal instruments have encouraged technology dissemination, but implementation has largely depended upon voluntary cooperation and market incentives. As a result, technology transfer obligations have often remained politically desirable but legally weak. The experience of COVID-19 exposed the shortcomings of this approach. The rapid development of vaccines demonstrated the extraordinary power of modern science, yet the concentration of manufacturing knowledge within a small number of institutions severely limited global production capacity. Many countries remained dependent

[40] Cottier, supra note 7.
[41] Lawrence O. Gostin, Global Health Security: A Blueprint for the Future (Harvard Univ. Press 2021).

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upon imports despite possessing substantial scientific expertise and industrial infrastructure.[42] This situation highlighted the need to reconsider the legal foundations of technology transfer within international law.

A Common Concern approach would reframe technology transfer as a necessary component of collective preparedness rather than a discretionary commercial arrangement. The objective would not be to abolish intellectual property rights but to ensure that critical technologies become accessible in circumstances where collective health security is at stake. Such an approach recognises that global resilience depends upon the widespread distribution of manufacturing capabilities rather than their concentration within a limited number of jurisdictions. This perspective is particularly relevant in relation to pandemic response technologies. Vaccines, diagnostics, therapeutics, surveillance systems, and manufacturing platforms constitute essential components of global health infrastructure.[43] When access to these technologies is restricted, the consequences extend beyond individual countries and affect the international community as a whole. Delays in production and distribution increase the likelihood of disease transmission, mutation, economic disruption, and social instability. Technology transfer therefore serves not merely developmental objectives but also collective security interests.

The concept of peacetime technology transfer is especially important in this regard. Much of the existing debate focuses on emergency measures implemented after a pandemic has already emerged. Meaningful preparedness, however, requires the development of manufacturing capacity before crises occur. Building facilities, training personnel, establishing regulatory systems, and mastering complex production techniques cannot be accomplished instantaneously during an emergency. A Common Concern framework would support continuous technology-sharing initiatives aimed at strengthening regional manufacturing ecosystems. Such initiatives would reduce dependence upon a limited number of suppliers and enhance the capacity of developing countries to respond effectively to future outbreaks. By treating preparedness as a shared international responsibility, the doctrine encourages long-term investments in resilience rather than short-term crisis management.[44]

The implications extend beyond vaccines and pandemic response technologies. Antimicrobial resistance, neglected tropical diseases, emerging zoonotic infections, and future health threats

[42] Cottier, supra note 7.
[43] Abbott & Reichman, supra note 3.
[44] EDITH BROWN WEISS, IN FAIRNESS TO FUTURE GENERATIONS: INTERNATIONAL LAW, COMMON PATRIMONY AND INTERGENERATIONAL EQUITY (United Nations Univ. Press 1989).

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all require sustained innovation and technology dissemination. Existing market structures often fail to generate sufficient incentives for research and development in these areas, particularly where expected commercial returns are limited. Technology transfer mechanisms can therefore complement innovation policies by ensuring that scientific advances reach populations most in need. Critics may argue that stronger technology transfer obligations could undermine innovation incentives and discourage private investment.[45] These concerns deserve careful consideration. Pharmaceutical research involves significant costs, risks, and uncertainty. Effective legal frameworks must therefore preserve incentives for scientific innovation while promoting equitable access. The Common Concern doctrine does not require the abandonment of intellectual property protections. Instead, it supports a balanced approach in which private rights are exercised within a broader framework of public responsibility.

Such a balance is already evident in other areas of international law. Environmental treaties, human rights instruments, and trade agreements frequently incorporate mechanisms designed to reconcile private interests with collective objectives. There is no reason why global health governance cannot adopt similar approaches. Indeed, the extraordinary consequences of pandemics and antimicrobial resistance make such reforms increasingly necessary. The integration of the Common Concern doctrine into the PABS framework would therefore represent more than a technical adjustment to existing legal arrangements. It would signal a fundamental shift in the normative foundations of global health governance. Technology transfer would cease to be viewed solely as a matter of commercial negotiation and instead become part of a broader system of shared international responsibility aimed at protecting humanity from common threats.[46]

VII. The PABS framework, the Nagoya Protocol and the challenge of legal fragmentation

While the proposed Pathogen Access and Benefit-Sharing (PABS) system represents a significant attempt to reform global health governance, its implementation raises important questions regarding its relationship with existing international legal regimes. Among the most significant of these is the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization. The interaction between the PABS framework and the Nagoya Protocol has become one of the most complex issues within the ongoing Pandemic Agreement negotiations, because both frameworks address access to

[45] TRIPS Agreement, supra note 23.
[46] Eccleston-Turner & Upton, supra note 5.

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biological resources and benefit-sharing obligations, yet they were designed for different purposes and operate according to distinct legal logics.[47] The Nagoya Protocol emerged from concerns regarding the exploitation of biological resources and traditional knowledge without adequate compensation to source countries and indigenous communities. It establishes a system based upon prior informed consent and mutually agreed terms between providers and users of genetic resources. The protocol seeks to ensure that countries contributing biological materials receive a fair share of the benefits derived from their utilisation. Its underlying objective is to promote equity while encouraging biodiversity conservation and sustainable use.[48]

Although the protocol has made important contributions to international environmental governance, its bilateral structure presents significant challenges in the context of pandemic response. Effective management of infectious disease outbreaks requires rapid access to pathogen samples and genetic sequence data. Delays associated with negotiating individual access agreements may undermine the speed necessary for effective surveillance, risk assessment, and vaccine development. Consequently, many public health experts have argued that pathogen-sharing systems require more flexible and streamlined arrangements than those contemplated under traditional access and benefit-sharing frameworks.[49] The proposed PABS system attempts to address this challenge by establishing a multilateral mechanism specifically tailored to pandemic preparedness and response. Rather than relying upon individual negotiations for each pathogen sample, the framework seeks to create standardised rules governing both access and benefit sharing. This approach is intended to facilitate rapid scientific collaboration while ensuring equitable distribution of resulting benefits.[50]

Tensions remain, however, regarding the relationship between the two regimes. Several developing countries have expressed concerns that a specialised pandemic framework could weaken protections available under the Nagoya Protocol. They fear that pathogen resources originating within their territories may become subject to reduced benefit-sharing obligations if transferred through a separate multilateral mechanism. Conversely, many developed countries and public health organisations argue that excessive regulatory complexity may discourage pathogen sharing and hinder rapid responses to emerging outbreaks. These concerns illustrate a broader challenge within international law: the fragmentation of legal regimes addressing

[47] Eccleston-Turner & Upton, supra note 5.
[48] SECRETARIAT OF THE CONVENTION ON BIOLOGICAL DIVERSITY, NAGOYA PROTOCOL ON ACCESS TO GENETIC RESOURCES AND THE FAIR AND EQUITABLE SHARING OF BENEFITS ARISING FROM THEIR UTILIZATION (United Nations 2011); the Protocol was adopted Oct. 29, 2010, and entered into force Oct. 12, 2014.
[49] ELISA MORGERA ET AL., THE 2010 NAGOYA PROTOCOL ON ACCESS AND BENEFIT-SHARING IN PERSPECTIVE: IMPLICATIONS FOR INTERNATIONAL LAW AND IMPLEMENTATION CHALLENGES (Brill 2013).
[50] Fidler, supra note 17.

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interconnected issues. Biodiversity governance, intellectual property law, international trade law, environmental law, and public health law have often developed independently despite addressing overlapping subject matter. As a result, states frequently encounter competing obligations arising from multiple legal frameworks.[51]

The Common Concern of Mankind doctrine offers a potential pathway for overcoming these tensions. Rather than viewing pathogen sharing exclusively through the lens of resource sovereignty, the doctrine emphasises the collective interest of humanity in preventing and responding to global health threats. This does not require abandoning principles of equity or benefit sharing. Instead, it encourages the development of legal mechanisms capable of reconciling sovereign interests with collective responsibilities. Under such an approach, pathogen resources would be understood as simultaneously possessing national significance and global importance. States would retain legitimate interests in ensuring equitable benefit sharing while recognising their responsibilities to contribute to collective health security. The PABS framework could therefore complement rather than replace the Nagoya Protocol by establishing specialised procedures applicable in circumstances involving pandemic preparedness and response.[52]

VIII. Antimicrobial resistance as a constant pandemic: technology transfer, market failure and global responsibility

While the COVID-19 pandemic focused international attention on acute infectious disease outbreaks, another public health crisis continues to develop more gradually but potentially with even greater long-term consequences. Antimicrobial resistance (AMR) has increasingly been described as a silent pandemic owing to its persistent and transboundary nature. Unlike conventional pandemics that emerge suddenly and attract immediate political attention, antimicrobial resistance evolves incrementally through the misuse and overuse of antibiotics, antivirals, antifungals, and antiparasitic medicines. The significance of antimicrobial resistance extends far beyond the health sector.[53] Modern healthcare systems depend upon effective antimicrobial medicines to support surgery, cancer treatment, organ transplantation, intensive care, and numerous other medical interventions. As resistance increases, these procedures become progressively riskier and less effective. The World Bank, the World Health Organization, and numerous international organisations have repeatedly warned that

[51] Eccleston-Turner & Upton, supra note 5.
[52] Fidler, supra note 17.
[53] World Bank, Drug-Resistant Infections: A Threat to Our Economic Future (World Bank 2017).

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uncontrolled antimicrobial resistance could produce severe economic, social, and humanitarian consequences.[54]

From a legal perspective, antimicrobial resistance shares many characteristics with pandemics. Resistant pathogens do not respect national boundaries and cannot be effectively controlled through unilateral action. Resistant strains emerge through complex interactions involving human health, animal health, agriculture, environmental contamination, pharmaceutical manufacturing, and international trade. Consequently, AMR represents a quintessential collective action problem requiring coordinated international responses. The challenge is further complicated by market failures within pharmaceutical innovation systems. Existing economic incentives often discourage investment in antimicrobial research and development.[55] Unlike medicines used to treat chronic conditions, antibiotics are typically administered for short periods and are ideally used sparingly to reduce resistance. This creates a paradox in which the public health objective of conserving antimicrobial effectiveness conflicts with commercial incentives to maximise sales. As a result, many pharmaceutical companies have reduced investment in antimicrobial research despite the growing threat posed by resistant pathogens. The innovation pipeline for new antibiotics remains inadequate relative to anticipated future needs. This situation demonstrates the limitations of relying exclusively upon market-based mechanisms to address global health challenges.[56]

Technology transfer can play an important role in addressing these deficiencies. Expanding regional manufacturing capacity, facilitating collaborative research networks, and promoting access to scientific knowledge can strengthen global resilience against antimicrobial resistance. Achieving these objectives, however, requires legal frameworks capable of supporting long-term cooperation rather than merely responding to immediate emergencies. The Common Concern of Mankind doctrine provides a particularly compelling justification for such cooperation. Antimicrobial resistance threatens the effectiveness of essential medicines relied upon by humanity as a whole. The consequences of inaction will be distributed globally, affecting current and future generations alike. Recognising AMR as a Common Concern therefore supports stronger international obligations relating to surveillance, information sharing, technology transfer, research collaboration, and capacity building. Importantly, this perspective reinforces the argument for peacetime technology transfers. Waiting until resistance reaches catastrophic levels before sharing technologies would replicate many of the mistakes

[54] Kevin Outterson et al., Repairing the Broken Market for Antibiotic Innovation, 34 HEALTH AFFAIRS 277 (2015).
[55] Id.
[56] Cottier, supra note 7.

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observed during COVID-19. Instead, international law should encourage continuous cooperation aimed at strengthening manufacturing capacity, regulatory expertise, and research infrastructure before emergencies arise.[57]

IX. THE MRNA TECHNOLOGY TRANSFER HUB AND THE CASE FOR PEACETIME TECHNOLOGY SHARING

One of the most significant initiatives to emerge from the COVID-19 experience was the establishment of the WHO mRNA Technology Transfer Hub. The project was designed to facilitate the dissemination of mRNA vaccine technology and manufacturing expertise to developing countries. Its objective was not merely to transfer intellectual property rights but to share the broader ecosystem of knowledge required for effective production.[58]

The initiative reflected an important recognition that patents alone do not determine technological capacity. Successful vaccine production depends upon tacit knowledge, technical expertise, workforce training, quality assurance systems, and regulatory competence. These elements are often more difficult to transfer than formal intellectual property rights. Consequently, meaningful technology transfer requires sustained cooperation and institutional support. The experience of the mRNA hub illustrates both the potential and the limitations of voluntary technology-sharing mechanisms. On one hand, the initiative demonstrated that scientific knowledge can be successfully disseminated through collaborative international efforts. On the other hand, it highlighted the difficulties associated with obtaining access to proprietary technologies and manufacturing know-how controlled by private actors.[59]

These challenges have generated renewed interest in the possibility of compulsory technology transfer mechanisms. Traditional compulsory licensing provisions primarily address patents, but modern biotechnology increasingly relies upon trade secrets and confidential information. Consequently, some scholars have argued that future international frameworks should explore mechanisms capable of facilitating access to critical manufacturing knowledge during global health emergencies. Such proposals remain controversial. Critics argue that compulsory disclosure of trade secrets could undermine innovation incentives and discourage private investment.[60] Nevertheless, the COVID-19 experience demonstrated that excessive

[57] INTERNATIONAL CENTRE FOR ANTIMICROBIAL RESISTANCE SOLUTIONS (ICARS), GLOBAL COOPERATION AND CAPACITY BUILDING FOR AMR CONTAINMENT (2024).
[58] MEDICINES PATENT POOL, THE WHO MRNA TECHNOLOGY TRANSFER HUB: PROGRESS REPORT (MPP 2024).
[59] WORLD HEALTH ORGANIZATION, MRNA TECHNOLOGY TRANSFER PROGRAMME: STRENGTHENING GLOBAL MANUFACTURING CAPACITY FOR VACCINES (WHO 2024).
[60] Mark Eccleston-Turner & Hayley Upton, Technology Transfer and Equity in Pandemic Preparedness, 18 GLOBAL HEALTH GOVERNANCE 61 (2024).

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concentration of technological knowledge can create significant vulnerabilities within global health systems. The challenge therefore lies in developing balanced legal mechanisms capable of preserving innovation incentives while ensuring that critical technologies become accessible when collective health security is at stake. The Common Concern framework offers a useful analytical perspective in this regard. If pandemic preparedness constitutes a collective responsibility, then states may possess obligations to ensure that legal protections for private knowledge do not undermine broader public interests. This does not necessarily require unrestricted access to proprietary information. Rather, it supports carefully designed mechanisms capable of balancing private rights with collective needs.[61]

X. Conclusion

The COVID-19 pandemic exposed fundamental weaknesses within the existing architecture of global health governance. Although scientific innovation progressed at unprecedented speed, access to vaccines, therapeutics, diagnostics, and manufacturing technologies remained deeply unequal. These disparities revealed the limitations of legal frameworks that rely heavily upon voluntary cooperation and market-based technology dissemination while providing insufficient mechanisms for equitable benefit sharing. The ongoing negotiations surrounding the WHO Pandemic Agreement and the proposed Pathogen Access and Benefit-Sharing system represent a historic opportunity to address these shortcomings. The PABS framework seeks to create a more balanced relationship between pathogen sharing and benefit sharing by linking access to biological resources with obligations concerning technology transfer, capacity building, and equitable access to medical countermeasures. Significant disagreements remain, nevertheless, regarding the scope of these obligations and the relationship between public health objectives and intellectual property protections.

This paper has argued that the doctrine of the Common Concern of Mankind provides a compelling normative foundation for resolving these tensions. Pandemics, antimicrobial resistance, and global health security possess the transboundary and collective characteristics traditionally associated with Common Concern issues. They threaten humanity as a whole and cannot be effectively addressed through isolated national measures. Consequently, they require legal frameworks grounded in cooperation, solidarity, and shared responsibility. Applying the Common Concern doctrine to global health governance would strengthen the legal basis for international cooperation, equitable benefit sharing, and technology transfer obligations. It

[61] Thomas Cottier, The Principle of Common Concern and International Cooperation, 52 ARCHIV DES VÖLKERRECHTS 293 (2014).

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would also support a more expansive understanding of state responsibilities, including duties to regulate private actors whose conduct affects collective health security. Such an approach would not eliminate intellectual property protections or commercial incentives but would ensure that these mechanisms operate consistently with broader public interests.

The experience of COVID-19, the challenges associated with antimicrobial resistance, and the continuing debates surrounding the PABS framework all point toward the same conclusion: global health security cannot be achieved through reactive crisis management alone. It requires sustained peacetime cooperation, regional manufacturing capacity, technology dissemination, and institutional resilience. The future effectiveness of international health law will depend upon its ability to move beyond narrow conceptions of sovereignty and market efficiency toward a framework that recognises health as a shared global responsibility. The integration of the PABS architecture with the Common Concern of Mankind doctrine offers a promising pathway toward such a framework. By harmonising principles of equity, cooperation, innovation, and collective responsibility, international law can contribute to the creation of a more resilient, just, and effective global health order capable of responding not only to future pandemics but also to the enduring public health challenges that continue to confront humanity.

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