

May 2022

Intellectual Property Rights and Competition Law for Transfer of Environmentally Sound Technologies

Mahatab Uddin
University of Southern Denmark and University of Guelph

Follow this and additional works at: <https://digitalcommons.pace.edu/pilr>



Part of the [Environmental Law Commons](#), [Intellectual Property Law Commons](#), [International Law Commons](#), and the [International Trade Law Commons](#)

Recommended Citation

Mahatab Uddin, *Intellectual Property Rights and Competition Law for Transfer of Environmentally Sound Technologies*, 34 Pace Int'l L. Rev. 63 (2022)

Available at: <https://digitalcommons.pace.edu/pilr/vol34/iss2/2>

This Article is brought to you for free and open access by the School of Law at DigitalCommons@Pace. It has been accepted for inclusion in Pace International Law Review by an authorized administrator of DigitalCommons@Pace. For more information, please contact dheller2@law.pace.edu.

INTELLECTUAL PROPERTY RIGHTS AND COMPETITION LAW FOR TRANSFER OF ENVIRONMENTALLY SOUND TECHNOLOGIES

Mahatab Uddin*

ABSTRACT

Battling against climate change, “a common concern of humankind,” is the most prominent global challenge of this century, and Environmentally Sound Technologies (“ESTs”) are the main tools to fight this battle. This article examines the juxtaposed role of Intellectual Property Rights (“IPRs”) and competition laws in facilitating wide-scale innovation and transfer of ESTs in developing and least developed countries. This article covers diverse IPRs, including patents and trade secrets. The discussion and analysis of the IPRs are based on the Agreement on Trade-Related Aspects of Intellectual Property Rights (“TRIPS”). And the discussion on competition law mainly focuses on competition related regulation of the European Union (EU). The article concludes with an examination of whether the current state of relevant national IPRs and competition laws can facilitate the transfer of ESTs in Bangladesh, which is considered to be one of the most climate change affected countries in the world. The article finds that the adoption of a suitable IPR regime can facilitate innovation and transfer of

* Postdoctoral Fellow at the University of Southern Denmark, Odense, Denmark and an Adjunct Professor at the University of Guelph, Guelph, Canada. Ph.D. in Public International Law on Climate Change and Sustainable Development (Aarhus, Denmark), M.Sc. in Sustainable Development (Uppsala, Sweden), and an LL. M. in Intellectual Property Law (Stockholm, Sweden).

ESTs to developing and least developed countries. However, some countries can facilitate innovation and transfer of ESTs by using TRIPS' flexibilities like compulsory licensing. Competition laws can also facilitate innovation and transfer of ESTs through expanding EST markets by preventing abuse of IPRs, for which countries' competition laws should include guidelines. Finally, the article finds that the current relevant IPRs and competition related laws of Bangladesh are not suitable enough for creating a favorable environment for innovation and transfer of ESTs. Hence, this paper recommends amending these domestic laws in light of TRIPS and on the basis of national interests of Bangladesh.

Keywords: Intellectual Property Rights, Competition Law, Patent, Trade Secret, Environmentally Sound Technologies, Climate Change, Bangladesh, EU, TRIPS

TABLE OF CONTENTS

| | | |
|-------|---|----|
| I. | Introduction | 66 |
| II. | Channels of Technology Transfer | 68 |
| III. | Impact of IPRs over Transfer of ESTs | 70 |
| IV. | Patent | 72 |
| V. | Trade secret | 77 |
| VI. | TRIPS and Transfer of ESTs..... | 79 |
| VII. | Competition law and technology transfer | 82 |
| VIII. | Abuse of Dominant Position | 88 |
| IX. | IPRs and Competition Law for Transfer of ESTs in Bangladesh..... | 91 |
| | A. 5.1. IPRs | 91 |
| | B. 5.2. Competition Law | 93 |
| X. | Conclusion..... | 98 |

I. INTRODUCTION

Technologies are composed of both "hard" products, like machinery and equipment involved in the manufacturing process, and "soft" products, like knowledge of science and technology, skills, know-how and relevant organizational and institutional arrangements including the goods or services derived from the process.¹ Accordingly, the term "technology transfer" refers to the transfer of both tangible tools and intangible knowledge, or know-how, associated with the tools.² It is argued that "as long as the technology receiver does not understand the complete process of use of a particular technology, one cannot claim that any technology transfer has taken place."³ Consequently, full technology transfer takes place when a technology receiving country is capable of reproducing and deploying the technology on its own.

However, the sources of funding for technological research and development concern two quite different sectors: public sectors and private sectors. Though the technology derived from public funding is generally not protected by intellectual property rights ("IPRs") and is open to the public, almost all technologies resulting from private fund research are protected.⁴ While IPRs are considered an essential incentive for invention and innovation of new technologies,⁵ sometimes they can create a monopoly over the technology market and cause unusually high prices of the concerned technological product.⁶ In this regard,

¹ MAHATAB UDDIN, CLIMATE CHANGE LAW, TECHNOLOGY TRANSFER, AND SUSTAINABLE DEVELOPMENT 9–11 (2021); *see also* Mahatab Uddin & Saiful Karim, *International Law and South-South Cooperation for Innovation and Transfer of Green Technologies*, 52 GEO. WASH. INT'L L. REV. 355, 357 (2020); Mahatab Uddin & Saleemul Huq, *Protecting Soft Adaptation Technologies Under Intellectual Property Rights Systems*, 25 UNIV. S.F. INTELL. PROP. & TECH. L.J. 19, 21 (2020).

² *Id.* at 11.

³ *Id.* at 10.

⁴ Uddin, *supra* note 1, at 13–14.

⁵ Daniel F. Spulber, *How Patents Provide the Foundation of the Market for Inventions*, 11 J. COMPETITION L. & ECON. 271, 272 (2015); *see also* Rod Falvey & Neil Foster, *The Role of Intellectual Property Rights in Technology Transfer and Economic Growth: Theory and Evidence* 1 (U.N. Indus. Dev. Org., Working Paper, 2006).

⁶ Taimoon Stewart, *The Functioning of Patent Monopoly Rights in Developing Economies: In Whose Interest?*, 49 SOC. & ECON. STUD. 1, 36 (2000).

competition law can bring market balance through monitoring abuse of IPRs from those in dominant positions in any given technology market.⁷ Therefore, this paper argues that the transfer of technology is greatly dependent on balanced interfaces of both IPRs and competition laws because the harmonization of suitable IPRs and competition regime is essential to facilitate wide-scale innovation, transfer, and diffusion of technologies. Based on this argument, this article aims to explore how this interface can be employed to facilitate the transfer of environmentally sound technologies (“ESTs”), technologies which are essential for climate change mitigation and adaptation,⁸ in developing and least developed countries. As an example of a technology-receiving least developed country, this article will include a discussion on the role of IPRs and competition laws in facilitating the transfer of ESTs in Bangladesh, which is considered to be one of the most climate-change-affected countries in the world.⁹

The discussion and analysis of this article will cover the governing international treaty of IPRs: The Agreement on Trade-Related Aspects of Intellectual Property Rights (“TRIPS”),¹⁰ competition related rules of the European Union (“EU”), and relevant IPRs and competition related laws of Bangladesh. The paper will first address diverse channels of technology transfer such as international trade, foreign direct investment, and licensing. The article will then cover a discussion as to how IPRs can influence innovation and transfer

⁷ Hanna Stakheyeva, *Intellectual Property and Competition Law: Understanding the Interplay*, in MULTI-DIMENSIONAL APPROACHES TOWARDS NEW TECHNOLOGY 4 (Ashish Bharadwaj et al. eds., 2018).

⁸ *What’s the difference between climate change mitigation and adaptation?*, WORLD WILDLIFE FUND, <https://www.worldwildlife.org/stories/what-s-the-difference-between-climate-change-mitigation-and-adaptation> (last visited Apr. 5, 2022).

⁹ *How the Climate Crisis is Impacting Bangladesh*, CLIMATE REALITY PROJECT (Dec. 9, 2021, 11:00 PM), <https://www.climaterealityproject.org/blog/how-climate-crisis-impacting-bangladesh>.

¹⁰ 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, 33 I.L.M. 1197 [hereinafter TRIPS Agreement].

of ESTs. Thereafter, this article will focus on the EU competition regime as an example of the positive role of competition law in facilitating technology transfer through preventing anticompetitive behaviors of concerned IPR holders. And finally, this paper will discuss and analyze the relevant IPRs and competition laws of Bangladesh in connection with their role in facilitating possible innovation and transfer of ESTs in the country.

II. CHANNELS OF TECHNOLOGY TRANSFER

According to statistics, the amount of public fund research is less than the amount of private fund research in developed countries, whereas, in developing countries, the amount of public fund research is larger than the amount of private fund research.¹¹ But still, the public sector research of the developing world offers far less technology than the international private sector does.¹² Thus, it is understandable that a large portion of commercially significant technologies, including ESTs, are owned by private entities or transnational corporations (“TNCs”), predominantly from developed countries.¹³ Accordingly, TNCs of developed countries play a vital role in transfer, dissemination, and creation of technologies. The typical methods followed by TNCs for international technology transfer include international trade, foreign direct investment (“FDI”), and technology licensing.¹⁴

¹¹ See John Barton, *New Trends in Technology Transfer: Implications for National and International Policy* 8 (Int'l Ctr. Trade & Sustainable Dev., Issue Paper No. 18, 2007).

¹² See *id.* (noting exceptions occur in agricultural sectors, where most of the research is conducted by international public sectors such as CGIAR, formerly the Consultative Group for International Agricultural Research system).

¹³ See generally Fekitamoela 'Utoikamanu, *Closing the Technology Gap in Least Developed Countries*, U.N. CHRONICLE, <https://www.un.org/en/chronicle/article/closing-technology-gap-least-developed-countries> (last visited Apr. 5, 2022) (detailing the reasons why developing countries and least developed countries lack large portions of technologies).

¹⁴ Barton, *supra* note 11, at 1; see Mahatab Uddin, *Climate Change and Requirement of Transfer of Environmentally Sound Technology* 4 (2011) (M.A. thesis, Uppsala University), <http://www.diva-portal.org/smash/get/diva2:451119/FULLTEXT01.pdf>.

When a country or firm imports higher quality intermediary products to use in its own manufacturing process, technology transfer via international trade occurs.¹⁵ Generally, intra-industry trade has more significance in technology transfer than inter-industry trade.¹⁶ As intra-industry trade occurs mainly among developed countries, it is presumed that the developing and least developed countries enjoy comparatively less technology transfer facility through international trade.¹⁷

Technology transfer via a FDI occurs when a TNC from the developed world extends its international business into a developing or least developed country and it brings its own technology to the place of investment, which results in a spillover of technologies to the local market.¹⁸ A FDI not only includes technology, but also management experience and entrepreneurial abilities, which are transferred by training programs and learning by doing processes.¹⁹ Besides, some technologies and know-how are not always available in the market, and are specially used by specific TNCs.²⁰ Thus, technology transfer through FDI can bring benefits, which are generally not available through other modes of transfer.²¹

And technology transfer through licensing happens when a firm provides a license for using its technology to an agent

¹⁵ Uddin, *supra* note 14, at 7; Immaculada Martínez-Zarzoso & Santiago Chelala, *Trade agreements and international technology transfer*, 157 REV. WORLD ECON. 631, 635 (2021).

¹⁶ See generally Dalia Hakura & Florence Jaumotte, *The Role of Inter- and Intra-industry Trade in Technology Diffusion* 1 (IMF, Working Paper No. 99/58, 1999) (describing how international trade is an important channel for the transfer of technology); see also U.N. Conf. on Trade & Dev., *The Least Developed Countries Report 2020*, UNCTAD/LDC/2020 (Dec. 3, 2020) (explaining the impact of specific technology and types of trade in the least developed countries).

¹⁷ See generally Hakura & Jaumotte, *supra* note 16 (highlighting that intraindustry trade between developing and developed nations is far more effective than interindustry trade).

¹⁸ Uddin, *supra* note 14, at 5–6.

¹⁹ Philip Bodman & Thanh Le, *Assessing the roles that absorptive capacity and economic distance play in the foreign direct investment-productivity growth nexus*, 45 APPLIED ECON. 1027, 1035 (2013).

²⁰ See *id.* at 1037 (highlighting that FDI increases knowledge in technology and higher capacity labor force that are beneficial for countries).

²¹ Uddin, *supra* note 14, at 5.

abroad, who utilizes the technology to improve production of its own firm.²² As it is difficult to successfully integrate in foreign markets through exports only, TNCs tend to choose to provide licenses of their technology to local firms of the developing world.²³

III. IMPACT OF IPRS OVER TRANSFER OF ESTS

In all of the above-described channels of technology transfer, the technology owners are generally reluctant to proceed with technology related business transactions with developing or least developed countries that have weak or no intellectual property laws due to the fear and apprehension of misappropriation of their technologies.²⁴ Arguably, the risk of imitation is higher in cases of recently invented "high technologies"²⁵ on which IPRs have not yet expired.²⁶ Though the risk of losing protected technology is comparatively less in countries that do not have infrastructural capabilities to reverse engineer at present, it does not give any guarantee to technology owning entities that their technology will remain safe.²⁷

The Ginarte and Park IPR index shows that the level of IPR

²² Japan Patent Office, *Technology Transfer and Licensing*, 1, 3, 18 (2011), https://www.jpo.go.jp/e/news/kokusai/developing/training/textbook/document/index/Technology_Transfer_and_Licensing2011.pdf.

²³ *Id.* at 2; Uddin, *supra* note 14, at 6.

²⁴ See generally Elisabetta Gentile, *Intellectual Property Rights and Foreign Technology Licensing in Developing Countries: An Empirical Investigation* 25 (Asian Dev. Bank, Working Paper No. 515, 2017) (explaining how foreign inventors are reluctant to participate in business transactions that offer inadequate protection to their intellectual property).

²⁵ See Mahatab Uddin & Saleemul Huq, *Protecting Soft Adaptation Technologies Under Intellectual Property Rights Systems*, 25 INTEL. PROP. & TECH. L.J. 19, 24 (2020) (stating that "[h]igh technologies are those derived from recent scientific progress").

²⁶ See *id.* at 24–25 (listing various technologies that are still subject to intellectual property rights).

²⁷ See, e.g., Harvey Rubin & Nicholas Saidel, *Innovation beyond patent waivers: Achieving global vaccination goals through public-private partnerships*, BROOKINGS INST. (Aug. 31, 2016), <https://www.brookings.edu/blog/up-front/2021/08/31/innovation-beyond-patent-waivers-achieving-global-vaccination-goals-through-public-private-partnerships/> (depicting how despite low and middle income countries' lack of proper infrastructure to develop vaccines, inventors still fear the repercussions of granting them patent rights, which is made evident by their opposition to the vaccine waiver).

protection has a positive correlation with the potential of receiving FDI in high-tech sectors.²⁸ Another recent study shows that the developing countries that recently strengthened their intellectual property law framework have experienced increased numbers of licensing agreements with foreign companies, ensuring effective access by the local firms to the protected technologies and know-how.²⁹ In fact, scholarship has noted that TNCs are more interested in offering licenses in countries with strong IPR protection rather than exporting or selling products through their affiliations in those countries.³⁰ This is also supported by a theoretical model by Lei Yang and Keith Maskus who argue that, to offer licenses for technology in developing and least developed countries, it is essential that the specific country has obtained a certain level of absorptive capacity to utilize the licensed technology.³¹

The above-mentioned facts concerning IPRs and technology transfer are arguably more applicable for ESTs. Since many ESTs are considered "high technologies," invented recently or still under process of invention based on new and changing circumstances of global climate, it is common that IPR owners of these ESTs are more careful about protection of their rights.³² Under these circumstances, it can be argued that ensuring the existence of an IPR protection regime in developing and least developed countries would attract the technology owning entities to engage in international trade, FDI, and licensing in those countries. In connection with this protection, the two most relevant IPRs are patents and trade secrets.

²⁸ See Juan C. Ginarte & Walter G. Park, *Determinants of patent rights: A cross-national study*, 26 RSCH. POL'Y 283, 285 (1997) (illustrating the positive correlation between patent rights and foreign and direct investments).

²⁹ Walter G. Park & Douglas Lippoldt, *International Licensing and the Strengthening of Intellectual Property Rights in Developing Countries During the 1990s*, 40 OECD ECON. STUD. 7, 9 (2005).

³⁰ See DELVIN KULYEK, *INTELLECTUAL PROPERTY RIGHTS IN AFRICAN AGRICULTURE: IMPLICATIONS FOR SMALL FARMERS* 5 (2002) (discussing the preference of TNCs to only work with IPRs).

³¹ Lei Yang & Keith E. Maskus, *Intellectual Property Rights, Technology Transfer and Exports in Developing Countries* 18 (J. Dev. Econ., Working Paper No. 2464, 2008).

³² *High technology*, MERRIAM-WEBSTER DICTIONARY, <https://www.merriam-webster.com/dictionary/high%20technology> (last visited Mar. 13, 2022).

IV. PATENT

Among all IPRs, patents have vital importance concerning technology transfer issues including the issues of the transfer of ESTs. Like all other kinds of IPRs, the general standard for the patent system is given by TRIPS, which itself does not grant patents, but provides guidelines for a national patent system for the member states of the World Trade Organization (“WTO”).³³ In order to obtain patent protection, an inventor, or a representative, must file a patent application in the country where they seek protection of the invention, which discloses technical information about the invention to the public.³⁴ The invention must fulfill the basic criteria of Article 27 of TRIPS which requires the invention to be new, involve an inventive step, and capable of industrial application.³⁵ If the subject matter of a patent is a product, the patent owner is protected from others making, using, offering for sale, selling, or importing that product without first obtaining consent from the patent owner.³⁶ Similarly, if the subject matter of a patent is a process, the owner of the patent has exclusive rights to prevent others from using, offering for sale, selling, or importing those products which are directly made by using the patented process.³⁷

In general, patent rights and protections are limited to the countries where the patent applications have been filed and granted.³⁸ For this reason, if a technology is not protected by a patent in a country, the original innovator of the technology will have no right to prevent others from commercial application of the technology. Thus, in many developing and least developed countries all patented high-tech ESTs are as accessible as public knowledge.³⁹ But the non-existence of patent rights in these

³³ TRIPS Agreement, *supra* note 10, art. 29.

³⁴ *Patents*, WIPO, <https://www.wipo.int/patents/en/> (last visited Apr. 14, 2022).

³⁵ TRIPS Agreement, *supra* note 10, art. 27(1).

³⁶ *Id.* art. 28(1)(a).

³⁷ *Id.* art. 28(1)(b).

³⁸ *Patents*, *supra* note 34.

³⁹ See Neel Maitra, Access to Environmentally Sound Technology in the Developing World: A Proposed Alternative to Compulsory Licensing 2 (2009)

countries does not necessarily allow local firms to reverse engineer the technology due to the lack of access to the tacit knowledge, trade secrets and know-how embodied with the technology, or infrastructural capability to mimic. Such lack of infrastructural capability can also impede technology transfer through technology licensing.⁴⁰

On the other hand, the introduction of a national patent system in developing and least developed countries in accordance with the given guidelines of TRIPS will offer a strong protection of the IPRs over their ESTs owned by the private entities.⁴¹ Accordingly, the assurance of the protection of rights will stimulate them to make FDI or offer licenses of their rights.⁴² More importantly, introducing a strong IPR regime will build a strong research and development environment,⁴³ which might bring an absorption level for high technologies resulting in future innovations and technology transfer in those countries.

A major economic rationale behind patent systems is to sacrifice static efficiency for the sake of dynamic efficiency of the market, which in the long run, brings overall social benefit and infrastructural development to a state.⁴⁴ Based on this economic behavior of patent systems, one may argue that the introduction of a strong IPR regime can be vital for climate change technology innovation strategy (“CCTIS”) for developing and least developed countries.⁴⁵ A CCTIS approach can be a medium for

(on file with Columbia Law School Sabin Center for Climate Change Law) (showing that since no legal framework of IPRs exists, it is not unlawful to imitate technology protected in foreign countries).

⁴⁰ Maitra, *supra* note 39, at 2–3.

⁴¹ Keith E. Maskus, *Encouraging International Technology Transfer* 22 (UNCTAD-ICTSD Project on IPRs and Sustainable Development, Issue Paper No. 7, 2004) (demonstrating the protection offered for IPRs over private entity owned ESTs).

⁴² *Id.* at 26.

⁴³ *Id.*

⁴⁴ Ioannis Lianos et al., *Competition law, intellectual property rights and dynamic analysis: Towards a new institutional “equilibrium?”*, 4 CONCURRENTS 13, 15 (2013).

⁴⁵ See generally Joshua D. Sarnoff & Margaret Chon, *Innovation Law and Policy Choices for Climate Change-Related Public-Private Partnerships*, in THE CAMBRIDGE HANDBOOK OF PUBLIC-PRIVATE PARTNERSHIPS, INTELLECTUAL PROPERTY GOVERNANCE AND SUSTAINABLE DEVELOPMENT 245, 257 (Margaret Chon et al., eds., 2018) (detailing how imbalances in the patent systems of the

a long term approach of general innovation strategy in the field of climate change in order to achieve the goal of technology development and commercialization.⁴⁶ This long-term approach based on the patent regime of a state can build a strong local environment of technological development and simultaneously ensure a free flow of FDI and technology licensing over the long term.⁴⁷

However, from a market competition and consumer welfare perspective, one major doubt surrounding a patent system is whether the exclusive right given by a patent system may give the right owner an opportunity to abuse the right by creating a monopoly market.⁴⁸ If an EST patent owner firm is not interested in licensing its patent to others, fearing loss in its market position, then such reluctance could create a monopoly market for that specific EST, which will have a negative impact in transfer and diffusion of the given EST in that specific country.⁴⁹ One solution to such a situation can be achieved through a provision for compulsory licensing of required ESTs.⁵⁰ Though the provision of compulsory licensing enables existing technologies to generate and disseminate more quickly and cost effectively, the risk then becomes whether it can discourage

global North and South are causing a dichotomy in climate change technologies).

⁴⁶ See generally Richard G. Newell, *The Role of Markets and Policies in Delivering Innovation for Climate Change Mitigation*, 26 OXFORD REV. ECON. POL'Y 253, 262 (2010) (explaining how the United States improving its policy in applied research saw development and commercialization from its solar and wind energy patents).

⁴⁷ See Maitra, *supra* note 39, at 22.

⁴⁸ See Joined Cases C-468/06 to C-478/06, *Sot. Lélos kai Sia EE v. GlaxoSmithKline AVEE*, 2008 E.C.R. I-7196 (explaining how price competition is limited due to medical patents); see also Joaquín Almunia, Vice President, Eur. Comm'n Responsible for Competition Pol'y, Speech for New Frontiers of Antitrust 2012 (Feb. 10, 2012) (detailing how patent holders can negate the possibility of competition in future generations of businesses).

⁴⁹ See generally Robert Fair, *Does Climate Change Justify Compulsory Licensing of Green Technology?*, 6 BYU INT'L L. & MGMT. REV. 21, 24 (2010) (describing how corporations that have been granted environmental patents are very reluctant to relinquish them).

⁵⁰ Daniel K.N. Johnson & Kristina M. Lybecker, *Challenges to Technology Transfer: A Literature Review of the Constraints on Environmental Technology Dissemination* 11 (Colo. Coll. Working Paper, Paper No. 2009-07, 2009), https://papers.ssrn.com/sol3/Delivery.cfm/SSRN_ID1456222_code57030.pdf?abstractid=1456222&mirid=1.

second-generation solutions from developing similar technologies.⁵¹ Therefore, compulsory licensing is regarded as a “static solution to a dynamic problem.”⁵²

Article 31 of TRIPS provides the option of nonexclusive compulsory licensing under the general term of “use without authorization of the right holder,” which covers both compulsory licenses granted to third parties for their own use and use by or on behalf of governments without seeking permission of the original right holder.⁵³ This provision of Article 31 allows the WTO member states to lay down their patent laws, including the authorization of compulsory licenses, subject to conditions aimed at protecting the legitimate interests of the right holder.⁵⁴ Later on, the Doha Declaration on the TRIPS Agreement and Public Health reaffirmed that “each [WTO member] has the right to grant compulsory licenses and the freedom to determine the grounds upon which such licenses are granted.”⁵⁵ While Article 31 of TRIPS does not specify the conditions on the grounds for granting compulsory licensing for the national authorities, national laws generally consider the issues of public policies and issues essential to overcome anti-competitive situations as grounds for issuing compulsory licenses.⁵⁶

However, before applying for a compulsory license under Article 31, the applicant is required to make an attempt to obtain a voluntary license from the right holder on “reasonable commercial terms and conditions [...] within a reasonable period of time.”⁵⁷ Taking into account the proper economic value of the license, the applicant is also required to pay adequate remuneration to the original right holder.⁵⁸ It is important to note that the application of compulsory licenses under TRIPS

⁵¹ *Id.* at 12.

⁵² Johnson & Lybecker, *supra* note 50, at 12.

⁵³ TRIPS Agreement, *supra* note 10, art. 31.

⁵⁴ *Id.* art. 31(g).

⁵⁵ World Trade Organization, Ministerial Declaration of 14 November 2001, WTO Doc. WT/MIN(01)/DEC/2, 41 ILM 755, ¶ 5(b) (2002) [hereinafter Doha Declaration].

⁵⁶ Lisa Peets & Mark Young, *Is the exception becoming the rule?*, 195 PATENT WORLD 21, 21–22 (2007).

⁵⁷ TRIPS Agreement, *supra* note 10, art. 31(b).

⁵⁸ TRIPS Agreement, *supra* note 10, art. 31(h).

must be only to fulfill the domestic purposes, and the license is limited to the purposes for which it was granted.⁵⁹ As soon as the purpose disappears, the validity of the license will expire.⁶⁰ And provisions of compulsory licenses under Article 31 are subject to judicial review by a distinct higher authority.⁶¹ In cases of national emergency or other circumstances of extreme urgency, in the case of public noncommercial use, or, if a compulsory license is granted as a remedy in adjudicated cases of anti-competitive practices, attempting to obtain a voluntary license is not a necessary step.⁶²

While TRIPS allows granting a compulsory license for patents without prior authorization from innovators in the case of a “*national emergency or other circumstances of extreme urgency* or in cases of public noncommercial (i.e., government) use,”⁶³ it is a matter of debate whether such compulsory licenses are applicable to patented ESTs or not. The 2001 Doha Declaration made it clear that countries themselves will determine “the grounds upon which such licenses are granted.”⁶⁴ Taking this notion of the Doha Declaration into account, granting a compulsory license for patented ESTs is possible if a concerned WTO Member state determines innovation and transfer of green technologies to be an “emergency” or constitutes “extreme urgency” as these technologies are essential to combat climate change, which is widely acknowledged as a “common concern of humankind.”⁶⁵

Adoption of a compulsory license for ESTs may not necessarily be fruitful in all developing and least developing countries, since most of these countries are not capable of reproducing or reverse engineering “high tech” ESTs on their own.⁶⁶ These countries may benefit from a compulsory license if

⁵⁹ *Id.* art. 31(c).

⁶⁰ TRIPS Agreement, *supra* note 10, art. 31(c).

⁶¹ *Id.* arts. 31(i)–(h).

⁶² *Id.* art. 31(h).

⁶³ *Id.* art. 31(b) (emphasis added).

⁶⁴ Doha Declaration, *supra* note 55, ¶ 5(b).

⁶⁵ U.N. Conference of the Parties to the U.N. Framework Convention on Climate Change, *Adoption of the Paris Agreement*, pmb., U.N. Doc. FCCC/CP/2015/L.9/Rev.1 (Dec. 12, 2015) [hereinafter Paris Agreement].

⁶⁶ See 'Utoikamanu, *supra* note 13 (describing the hurdles preventing the reproduction of ESTs in most countries which include insufficient funding for

any advanced developing country produces ESTs using a compulsory license provision and exports those ESTs at a lower price to the less advanced developing and least developed countries.⁶⁷ Once the less advanced developing and least developed countries obtain wide-scale access to these technologies through imports from the advanced developing countries, those countries will be able to create a suitable environment for adapting and reverse engineering those technologies on their own.

Hence, the country's priority should be introducing a strong patent regime for the purpose of facilitating transfer of ESTs through attracting FDI, licensing, or international trade.⁶⁸ But, in special circumstances where ESTs are not transferred through the above-stated channels, capable countries may think of reproducing that particular EST by using TRIPS flexibilities of compulsory licenses.⁶⁹ And for those countries that are not capable of producing any EST, may consider importing that EST at a lower price from those countries that are capable of producing the ESTs through the use of compulsory licenses. Since mere import of any technology does not ensure complete technology transfer, exporting countries may require a period of time to create a favorable environment that would allow for reproduction of the concerned imported ESTs.⁷⁰

V. TRADE SECRET

As mentioned earlier, regardless of whether a technology is protected by a patent or not, most of the developing and least

research, low enrollment rates in higher education programs, and a limited skilled labor supply).

⁶⁷ Cf. William Alan Reinsch, *Compulsory Licensing: A Cure for Distributing the Cure?*, *CTR. STRATEGIC & INT'L STUD.*, <https://www.csis.org/analysis/compulsory-licensing-cure-distributing-cure> (discussing the importance of compulsory licenses for developing countries in accessing important technology such as COVID-19 vaccines).

⁶⁸ See, e.g., U.N. Environment Programme (UNEP), *Trade in Environmentally Sound Technologies: Implications for Developing Countries* 9 (2018).

⁶⁹ TRIPS Agreement, *supra* note 10, art. 31(b) (articulating that requirements may be waived under special circumstances which may allow for more widespread reproduction of ESTs).

⁷⁰ UNEP, *supra* note 68, at 124.

developed countries will not be able to exploit or further develop any technology due to unknown tacit knowledge surrounding the use of the technology.⁷¹ "Tacit knowledge" is also known as know-how or a secret "methodology" or "recipe" of the technology developing entities which they apply at the time of manufacturing a product.⁷² Even if a patent is licensed to others, a patent of the technology is expired, or it is not protected by a patent in that region, it still remains virtually impossible to utilize the technology due to this lack of information on secret know-how, trade secrets, and undisclosed information of its application.⁷³ Unlike patents, trade secrets can be protected for an unlimited period.⁷⁴ Article 39 of TRIPS obligates the member states to lay down provisions protecting trade secrets.⁷⁵ To receive protection as a trade secret, it is essential to fulfill the following three conditions: 1) it must be "secret in the sense that it is not, as a body or in the precise configuration and assembly of its components, generally known among or readily accessible to persons within the circles that normally deal with the kind of information in question;" 2) it must have "commercial value because it is secret;" and 3) it "has been subject to reasonable steps under the circumstances, by the person lawfully in control of the information, to keep it secret."⁷⁶ However, even if a country lacks sufficient law to protect trade secrets or undisclosed information, special measures taken by companies, such as non-disclosure agreements with employees, can provide a legal shield, through civil remedy, to trade secrets of the

⁷¹ Rajarata University of Sri Lanka, *Literature Review of Importance of Knowledge Management to Developing Nations*, 7 GLOB. SCI. J. 52, 53–54 (2019).

⁷² Ed Marsh, *The 'Recipe' and 'Know How' Challenge of Top Line Growth*, CONSILIUM GLOB. BUS. ADVISORS (June 24, 2021), <https://www.consiliumglobalbusinessadvisors.com/stages-of-business-development-for-b2b-manufacturers/the-recipe-and-know-how-challenge-of-top-line-growth>.

⁷³ See *Trade Secrets*, WIPO, <https://www.wipo.int/tradesecrets/en/> (last visited Apr. 16, 2022) ("Trade secrets are intellectual property (IP) rights on confidential information which may be sold or licensed.").

⁷⁴ *Frequently Asked Questions: Trade Secrets*, WIPO, https://www.wipo.int/tradesecrets/en/tradesecrets_faqs.html (last visited Apr. 16, 2022).

⁷⁵ TRIPS Agreement, *supra* note 10, art. 39 (2).

⁷⁶ *Id.*

companies.⁷⁷

From the perspectives of the trade secret owning entity or firm which is engaged in developing ESTs, it is important to keep their know-how secret for the sake of their business growth. Concerned entities will try to create a dominant position in the market through holding their trade secrets and preventing entry of their competitors into the market. Hence, in connection with trans-boundary transfer of ESTs, strong protection of trade secrets in technology receiving countries can obviously play a positive role as it protects technology developers' interests in the technology receiving country.⁷⁸

On the contrary, from a consumer's viewpoint, if no competition exists in the market, there will be no welfare as the monopolist or dominant company may discretionarily raise the price of the product or may supply poor quality goods, in this case ESTs.⁷⁹ For this reason, the existence of an appropriate competition regime is essential to prevent any abuse of trade secrets.⁸⁰

VI. TRIPS AND TRANSFER OF ESTS

The above discussions indicate that although IPRs, such as patents and trade secrets, protect technology developers' interests, abuse of IPRs by the right holders may impede transfer and diffusion of technology.⁸¹ In this regard, it is important to note that although TRIPS offers IPRs to promote technological innovation through protecting the interests of the technology developers, the ultimate objectives of TRIPS also encompasses transfer and dissemination of the invented

⁷⁷ *Trade Secrets*, *supra* note 73 (discussing the different ways that employers may further attempt to prevent their competitors from entering the market).

⁷⁸ *Frequently Asked Questions*, *supra* note 74 ("In countries with market economy systems, both in the developing and developed world, fair competition between enterprises is considered as the essential means for satisfying the supply and demand of the economy, and serving the interests of the consumers and the society as a whole.").

⁷⁹ *Id.*

⁸⁰ *Id.*

⁸¹ *See Lianos*, *supra* note 44, at 17 (addressing interchangeably the impact that IP and IPRs have on competition in the market).

technologies.⁸² Certain provisions of TRIPS clearly refer to the necessity of transfer of technology.⁸³ Although TRIPS does not directly mention anything about ESTs, the preamble does mention that "the underlying public policy objectives of national systems for the protection of intellectual property, including developmental and technological objectives."⁸⁴ In this regard, the objective clause of TRIPS affirms that "the protection and enforcement of intellectual property rights should contribute to the promotion of technological innovation and to *the transfer and dissemination of technology*."⁸⁵ While references to technology transfer found under the objective and principle clauses of TRIPS are broad and do not specifically refer to ESTs, these provisions play an important role in interpreting other TRIPS provisions that allow "flexibility" for innovation and transfer of specific kinds of technologies. This is clear from the 2001 Doha Declaration on TRIPS and Public Health which confirms the importance of the objective clause of TRIPS as a guiding principle for the global IPR regime.⁸⁶

For the purpose of invoking TRIPS flexibility as to IPR protection over ESTs, the objective clause of TRIPS must be read in association with the principal clause of TRIPS which allows member states adopting "measures necessary to protect public health and nutrition, and to *promote the public interest in sectors of vital importance* to their socio-economic and technological

⁸² TRIPS Agreement, *supra* note 10, art. 7.

⁸³ *See id.* art. 8(2) ("Appropriate measures, provided that they are consistent with the provisions of this Agreement, may be needed to prevent the abuse of intellectual property rights by right holders or the resort to practices which unreasonably restrain trade or adversely affect the international transfer of technology."); *see also id.* pmb. ("Members recognize the desirability of promoting the transfer of technology and capacity building in the pharmaceutical sector in order to overcome the problem faced by Members with insufficient or no manufacturing capacities in the pharmaceutical sector. To this end, eligible importing Members and exporting Members are encouraged to use the system in a way which would promote this objective. Members undertake to cooperate in paying special attention to the transfer of technology and capacity building in the pharmaceutical sector in the work to be undertaken pursuant to Article 66.2 of this Agreement, paragraph 7 of the Declaration on the TRIPS Agreement and Public Health and any other relevant work of the Council for TRIPS.")

⁸⁴ *Id.* pmb.

⁸⁵ *Id.* art. 7 (emphasis added).

⁸⁶ Doha Declaration, *supra* note 55, ¶ 5(a).

development."⁸⁷ Since climate change is a global concern and a "common concern of humankind,"⁸⁸ it is possible to argue that the issue of innovation and transfer of ESTs, which are essential to deal with climate change, is a matter of public interest.⁸⁹ Based on this interpretation of "public interest," one can deduce that if WTO member states take any measure for designing or redesigning its IPR regime for the purpose of facilitating innovation and transfer of ESTs, at least in principle, it will not be a violation of TRIPS obligations.⁹⁰ Therefore, advanced developing countries which have enough technological base and capability of imitating ESTs, can arguably do so for the sake of public interest.⁹¹ Besides, TRIPS' principal clause also allows member states to take necessary steps to prevent any IPR holders from exercising their rights in a way which "unreasonably restrain trade or adversely affect the international transfer of technology."⁹²

On the other hand, least developed country WTO members are automatically allowed to design a suitable IPR regime for creating a favorable environment for innovation and transfer of ESTs, even without invoking any broad interpretation for bringing innovation and transfer of ESTs under the public interest category.⁹³ This is clear from the notion of TRIPS' preamble which acknowledges "the special needs of the least-developed country Members in respect of maximum flexibility in the domestic implementation of laws and regulations in order to enable them to create a sound and viable technological base."⁹⁴

In addition to the above-stated TRIPS' flexibility provisions, Article 66(2) requires developed country WTO members to "provide incentives to enterprises and institutions in their territories for the purpose of promoting and encouraging

⁸⁷ TRIPS Agreement, *supra* note 10, art. 8(1) (emphasis added).

⁸⁸ Paris Agreement, *supra* note 65, pmb1.

⁸⁹ Mahatab Uddin & Saiful Karim, *International Law and South-South Cooperation for Innovation and Transfer of Green Technologies*, 52 GEO. WASH. INT'L L. REV. 355, 375 (2020).

⁹⁰ Uddin & Karim, *supra* note 89.

⁹¹ *See id.*

⁹² TRIPS Agreement, *supra* note 10, art. 8(2).

⁹³ *Id.* pmb1.

⁹⁴ *Id.*

technology transfer to least-developed country Members in order to enable them to create a sound and viable technological base."⁹⁵ This provision can be particularly helpful for wide scale innovation and transfer of ESTs. Taking into account the just-mentioned notions of Article 66(2), if developed country WTO members offer special incentives to their public or private developers of ESTs, it will have a threefold impact. First, such an incentive will promote innovation of new ESTs in those countries.⁹⁶ Second, it will facilitate transfer of ESTs along with know-how associated with them to the least developed countries through importing newly invented ESTs.⁹⁷ And finally, it will help those least developed countries to create a favorable environment of innovation of ESTs through creating "a sound and viable technological base" for ESTs.⁹⁸

While developed country WTO members' sincere compliance with the provisions of Article 66(2) will facilitate the creation of "a sound and viable technological base" for ESTs in least developed countries, the least developed countries can maximize the fruits of this technological base through designing a suitable IPR regime.⁹⁹ If least developed countries adopt a suitable IPR regime in line with TRIPS, it will not only create a favorable environment for innovation of ESTs on their own, but it will also facilitate the transfer of ESTs in those countries through the channels of FDI, licensing, or international trade. In this manner, proper application of Article 66(2) by developed country WTO members and adoption of suitable IPR regimes by least developed countries can create a positive cycle of technology transfer to IPRs to innovation and technology transfer.

VII. COMPETITION LAW AND TECHNOLOGY TRANSFER

While both patent and trade secret protections facilitate the innovation of technology, it is likely that the abuse of these IPR protections may cause a market monopoly which will bring an advantage to the concerned EST developers but a disadvantage

⁹⁵ *Id.* art. 66(2).

⁹⁶ TRIPS Agreement, *supra* note 10, art. 66(2).

⁹⁷ *Id.*

⁹⁸ *Id.* art. 66(2).

⁹⁹ *Id.* art. 66(2)–67.

to new EST developers and the concerned EST consumers. Taking into account such potential tension between technology producers and consumers, Article 40(1) shows an agreement of WTO members that “some licensing practices or conditions pertaining to intellectual property rights which restrain competition may have adverse effects on trade and may impede the transfer and dissemination of technology.”¹⁰⁰ Accordingly, Article 40(2) of TRIPS advocates for adopting competition law through allowing Members to specify “in their legislation licensing practices or conditions that may in particular cases constitute an abuse of intellectual property rights having an adverse effect on competition in the relevant market.”¹⁰¹ Moreover, TRIPS’ conditions for granting a compulsory license predominantly for the purpose of ensuring supply to the domestic market, may also be relaxed if the compulsory license is granted as a remedy derived from adjudicated cases of anti-competitive practice.¹⁰²

Although competition law is aimed at dealing with markets for goods, the above-mentioned texts of Articles 40(1) and 40(2) make it clear that competition law can also be applicable to the market for technology protected by IPRs.¹⁰³ Successful instances of this realization are evident in the Guidelines on the applicability of Article 101 of the Treaty on the Functioning of the European Union (“TFEU”)¹⁰⁴ where a horizontal cooperation agreement distinguishes “product markets” from “technology markets.”¹⁰⁵ The guideline defines the technology market as

¹⁰⁰ *Id.* art. 40(1).

¹⁰¹ TRIPS Agreement, *supra* note 10, art. 40(2).

¹⁰² *Id.* art. 31(k).

¹⁰³ *Id.* art. 40(1)–(2).

¹⁰⁴ *See generally* Guidelines on the Applicability of Article 101 of the Treaty on the Functioning of the European Union to Horizontal Cooperation Agreements, ¶ 10, 2011 O.J. (C 11) 1 (The Treaty of Lisbon changed name from the “Reform Treaty” when it was amended and signed in Lisbon, Portugal, by the prime ministers and foreign ministers of the 27 EU Member States on 13 December 2007. The Lisbon Treaty amends the Treaty on European Union (TEU) and the Treaty establishing the European Community (TEC), which is renamed “Treaty on the Functioning of the European Union” (TFEU)) [hereinafter Guidelines Art. 101].

¹⁰⁵ *See* Guidelines on the Applicability of Article 81 of the EC Treaty to Horizontal Cooperation Agreements, ¶¶ 44–49, 2001 O.J. (C 3) 2 (distinguishing “product markets” from “technology markets”).

follows:

When rights to intellectual property are marketed separately from the products concerned to which they relate, the relevant technology market has to be defined as well. Technology markets consist of the intellectual property that is licensed and its close substitutes, i.e. other technologies which customers could use as a substitute.¹⁰⁶

Moreover, the Commission Notice - Guidelines on the application of Article 101 of the "EC Treaty to technology transfer agreements" states:

Technology is an input, which is integrated either into a product or a production process. Technology licensing can therefore affect competition both in input markets and in output markets. For instance, an agreement between two parties which sell competing products and which cross license technologies relating to the production of these products may restrict competition on the product market concerned. It may also restrict competition on the market for technology and possibly also on other input markets.¹⁰⁷

Thus, the distinguished product and technology market admits that the anti-competitive market behavior can take place both in the product and technology market. Competition law addresses IPRs issues on the technology market when IPRs are applied to fix excessive prices of any technology and/or when IPRs are used to prevent access to the protected technologies.¹⁰⁸ However, the most important interface between transfer, dissemination, and generation of technology and competition law concerns the control of restrictive business practices in licensing agreements.¹⁰⁹

It is not always the case that a patent owner goes for production using the technology that they own. A patent right owner may not have the required resources to go for production, or the right owner may decide to produce within some specific territory by itself and offer licenses for the production in other areas. It can also be the case that the patent owner wishes to

¹⁰⁶ *Id.* ¶ 47.

¹⁰⁷ Guidelines on Applicability, *supra* note 105, at ¶ 20.

¹⁰⁸ See *Licensing of IP Rights and Competition Law*, OECD, <https://www.oecd.org/daf/competition/licensing-of-ip-rights-and-competition-law.htm> (last visited Apr. 17, 2022) (distinguishing between the IPR's of competition law).

¹⁰⁹ UNCTAD, *Transfer of Technology*, 22, UNCTAD/ITE/IIT/28 (Oct. 2001).

apply the patented process for one purpose and allow the licensee to use it for other purposes. Whatever the reason is, a patentee may impose different conditions to the licensee in terms of price, quality, or quantity of the product produced through using the patented technology. Whether the conditions or terms of these patent license agreements are anticompetitive are monitored through Article 101 of TFEU.¹¹⁰ The provisions of Article 101 are related to the own products of the patent owners, as such it is restrictive only for the intra-technology competition. Some of the terms of technology licensing agreements like tie-in clauses, which require a licensee to obtain a specific kind of technology or products only from the patentee, or competition clauses, preventing the licensees to handle technology or products which compete with the patentee's product, such provisions may prevent the opportunities of other producers to enter into technology market, may also affect inter-technology competition."¹¹¹

Article 101 monitors the licensing terms such as Territorial Exclusivity, Royalties, Duration, Field of use Restrictions, Non-Challenge clauses, Improvements, Tying and bundling, and prices, terms, and conditions.¹¹² If in a license agreement a patent right holder puts conditions of absolute territorial exclusivity, the agreement will necessarily hinder competition of the technology market, and would likely be prohibited by EU Competition rule. Similarly, if a field of uses restrictions clause of a license agreement appears to be motivated to hinder competition it may also be prohibited under article 101(1) of TFEU.¹¹³

A non-competition clause through which a licensee is restricted to compete by using its own or rival technology is inserted in a license agreement to foster the production of patented goods.¹¹⁴ But if such a noncompetitive clause creates a major negative impact on the technology market, in Europe, it

¹¹⁰ *EU competition law and selective distribution*, LEXIS PSL (Mar. 28, 2018), <https://www.gibsondunn.com/wp-content/uploads/2018/06/Wood-EU-competition-law-and-selective-distribution-Lexis-3-28-2018.pdf>.

¹¹¹ RICHARD WHISH, *COMPETITION LAW* 759–60 (6th ed. 2009).

¹¹² Guidelines Art. 101, *supra* note 104, art. 101.

¹¹³ *Id.* art. 101(1).

¹¹⁴ *Id.*

will be treated as an act of non-competitive conduct.¹¹⁵

At the time of application of a patented technology a licensee may come up with some new knowledge or know-how. In some license agreements it is seen that the licensor requires the licensee to grant him or her access to such a kind of subsequently invented "know how" and not to grant access of the know-how to others. But such terms in a licensing agreement may also be objectionable under EU Competition rules.¹¹⁶

Sometimes, a licensor may bundle their own technology or technological product or may offer a license to the licensee on the condition that the licensee is required to take a license of another technology or buy another product from the licensor or from any designated third party. Though this kind of licensing practice may promote economic efficiencies, it might hinder fair competition in the technology market and might be prohibited by EU Competition rules. Besides, if duration clauses, royalty clauses, or terms and conditions on prices of a license agreement seem anti-competitive, it will be altered by the EU Competition authority.¹¹⁷ It is important to note that the principles of patent licensing of EU Competition laws are also applied in cases of know-how licensing.¹¹⁸

Apart from the general terms and conditions of a license agreement, the most important issue concerning the interface between IPRs and competition law on technology transfer is compulsory licensing. As described earlier, a patent holder with exclusive rights or a know-how holder can abuse their market power by refusing to allow others to enter the market.¹¹⁹ Article

¹¹⁵ *European Union Restrictions On Non Compete Clauses In Distribution Agreements*, STIMMEL, STIMMEL & ROESER LAW, <https://www.stimmel-law.com/en/articles/european-union-restrictions-non-compete-clauses-distribution-agreements> (last visited Apr. 16, 2022).

¹¹⁶ The Treaty on the Functioning of the European Union, arts. 101(1), 179(1), Oct. 26, 2012, 2012 O.J. (C326) 47 [hereinafter Treaty EU].

¹¹⁷ See generally *id.* arts. 101, 105 (explaining that any agreements aiming to restrict trade are prohibited, then providing specific scenarios that the authors in text examples would fulfill, and lastly, explaining that the Competition authority will enforce article 101); see also *European Union Restrictions On Non Compete Clauses In Distribution Agreements*, *supra* note 115 (explaining specific non compete clauses that are often understood as too restrictive in the EU).

¹¹⁸ See WHISH, *supra* note 111, at 766.

¹¹⁹ Treaty EU, *supra* note 116.

102 of TFEU prohibits the right holders from abuse of its dominant position of market: "[a]ny abuse by one or more undertakings of a dominant position within the internal market or in a substantial part of it shall be prohibited as incompatible with the internal market in so far as it may affect trade between Member States."¹²⁰ The ECJ judgment makes clear that the Article is not against a dominant position holder in the market, but rather it prohibits any sort of abuse of the dominant position.¹²¹ The similar notion of "abuse" has also been inserted in Article 8(2) of TRIPS: "[a]ppropriate measures, provided that they are consistent with the provisions of this Agreement, may be needed to prevent *the abuse of intellectual property rights* by holders or the resort to practices which unreasonably restrain trade or adversely affect the international transfer of technology."¹²²

Thus, in cases of anticompetitive behavior of a patent or know-how owner, Article 102 of TFEU first needs to determine the dominant position and then whether there is an abuse of the dominant situation.¹²³ European law requires that the holder of the dominant position has "a special responsibility not to allow its conduct to impair genuine undistorted competition on the common market."¹²⁴ If a dominant position holder fails to show its "special responsibility" through its conduct in the technology market, it could be liable for abusing its dominant position.¹²⁵ A dominant position is determined through market share of the firm within the relevant market, where the firm and product or technology in question is offered.¹²⁶ Therefore, defining "relevant market" is an important critical task, as a larger definition of market will not allow consideration of a dominant firm and a narrower definition of relevant market may lead to

¹²⁰ *Id.* art. 102.

¹²¹ See Case 24/67, Parke, Davis & Co. v. Probel, 1968 E.C.R. 72–73.

¹²² TRIPS Agreement, *supra* note 10, art. 8(2) (emphasis added).

¹²³ See Treaty EU, *supra* note 116, art. 102.

¹²⁴ Case 322/81, Michelin v. Comm'n, 1983 E.C.R. 3466.

¹²⁵ See *id.* (finding an abuse of a dominant position in the Defendant's conduct when they failed to show special responsibility in setting up a contested discount system).

¹²⁶ Case 85/76, Hoffmann-La Roche & Co. AG v Comm'n, 1979 E.C.R. 461.

an incorrect labeling of a firm as dominant.¹²⁷ However, if the dominance and relevant market criteria are properly fulfilled, it is required to determine whether any abuse of the dominant position exists.¹²⁸

VIII. ABUSE OF DOMINANT POSITION

The term “abuse” meant by Article 102 occurs in different manners under different circumstances. In most of the cases, abuse is occurred through tying,¹²⁹ limiting production,¹³⁰ price exploitation,¹³¹ price discrimination,¹³² or through predatory pricing.¹³³

Under EU competition regime, it is possible to seek compulsory licenses based on a “refusal to deal” in intellectual property. To gain compulsory license on this ground, it is essential to prove that the refusal constitutes an abuse of dominant position. In a 1995 European case, refusal of authorization for a reasonable remuneration was considered abusive conduct.¹³⁴ The “doctrine of essential facility,” is applied to seek, grant, and issue compulsory licenses in case of a refusal

¹²⁷ See *id.* (discussing the importance of delimiting the relevant market).

¹²⁸ *Id.* at 470.

¹²⁹ See Case T-201/04, Microsoft Corp. v. Comm'n, 2007 E.C.R. II-4463.

¹³⁰ Treaty EU, *supra* note 116, art. 102(2)(b) (“limiting production, markets or technical development to the prejudice of consumers” is considered an abuse by a dominant undertaking); see also Case 30/87, Corinne Bodson v. SA Pompes, 1988 E.C.R. 2479.

¹³¹ Treaty EU, *supra* note 116, art. 102(2)(a) (noting that “directly or indirectly imposing unfair purchase or selling prices or other unfair trading conditions” is considered abusive); see also Case 30/87, Corinne Bodson v. SA Pompes, 1988 E.C.R. 2479.

¹³² Treaty EU, *supra* note 116, art. 102(2)(c) (noting that “applying dissimilar conditions to equivalent transactions with other trading parties, thereby placing them at a competitive disadvantage” is an abuse of dominant position); see also Case T-228/97, Irish Sugar Plc v. Comm'n, 1999, E.C.R. II-02969.

¹³³ See Case T-340/03, France Telecom SA v. Comm'n, 2007 E.R.C. II-00107 (explaining that predatory pricing is dropping prices of a product so much that in order one's smaller competitors cannot cover their production costs and wipe out from business).

¹³⁴ See DAVID A. LATHAM, SHOULD COMPETITION LAW BE USED TO COMPEL THE GRANT OF LICENSES OF INTELLECTUAL PROPERTY RIGHTS? 26 (Lovell White Durrant ed., 1996).

to deal.¹³⁵ Under European law, an essential facility may be a "product such as a raw material, an intellectual property right, a service, information, infrastructure, or access to a physical place such as a harbor or an airport, or a part of a telecommunications network, or a software interface."¹³⁶ In *Commercial Solvents vs. Commission*,¹³⁷ it was established that a refusal to supply can amount to an abuse of a dominant position, in some circumstances. While the refusal to supply of *Commercial Solvents* would cause elimination of its only competitor due to its negative impact on downstream market, it was considered an abuse of dominant position and accordingly an anticompetitive measure.¹³⁸ However, the view was made clear by the Court that ownership alone does not confer dominance and refusal alone does not constitute abuse.¹³⁹ To apply this doctrine, some special circumstances must exist.¹⁴⁰ However, the law in cases of refusal to license suggests that it is stricter and harder to prove abuse in those situations.¹⁴¹

The circumstances make the refusal exceptional and to show an abuse of dominance, three conditions must be met.¹⁴² First, the refusal is required to be related to a product or service essential for the exercise of a particular action in the relevant market.¹⁴³ Second, the refusal is required to be of a particular kind, which excludes any effective competition in that relevant

¹³⁵ *Id.* at 28.

¹³⁶ John Temple Lang, *The Application of Essential Facility Doctrine to Intellectual Property Rights Under European Competition Law*, in ANTITRUST, PATENTS, AND COPYRIGHT: EU AND US PERSPECTIVES 62 (François Lévêque & Howard Shelanski eds., 2005).

¹³⁷ See Joined Cases 6 & 7-73, *Istituto Chemioterapico Italiano S.p.A. & Com. Solvents Corp. v. Comm'n Eur. Communities*, 1974 E.C.R. 223.

¹³⁸ *Market Abuse and Affected Trade*, LAWTEACHER (July 17, 2019), <https://www.lawteacher.net/free-law-essays/european-law/market-abuse-and-affected-trade-law-essays.php>.

¹³⁹ *Id.*

¹⁴⁰ See Shamnad Basheer, *Block Me Not: How 'Essential' are Patented Genes?*, 2005 U. ILL. J.L. TECH. & POL'Y 55, 76 (2005).

¹⁴¹ See generally RICHARD WHISH & DAVID BAILEY, *COMPETITION LAW* 802–3 (7th ed. 2012) (describing the factors that must be satisfied in order to prove refusal to license).

¹⁴² Case T-201/04, *Microsoft Corp. v. Comm'n*, 2007 E.C.R. II-03601, ¶ 6.

¹⁴³ *Id.*

market.¹⁴⁴ And third, the refusal is required to prevent entry of a new product for which there is possible demand.¹⁴⁵ A similar description of special circumstances is also found in the Magill case,¹⁴⁶ where the Court considered whether a refusal to grant a license in exercising in IPRs may be considered an abuse if lack of an actual or potential substitute for the product exists.¹⁴⁷ Specifically, looking at whether regular and constant demand of the product exists, and if refusal to grant a license prevents entry of new products in a market.¹⁴⁸ Though the third condition (only applicable in cases where IPRs are involved) has specified a higher threshold for IPRs involving cases, "the essential facilities doctrine" can work as a catalyst to balance a market competition through granting compulsory license of essential patent or know-how in the technology market.¹⁴⁹

Thus, in addition to the licensing agreement provisions of Article 101 of TFEU, and general provisions concerning abuse of dominant position of Article 102 of TFEU, the "essential facilities doctrine" may also be applied to ensure access to protected technologies resulting in technology transfer.¹⁵⁰ This doctrine may ensure exploitation of the ESTs, particularly in the secondary market, even in the absence of any other abusive conduct.¹⁵¹ Under this doctrine, the refusal to grant third parties' access to essential technologies, in this case ESTs, will offer enough grounds to pursue a dominant firm/TNC to offer license on non-discriminatory and reasonable terms.¹⁵²

¹⁴⁴ *Id.* ¶ 332.

¹⁴⁵ *Id.*

¹⁴⁶ Joined Cases C-241 & C-242/91, *Radio Telefis Eireann v. Comm'n*, 1995 E.C.R. I-743.

¹⁴⁷ *Id.* at 818.

¹⁴⁸ *Id.* at 817–18.

¹⁴⁹ Mauro Squitieri, *Refusals to License Under European Union Competition Law After Microsoft*, 65 J. INT'L BUS. & L. 1, 67–68, 83 (2012).

¹⁵⁰ Guidelines Art. 101, *supra* note 104, arts. 101–02; Reiko Aoki & John Small, *Compulsory licensing of technology and the essential facilities doctrine*, 16 INFO. ECON. & POLICY 13, 14–15 (2004).

¹⁵¹ *See, e.g.*, Squitieri, *supra* note 149, at 70 (explaining a situation in which the essential facilities doctrine could be abused).

¹⁵² *See City of Chanute, Kan. v. Williams Natural Gas*, 955 F.2d 641, 648 (10th Cir. 1992) (stating that "access to an essential facility must be `upon such just and reasonable terms and regulations as will, in respect of use, character and cost of service, place every such company upon as nearly an equal plane as may be with respect to expenses and charges as that occupied

However, both IPRs and competition law systems are complementary in terms of the common fact that both regimes ultimately promote innovation and foster market efficiency.¹⁵³ Yet, it cannot be ignored that the direct and immediate goal of these two systems conflict with each other, as the IPR system is aimed to protect the interest of the innovators while competition laws are aimed to protect consumers' interest, especially under the EU Competition law.¹⁵⁴ Thus, harmony within the market economy for ESTs can only be sought by taking into account the interfaces of IPRs and competition law regimes.¹⁵⁵

IX. IPRS AND COMPETITION LAW FOR TRANSFER OF ESTS IN BANGLADESH

A. 5.1. IPRs

As the above-mentioned discussions demonstrate, a suitable combination of IPRs and competition laws can play a significant role in facilitating innovation and transfer of ESTs. Bangladesh, a WTO member and a Party to the United Nations Framework Convention on Climate Change ("UNFCCC"),¹⁵⁶ must ensure harmony between a suitable IPR regime and an appropriate competition law regime to create a favorable environment for innovation and transfer of ESTs. The UNFCCC suggests building a suitable patent regime and effective trade secret protection measures for the purpose of ensuring transfer of ESTs via increased international trade, FDI, licensing, and research and development activities.¹⁵⁷

by the proprietary companies" (citing *U.S. v. Terminal R.R. Ass'n*, 224 U.S. 283, 411 (1912)).

¹⁵³ ORGANISATION FOR ECON. CO-OPERATION & DEVELOPMENT (OECD), *COMPETITION POLICY AND INTELLECTUAL PROPERTY RIGHTS* 7 (1997).

¹⁵⁴ OECD, *COMPETITION POLICY AND INTELLECTUAL PROPERTY RIGHTS*, *supra* note 153, at 145.

¹⁵⁵ KEITH E. MASKUS, *PRIVATE RIGHTS AND PUBLIC PROBLEMS: THE GLOBAL ECONOMICS OF INTELLECTUAL PROPERTY IN THE 21ST CENTURY* 244 (Peterson Inst. for Int'l Econ. ed., 2010).

¹⁵⁶ See *UNFCCC Parties*, U.N. CLIMATE CHANGE <https://unfccc.int/process/parties-non-party-stakeholders/parties-convention-and-observer-states> (last visited Apr. 17, 2022) (listing Bangladesh as a Party to the Convention).

¹⁵⁷ *Climate Change and Technology Transfer: Addressing Intellectual*

Current patent law of Bangladesh was initially enacted in 1911,¹⁵⁸ though later amended several times.¹⁵⁹ Since this patent law was enacted during the British India period, it does not necessarily reflect the country's current need and demand of technological innovation, let alone the demand of innovation and transfer of ESTs. More importantly, this hundred-year-old patent law does not reflect one of main the spirits of TRIPS: the transfer and dissemination of technology.¹⁶⁰

While TRIPS set the minimum tenure of patent protection for twenty years,¹⁶¹ Bangladesh's patent law offers patent protection for sixteen years¹⁶² from the date of filing with a possible extension for ten years.¹⁶³ Although this law contains a provision of compulsory licensing, the provision is not applicable to public interest cases.¹⁶⁴ Instead, the compulsory license provision of Bangladesh patent law is merely applicable where a patent owner fails to fulfill market demand for the patented product.¹⁶⁵

While existing patent law of Bangladesh lacks suitable substantive provisions reflecting the country's need for promotion of transfer of technologies like ESTs, the patent regime of Bangladesh also suffers from weak institutional mechanisms. For example, the patent registration office of Bangladesh does not have enough staff and resource personnel.¹⁶⁶ On average it takes at least twenty-one months to

Property Issues, THIRD WORLD NETWORK 2, 14
https://unfccc.int/ttclear/misc_/StaticFiles/gnwoerk_static/TEM_tec_cfi_ee/7843d4ba5e5e459c99deb4e47b972e83/f7d4f254005e4fb786bd4cf1679e5d1a.pdf
 (last visited Apr. 17, 2022).

¹⁵⁸ Patents and Designs Act, 1911 (Act. No. II/1911) (P.R. Bangl.).

¹⁵⁹ *See id.* ¶ 8 (stating that paragraph 8 was repealed by section 4 of the Indian Patents and Design Act of 1930, an amendment to the Patents and Design Act of 1911).

¹⁶⁰ TRIPS Agreement, *supra* note 10, art. 7.

¹⁶¹ *Id.* art. 33.

¹⁶² Patents and Designs Act ¶ 14(1).

¹⁶³ *See id.* ¶ 15 (6) (stating a proposed new draft patent law has suggested the tenure of protection for 20 years which is in line with TRIPS).

¹⁶⁴ *Id.* ¶ 22.

¹⁶⁵ *Id.* ¶ 22(4).

¹⁶⁶ M. KAMAL UDDIN, DRAFT REPORT ON INNOVATION AND INTELLECTUAL PROPERTY FOR BANGLADESH A PROJECT OF WORLD INTELLECTUAL PROPERTY ORGANIZATION (WIPO) 142 (2013).

receive patent registration from an application's date of filing.¹⁶⁷ Moreover, Bangladesh does not have a special court to deal with patent related issues,¹⁶⁸ which in many cases require a judge that has sound knowledge on particular scientific matters.¹⁶⁹ At present, judges for the conventional courts of Bangladesh are not properly trained to deal with patent or other IPR related matters.¹⁷⁰ Moreover, Bangladesh does not have a specific law to protect trade secrets except for general provisions found under Contract Act 1872 and Competition Act 2012.¹⁷¹

Therefore, Bangladesh requires a strong patent regime based on a revised patent law which will not only reflect the country's need of advancing technological innovation but also consider the necessity of creating a favorable environment for innovation and transfer of ESTs. Bangladesh needs to adopt effective law regarding protection of trade secret or undisclosed information as enumerated under Article 39 of TRIPS.

B. 5.2. Competition Law

Although Bangladesh adopted a competition law in 2012, its objective is focused on creating an atmosphere of market competition.¹⁷² While the national competition law of Bangladesh is mainly aimed at creating a favorable environment for competition in trade, the objective of the Act is expected to be fulfilled through prevention, control, or eradication of "collusion, monopoly and oligopoly, combination or abuse of dominant position or activities adverse to the competition."¹⁷³ Although all these steps are necessary for creating a favorable environment

¹⁶⁷ *Id.*

¹⁶⁸ *Id.* at 147.

¹⁶⁹ *See generally id.* at 60 (explaining all concerned in IPR enforcement should receive extensive training on the appropriate laws including judges).

¹⁷⁰ Council for Trade-Related Aspects of Intellectual Prop. Rights, *Communication from Bangladesh: Priority Needs for Technical and Financial Cooperation*, ¶ 27, WTO Doc. IP/C/W/546 (Mar. 23, 2010).

¹⁷¹ Alfred Christopher D'Silva, *Protection Of Trade Secret*, DAILY STAR, <https://www.thedailystar.net/law-our-rights/protection-trade-secret-1497535> (Nov. 28, 2017, 12:41 AM).

¹⁷² Ministry of Commerce, The Competition Act, 2012, S.R.O. No. 48-Law/2017, ¶ 23 (Notified on March 2, 2017) [hereinafter The Competition Act].

¹⁷³ The Competition Act pmbl.

for market competition, the objective of the Act clearly misses the necessity of promotion of consumers' welfare and national sustainable development. One may argue that the omission of consumers' welfare is based on the reality that a separate legislative and regulatory framework, namely the Consumer Right Protection Act No. 26 of 2009 and the National Consumers' Right Protection Council, exist to deal with the issues concerning protection of consumers from anti-consumer right practice.¹⁷⁴

In fact, Bangladesh's competition law was enacted mainly to bring the country's trade law framework in line with the world trading system.¹⁷⁵ While it is praiseworthy that Bangladesh has aligned its national trade regime with global trade policy directions, it would be more effective if at the time of preparing the draft, the law makers would have considered Bangladesh's international obligations derived from other regimes of international laws. For instance, being a signatory of UNFCCC¹⁷⁶ and the Paris Agreement,¹⁷⁷ Bangladesh has obligations to deal with climate change issues in a globally agreed upon manner, one of which includes creating a favorable environment for innovation and transfer of environmentally sound technologies.¹⁷⁸

If Bangladesh's competition law contained inclusive sustainable development as part of its objective, arguably it could ensure a kind of market competition that would contribute to all social, economic, and environmental development, which

¹⁷⁴ See generally Ministry of Law, Justice and Parliamentary Affairs, The Consumers' Right Protection Act, 2009, S.R.O. No. 08-Law/2014 (Notified on Jan. 20, 2014) ("An Act to make provisions for the protection of the rights of the consumers, prevention of anti-consumer right practices and for matters connected therewith.").

¹⁷⁵ Sharmin Tania & Afroza Bilkis, *Competition Law in Bangladesh: Towards Achieving Inclusive Sustainable Development*, 21 AUSTRALIAN J. ASIAN L. 159, 159 (2021); see Trade Policy Review Body, *Report by the Secretariat: Trade Policy Review of Bangladesh*, WTO Doc. WT/TPR/S/385 (Feb. 6, 2019) (outlining the detailed policy regarding trade law and competition in Bangladesh).

¹⁷⁶ UNFCCC Parties, *supra* note 156.

¹⁷⁷ Paris Agreement, *supra* note 65, pmbl.

¹⁷⁸ *Target 17.7: Environmentally Sound Technology*, UNCTAD, https://stats.unctad.org/Dgff2016/partnership/goal17/target_17_7.html (last visited Apr. 17, 2022); Pieter Pauw et al., *Subtle differentiation of countries' responsibilities under the Paris Agreement*, 5 PALGRAVE COM. 1, 5 (2019).

includes battling climate change and creating a favorable environment for innovation and transfer of ESTs in Bangladesh.

Similar to EU Competition related rules described under section 4 of this paper, competition laws of Bangladesh have adopted “bundling” or “tie-in arrangements” as anti-competitive behavior.¹⁷⁹ Section 15(3) of the Act enumerates that any “tie-in arrangement,”¹⁸⁰ “exclusive supply agreement,”¹⁸¹ “exclusive distribution agreement,”¹⁸² “refusal to deal,”¹⁸³ and “resale price maintenance”¹⁸⁴ will be considered anti-competitive steps if they have an adverse impact on competition.¹⁸⁵ But, the Act confirms that such prohibition of anti-competitive measures will not affect “the right of any person, to restrain any infringement of, or for protecting intellectual property rights conferred under the intellectual property law, to impose reasonable conditions.”¹⁸⁶ The Act, however, does not explain what constitutes reasonable conditions and what possible consequences an IPR owner may

¹⁷⁹ The Competition Act §15(3).

¹⁸⁰ *Id.* §15(3)(a) (“[A]n agreement or understanding requiring a purchaser of goods, as a condition of such purchase, to purchase some other goods or facilities from any other person or enterprise engaged by the seller.”).

¹⁸¹ *Id.* §15(3)(b) (“[A]n agreement restricting in any manner the purchaser in the course of his trade from acquiring or otherwise dealing in any goods other than those of the seller.”).

¹⁸² *Id.* §15(3)(c) (“[A]n agreement which limits, restricts or withholds the output or supply of any goods or allocates any area or market for the disposal or sale of the goods.”).

¹⁸³ *Id.* §15(3)(d) (“[A]n agreement which restricts, by any manner the persons or classes of persons to whom goods are sold or from whom goods are bought.”).

¹⁸⁴ The Competition Act §15(3)(e) (“[A]n agreement to sell goods on condition that the prices to be charged on the resale by the purchaser shall be the prices stipulated by the seller unless it is clearly stated that prices lower than those prices may be charged.”).

¹⁸⁵ *Id.* §15(2) (“The practice or decision of any person or association who are engaged in identical or similar trade of goods or services shall be deemed to have adverse effect on competition in goods or services market if it (a) directly or indirectly (i) determines abnormal purchase or sale prices; or (ii) determine the deceptive price in all process including bid rigging; (b) limits or controls production, supply, markets, technical development, investment or provision of services; (c) shares the market or source of production or provision of services by the way of allocation of geographical area of market, or type of goods or services, or number of customers in the market or any other similar way.”).

¹⁸⁶ *Id.* §15(4)(i).

experience in case of imposing unreasonable conditions.¹⁸⁷

In relation to the transfer of ESTs, the Competition Act of Bangladesh ignores the most important issue concerning the interface between IPRs and competition law: compulsory licensing. While the EU competition regime allows an option for compulsory license of technology for some special circumstances like abuse of dominant position through refusal of authorization of IPR for a reasonable remuneration, there is not a similar or comparable provision in the Competition Act of Bangladesh.

Similar to the EU competition related rules, the Bangladesh Competition Act prohibits abuse of dominant position.¹⁸⁸ But, while the EU competition regime considers refusal to supply which may result in elimination of a market competitor as an abuse of dominant position, the Competition Act of Bangladesh does not include the provision of refusal to supply as an abuse of dominant position.¹⁸⁹

It is observed that substantial provisions of the Bangladesh Competition Act have been greatly influenced by the 2002 Competition Act of India,¹⁹⁰ but the procedural mechanism of the Act has adopted an approach which is closely akin to the model adopted by the European Commission. Under this model, the competition commission of Bangladesh is entrusted with a dual role of prosecution and adjudication. This model of the European Commission has been criticized for its drawback of creating an opportunity for inherent bias in favor of the decision makers.¹⁹¹ This is because the Commission as an adjudicator might not go against the findings of the investigation and inquiries conducted by officials who belong to its own authority.¹⁹² Although the Bangladesh Competition Act has successfully adopted this EU approach of dual role of prosecution and adjudication, it is not clear why the Act did not consider some other substantive provisions of the EU Competition regime which might bring benefit for the country's technological

¹⁸⁷ *See id.*

¹⁸⁸ The Competition Act § 15(4)(i).

¹⁸⁹ *Id.*

¹⁹⁰ Tania & Bilkis, *supra* note 175, at 164.

¹⁹¹ Terry Calvani & Angela M. Diveley, *The FTC at 100: A Modest Proposal for Change*, 21 GEO. MASON L. REV. 1174 (2014).

¹⁹² Calvani & Diveley *supra* note 191 (detailing the ways this form of bias might manifest under this policy).

advancement.

In connection with creating a favorable atmosphere for innovation and transfer of ESTs, one important drawback of the Bangladesh competition law is that it does not distinguish technology from other products as the EU competition regime does.¹⁹³ Accordingly, the Act remains silent about noncompetitive clauses in technology license agreements.¹⁹⁴

While Article 40(2) of TRIPS advocates for adopting competition law addressing “licensing practices or conditions that may in particular cases constitute an abuse of intellectual property rights,”¹⁹⁵ the Competition Act of Bangladesh completely ignores the issue of the abuse of intellectual property rights.¹⁹⁶ This means that in connection with creating a favorable environment for innovation and transfer of ESTs, the current Competition Act of Bangladesh has left the issues of using IPRs for fixing excessive process of any technology and control of restrictive business practices in IPR licensing agreement out of its focus. Consequently, the Act also skips the issue of whether a patent licensee can grant any know-how or new knowledge one comes across at the time of application of any licensed patented technology.¹⁹⁷

Under the EU competition regime, absolute territorial exclusivity or a field of use restrictions hindering competition is prohibited for technology license agreement.¹⁹⁸ But since there is no clause that deals with technology or licensing technology in the Completion Act of Bangladesh, such practices are not explicitly barred under the current Competition Act of

¹⁹³ See generally The Competition Act (showing that no meaningful distinction or carve out is made for technology specifically).

¹⁹⁴ *Id.* §§ 15(2)(b), 16(2)(b) (showing that the only mentions of anything technology related are irrelevant to license agreements).

¹⁹⁵ TRIPS Agreement, *supra* note 10, art. 40.

¹⁹⁶ Saurov Dash Roni, *The Right to Repair and IP Rights in Bangladesh*, DAILY STAR (Jan. 8, 2022), <https://www.thedailystar.net/law-our-rights/rights-advocacy/news/the-right-repair-and-ip-rights-bangladesh-2934676>.

¹⁹⁷ See generally The Competition Act (pointing out the shortcomings in the Competition Act of Bangladesh stemming from the abuse of IP rights).

¹⁹⁸ Guidelines on the Application of Article 101 of the Treaty on the Functioning of the European Union to Technology Transfer Agreements, 2015 O.J. (C89) 3, 5.

Bangladesh.¹⁹⁹

X. CONCLUSION

To create a wide-scale, smooth transfer of ESTs, both developed countries that own most of the technology developing entities and the developing and least developed countries that require technologies, need to ensure a kind of market structure and certain level of government intervention that can create a favorable environment for innovation and transfer of technologies. While introduction of a strong IPR regime, particularly a strong patent regime and proper trade secret protection, can be a vital step for the creation of such a favorable environment for many least developed and developing countries,²⁰⁰ many developed and developing countries can also benefit from using TRIPS flexibilities. Since the issue of innovation and transfer of ESTs is a matter of public interest,²⁰¹ if countries were to adopt special or innovative IPR related measures for this issue, theoretically, it would not be barred by TRIPS.

While designing, or redesigning, IPR regimes reflecting a countries' respective needs can be an important step for creating a favorable environment for innovation and transfer of ESTs, it needs to be further accompanied with adoption of a proper set of competition laws. At the time of adopting national competition laws, countries must ensure that the guidelines given under Article 40 of TRIPS are properly integrated. The EU competition regime's provision to prevent abuse of IPRs can also be an inspiration for a country's development of its competition related laws. But mere existence of IPRs and competition related laws do not offer any advantage in creating a favorable

¹⁹⁹ See generally The Competition Act (showing there is no exclusivity of intellectual property licensing agreements within the same territory that may hinder competition, unlike what is spelled out in TFEU).

²⁰⁰ See ZHANG XILIANG, ENABLING THE TRANSFER OF ENVIRONMENTALLY SOUND TECHNOLOGIES IN THE CONTEXT OF CLIMATE CHANGE: SOME LESSONS FROM ASIA 4–5 (Tsinghua Univ. Beijing 2000).

²⁰¹ See TRIPS Agreement, *supra* note 10, art. 8(1) (explaining that in amending laws and regulations, members may adopt measures necessary to “protect public health [...] and to promote the public interest in sectors of vital importance to their socio-economic and technological development” such as ESTs).

environment for facilitating innovation and transfer of ESTs. For the purpose of gaining actual benefit arising from the interfaces of IPRs and competition law it is important that each set of laws can fulfill the concerned country's national demands and priorities.

In the case of Bangladesh, although it has adopted patent and competition laws, provisions of these laws are insufficient to create a favorable environment for innovation and transfer of ESTs.²⁰² Current patent law of the country was developed more than one hundred years ago which does not reflect the country's current need for the creation of a favorable environment for innovation and transfer of ESTs.²⁰³ As such, it is recommended that a revised version of the patent law will necessarily address this need. To attract investment and innovation of ESTs, new patent law may consider offering a set of advantages or facilities for innovation of ESTs. At the same time, Bangladesh's patent law should also align with TRIPS through including a compulsory licensing provision as enumerated under Art 31 of TRIPS.²⁰⁴ Moreover, Bangladesh should adopt a set of laws to secure trade secrets and undisclosed information as enumerated under Article 39 of TRIPS.²⁰⁵

Since Bangladesh is expected to graduate from a least developed country ("LDC") to a middle-income country by 2026,²⁰⁶ soon the country's IPR regime will need to comply with all of the TRIPS provisions. For this purpose, Bangladesh will need to design its IPR regime to not contradict TRIPS provisions

²⁰² Rumana Helali Azad Lima, *Basics of Patent Law in Bangladesh*, 13 INFO. & COMM'N TECH. L. 401, 408 (2021) (proving Bangladesh has patent laws); see Khan Arman Shovon, *Electronic waste Management in Bangladesh: Challenges of Environmental Law*, LAWYERSCLUBBANGLADESH.COM (Apr. 7, 2021, 1:19 PM), <https://lawyersclubbangladesh.com/en/2021/04/07/electronic-waste-management-in-bangladesh-challenges-of-environmental-law/> (providing one of many examples of lacking ESTs in Bangladesh).

²⁰³ See Lima, *supra* note 202, at 408 (indicating when Bangladesh patent law was developed).

²⁰⁴ TRIPS Agreement, *supra* note 10, art. 31.

²⁰⁵ *Id.* art. 39.

²⁰⁶ *Bangladesh calls for balanced IPR system to fight Covid-19*, DHAKATRIBUNE (Oct. 6, 2021, 2:31 PM), <https://archive.dhakatribune.com/bangladesh/2021/10/06/bangladesh-calls-for-balanced-ipr-system-to-fight-covid-19>.

but at the same time reflect the country's national interests.²⁰⁷ Since Bangladesh has been experiencing climate change adversities in a more deadly manner than most other countries,²⁰⁸ it should make creating a suitable environment for innovation and transfer of ESTs one of its main objectives.

Just as the IPR regime, current competition law of Bangladesh should be revised through the addition of provisions for the purpose of facilitating a favorable environment for expanding the market for ESTs. For instance, current competition law should clearly distinguish technology from other products and services to offer some guidance for technology licensing agreements. The inclusion of the rules like Article 101 of TFEU can govern the licensing agreement on ESTs in a way that can ensure easier access to the ESTs by consumers. Current competition law should also introduce a compulsory license provision. Since compulsory licenses obtained under Article 102 of TFEU can offer a broader scope of use than those obtained under Article 31 of TRIPS,²⁰⁹ Bangladesh may consider adopting the TFEU approach of compulsory licenses as far as it reflects the country's national demand. Since there is no rigid structure for the concept of refusal to deal and the doctrine of essential facilities, for the purpose of creating a favorable environment for wide scale expansion of ESTs, Bangladesh should define and adopt these concepts and doctrines as per its own circumstances. In this regard, the law makers must be innovative and create unique provisions that reflect the unique needs of the country. For these changes to create a favorable environment for the innovation and transfer of ESTs, Bangladesh must bring about amendments to the above-stated laws and ensure that the changes made are enforced in the appropriate manner.

²⁰⁷ Mazharul Islam, *Benefits of TRIPS agreement will disappear with LDC Graduation. What then?*, BUS. STANDARD (Apr. 28, 2021, 10:24 AM), <https://www.tbsnews.net/thoughts/benefits-trips-agreement-will-disappear-ldc-graduation-what-then-238348>.

²⁰⁸ *How The Climate Crisis is Impacting Bangladesh*, CLIMATE REALITY PROJECT (Dec. 9, 2021, 11:00 AM), <https://www.climaterealityproject.org/blog/how-climate-crisis-impacting-bangladesh>.

²⁰⁹ TRIPS Agreement, *supra* note 10, art. 31.