



Queensland University of Technology
Brisbane Australia

This may be the author's version of a work that was submitted/accepted for publication in the following source:

Phelan, Alexandra & [Rimmer, Matthew](#)
(2015)

Climate change and human rights: Intellectual property challenges and opportunities.

Australian National University, College of Law, Australia.

This file was downloaded from: <https://eprints.qut.edu.au/215389/>

© Copyright 2015 [Please consult the author]

This work is covered by copyright. Unless the document is being made available under a Creative Commons Licence, you must assume that re-use is limited to personal use and that permission from the copyright owner must be obtained for all other uses. If the document is available under a Creative Commons License (or other specified license) then refer to the Licence for details of permitted re-use. It is a condition of access that users recognise and abide by the legal requirements associated with these rights. If you believe that this work infringes copyright please provide details by email to qut.copyright@qut.edu.au

Notice: *Please note that this document may not be the Version of Record (i.e. published version) of the work. Author manuscript versions (as Submitted for peer review or as Accepted for publication after peer review) can be identified by an absence of publisher branding and/or typeset appearance. If there is any doubt, please refer to the published source.*

Climate Change and Human Rights: Intellectual Property Challenges and Opportunities

Alexandra L Phelan

22 September 2015

Report prepared for Dr Matthew Rimmer as part of his Australian Research Council Future Fellowship on Intellectual Property and Climate Change, Australian National University College of Law.

Table of Contents

- I. Introduction 3
 - Global warming: a planet in crisis..... 3
 - Climate change as a profound challenge to human rights 4
 - Human rights approaches: a new strategy for solving the climate crisis 4
- II. Climate Change and Human Rights 6
 - The Right to Life 7
 - The Right to Health 8
 - The Rights to Water and Sanitation 10
 - The Right to Food..... 11
- III. Climate Change & Intellectual Property..... 13
 - Defining Technology Transfer..... 13
 - Technology Transfer Obligations Under UNFCCC 14
 - The International Intellectual Property Law Regime 17
- IV. A Human Rights Approach to Technology Transfer & Intellectual Property..... 20
 - ESTs for Human Rights..... 20
 - A Human Right to Technology Transfer?..... 21
 - Addressing Intellectual Property Impediments..... 22
 - A Doha-Style Declaration for TRIPS, Climate Change, and Technology Transfer 22
 - Compulsory Licensing 24
 - Patent Pools 25
 - Climate Impact Fund 26
 - Questioning Existing Intellectual Property Laws as the Correct Framework..... 28
- V. Components of a Human Rights Based Climate Technology Framework..... 29
- VI. References 30

I. Introduction

Global warming: a planet in crisis

Multiple independently produced datasets demonstrate that the Earth's surface temperature has been successively warming.¹ From 1880 to 2012, global average land and ocean surface temperatures have increased by 0.85°C.² Under all emissions scenarios assessed by the Intergovernmental Panel on Climate Change (IPCC), the average global surface temperature will likely increase by 0.3 to 0.7°C (above 1986-2005 levels) over the next 20 years (2016 to 2035).³ By the end of the 21st Century, it is likely that global surface temperature change will exceed 1.5°C from 1850-1900 levels in most emissions reduction scenarios.⁴ If no measures are taken to constrain emissions from current rates, surface warming is likely to exceed 2°C (high confidence).⁵ The consequences of an increase of even 2°C is significant, resulting in longer and more frequent heatwaves, rising sea levels from increasing ocean heat as well as glacial and polar ice sheets melting, global shifts in rainfall patterns resulting in both flooding and drought, and increasing the severity and frequency of extreme weather events.⁶

It is with almost complete certainty that current climate change is induced by human activities producing greenhouse gas emissions.⁷ Immediate and substantial efforts must be made to reduce global greenhouse gas emissions to mitigate the effects of climate change. In addition, with a likely global mean surface temperature increase of 1°C under even aggressive emissions reductions scenarios,⁸ climate change adaptation technologies are vital. Given the role humanity has played in inducing climate change, there is an ethical imperative to immediately act to mitigate and adapt to the substantial effects of climate change: not only an environmental-ethic, but an ethical imperative to all of humanity arising from the human suffering and violations of human dignity climate change will cause.

¹ IPCC, *Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Stocker, T.F., D. Qin, G.-K. Plattner, M. Tignor, S. K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex and P.M. Midgley (eds.)]. (2013, Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA) (hereafter "IPCC (2013)"): 5.

² Ibid: 161.

³ IPCC, *Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Core Writing Team, R.K. Pachauri and L.A. Meyer (eds.)]. (2014a, IPCC, Geneva, Switzerland) (hereafter "IPCC (2014a)"): 58.

⁴ Ibid: 60: "Relative to 1850–1900, global surface temperature change for the end of the 21st century (2081–2100) is projected to likely exceed 1.5°C for RCP4.5, RCP6.0 and RCP8.5 (high confidence). Warming is likely to exceed 2°C for RCP6.0 and RCP8.5 (high confidence), more likely than not to exceed 2°C for RCP4.5 (medium confidence), but unlikely to exceed 2°C for RCP2.6 (medium confidence)"

⁵ Ibid.

⁶ IPCC (2013), above n1: 7.

⁷ Ibid: 7, 15; Climate Council of Australia, *Climate Change 2015: Growing Risks, Critical Choices* (2015), available at: <https://www.climatecouncil.org.au/uploads/153781bfef5afe50eb6adf77e650cc71.pdf> (accessed 22 September 2015).

⁸ IPCC (2014a), above n4.

Climate change as a profound challenge to human rights

Climate change poses profound consequences for human rights globally. From the individual to the population level, climate change will increasingly have negative impacts on all aspects of human life, including health, food, water, and housing. On a systemic level, climate change undermines self-determination, non-discrimination, and the enjoyment of a safe environment. Existing socio-political inequalities further exacerbate its impact, with the world's most vulnerable population groups disproportionately affected by the consequences of climate change. Climate change increases human suffering and decreases human dignity. These consequences are already being experienced in Australia and the Asia-Pacific region. With greater awareness of the way in which climate change presents a direct challenge to these basic human rights, comes the need for new and innovative approaches to solving the climate crisis.

Human rights approaches: a new strategy for solving the climate crisis

A human rights based approach to climate change can provide substantial benefit to the political discourse for action on climate change. Firstly, potential or existing examples of climate change induced human rights violations are powerful advocacy tools for government action; particularly for marginalized or minority population groups that are disproportionately affected by changes in climate. With a positive self-perception of Australia's domestic, regional, and international position, human rights based advocacy carries significant weight. Secondly, the extensive field of international human rights law is a source of tangible legal obligations on states which can be used by individuals to compel government action, either through litigation itself or simply a state's desire to avoid litigation.

Whether as an advocacy tool or as a cause of action against states, human rights based approach provides a framework through which other laws, policies, and assumptions can be tested. In the words of Mary Robinson, former President of Ireland, former UN High Commissioner for Human Rights, and President of the Mary Robinson Foundation for Climate Justice:

Our shared human rights framework provides a basis for impoverished communities to claim protection of these rights. We must not lose sight of existing human rights principles in the tug and push of international climate change negotiations. A human rights lens reminds us there are reasons beyond economics and enlightened self-interest for states to act on climate change. Because climate change presents a new and unprecedented threat to the human rights of millions, international human rights law and institutions must evolve to protect the rights of these peoples.⁹

Mitigating and adapting to the effects of climate change will require innovation and the development of new technologies. Intellectual property laws have a key part to play in the global transfer of climate technologies. However, failures to properly utilize flexibilities in intellectual property regimes or comply with technology transfer obligations under international climate change agreements calls for a

⁹ M. Robinson, "Climate change is an issue of human rights" (10 December 2008) *The Independent*, available at: <http://www.independent.co.uk/voices/commentators/mary-robinson-climate-change-is-an-issue-of-human-rights-1059360.html> (accessed: 22 September 2015)

human rights based analysis of climate technology transfer. Climate change is an unprecedented challenge and requires unprecedented strategies. Given the substantial impact of climate change on all of humanity and the ethical imperative to act, a complete rethink of traditional intellectual property approaches is warranted. This report proposes a series of intellectual property law policy options, through a human rights framework, aimed at promoting access to technologies to reduce the human suffering caused by climate change.

II. Climate Change and Human Rights

In recent years, the broader legal and political dialogue has expanded to include greater focus on the justice and human rights dimensions of climate change. The most recent report from Working Group 2 of the Intergovernmental Panel on Climate Change (IPCC) in March 2014 noted the profound and disproportionate impact climate change will have on the world's most vulnerable populations, exacerbating existing socio-economic injustices.¹⁰

Traditionally, the realm of human rights law deals with the duties that states owe to individuals within their own territory. While there is some capacity for groups to claim rights,¹¹ international human rights treaties are typically structured around the obligations of a duty-bearer state to protect individuals' rights, limited solely to individuals within the state's own territory. As a global concern with global contributors, climate change poses unique challenges for the traditional human rights regime. It may not be possible to determine whether a state has failed in its duty to respect, protect and fulfil the rights of individuals within its territory, nor may it be possible to use existing accountability mechanisms under international human rights treaties to hold third-party states to account for violations. Despite this, the potential for human rights based, climate change litigation – whether through courts or non-judicial treaty bodies – has been highlighted by Olivier De Schutter, the United Nations Special Rapporteur on the Right to Food, stating that there is:

“huge scope for human rights courts and non-judicial human rights bodies to treat climate change as the immediate threat to human rights that it is. Such bodies could therefore take government policy to task when it is too short-sighted, too unambitious, or too narrowly focused on its own constituents at the expense of those elsewhere. Fossil fuel mining, deforestation, the disturbance of carbon sinks, and the degradation of the oceans are developments that can be blocked on human rights grounds. Human rights bodies can, and must, increasingly play this reactive role at the local level, in order to ward off the multitude of developments that simultaneously violate human rights and aggravate climate change”.¹²

In recent years, justice-based climate litigation has gained momentum, primarily based on the “public trust doctrine”, which holds that one of the most essential purposes of government is the protection of crucial natural resources for the survival and welfare of citizens. However, the field of climate change

¹⁰ IPCC, *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*, C.B., V.R. Barros, D.J. Dokken, K.J. Mach, M.D. Mastrandrea, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, and L.L. White (eds.), (2014, Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA) (hereafter “IPCC (2014b)”: 6, 20.

¹¹ Such as the “peoples’ rights” contained within the Organization of African Unity (OAU), *African Charter on Human and Peoples’ Rights (“Banjul Charter”)*, 27 June 1981, CAB/LEG/67/3 rev. 5, 21 I.L.M. 58 (1982), available at: <http://www.refworld.org/docid/3ae6b3630.html> (accessed 22 September 2015).

¹² O. De Schutter, “Climate Change is a human rights issue - and that's how we can solve it”, *The Guardian UK* (24 April 2012) Available at: <http://www.theguardian.com/environment/2012/apr/24/climate-change-human-rights-issue> (accessed: 22 September 2015).

litigation based on enumerated, international and domestic human rights law obligations is yet to fully develop. Despite this, international and domestic human rights law obligations have applications legally distinct causes of action. In particular, a human rights based approach to climate change can empower advocacy. Climate change policy and climate activism has traditionally been the realm of physical scientists and environmentalists. A human rights based approach provides an advocacy tool that demonstrates the human-experience of climate change. It reveals the suffering and inequalities that climate change exacerbates, and frames action on climate change as a matter of justice and ethics.

Human rights are indivisible and interdependent. The violation of one human right invariably violates other rights. A human rights based approach to climate change should therefore be part of a broader multi-sectoral and holistic policy-making framework for climate change mitigation and adaptation strategies. With this in mind, this report will now turn to survey four specifically identified human rights demonstrably affected by climate change: the Right to Life, the Right to Health, The Rights to Water and Sanitation, and the Right to Food. Each of these rights, even when presented in their least contentious and conservative formulations, demonstrate the significant extent to which anthropogenic climate change violates human rights.¹³

The Right to Life

The United Nations Human Rights Committee describes the right to life as “the supreme right”.¹⁴ The right to life is enshrined in numerous international and regional human rights treaties, including the *International Covenant on Civil and Political Rights* (ICCPR) (art 6),¹⁵ the *Convention on the Rights of the Child* (art 6),¹⁶ *Charter of Fundamental Rights of the European Union* (art 2),¹⁷ *African Charter on Human and Peoples' Rights* (art 4),¹⁸ and the *American Convention on Human Rights* (art 4).¹⁹ As one of the most universally accepted international human rights treaties, the ICCPR provides that the right to life is inherent to every human being, shall be protected by law, and no-person may be arbitrarily deprived of their life.²⁰ The right to life therefore includes not only an obligation on states not to kill

¹³ This minimalist rights-specific strategy for demonstrating anthropogenic climate change violations of human rights was posited in S. Caney, “Climate change, human rights, and moral thresholds”, 69-90: 75, in *Human Rights and Climate Change*, S. Humphreys (ed) (2010, Cambridge University Press, Cambridge, UK). Caney’s approach specifically examined three human rights, the human right to life, the human right to health, and the human right to subsistence. This report separately examines the right to food and right to water.

¹⁴ UN Human Rights Committee (HRC), *CCPR General Comment No. 6: Article 6 (Right to Life)*, 30 April 1982, [1].

¹⁵ UN General Assembly, *International Covenant on Civil and Political Rights*, 16 December 1966, United Nations, Treaty Series, vol. 999, p. 171, available at: <http://www.refworld.org/docid/3ae6b3aa0.html> (accessed 22 September 2015) (hereafter “ICCPR”).

¹⁶ UN General Assembly, *Convention on the Rights of the Child*, 20 November 1989, UN Treaty Series 1577, p. 3, available at: <http://www.refworld.org/docid/3ae6b38f0.html> (accessed 22 September 2015) (hereafter “CRC”).

¹⁷ European Union, *Charter of Fundamental Rights of the European Union*, 26 October 2012, 2012/C 326/02, available at: <http://www.refworld.org/docid/3ae6b3b70.html> (accessed 22 September 2015).

¹⁸ Organization of African Unity (OAU), *African Charter on Human and Peoples' Rights ("Banjul Charter")*, 27 June 1981, CAB/LEG/67/3 rev. 5, 21 I.L.M. 58 (1982), available at: <http://www.refworld.org/docid/3ae6b3630.html> (accessed 22 September 2015) (hereafter “African Charter”).

¹⁹ Organization of American States (OAS), *American Convention on Human Rights, "Pact of San Jose"*, Costa Rica, 22 November 1969, available at: <http://www.refworld.org/docid/3ae6b36510.html> (accessed 22 September 2015).

²⁰ ICCPR, art 6(1).

individuals, but to take positive steps to protect individuals' lives. Climate change directly threatens the realization of the right to life. Numerous observed and projected impacts of climate change pose direct and indirect threats to human life. With high confidence, the IPCC predicts an increase in deaths from heat waves, fires, storms, floods, and droughts, as well as increases in food and water-borne and vector-borne diseases.²¹ For example, the IPCC has attributed the 2003 Western European heat wave – which caused nearly 15,000 excess deaths in France over 3 weeks in August 2003 – to anthropogenic climate change.²² As an example of increased fires as a result of climate induced long-term drought and record high temperatures, the IPCC notes the 2009 Victorian “Black Saturday” bushfires, which lead to 173 deaths from burns and injury.²³ The Office of the High Commissioner for Human Rights (OHCHR) has concluded that these observed and predicted impacts of climate change will therefore affect the realization of the right to life.²⁴ The OHCHR also notes that “[e]qually, climate change will affect the right to life through an increase in hunger and malnutrition and related disorders” as well as disproportionately impacting the enjoyment of the right to life in developing countries.²⁵

The Right to Health

In all cultures, health is revered as having intrinsic value, reflected in rituals and expressions demonstrating its universally special importance.²⁶ This value is reflected in the identification of health as a human right. In 1946, the preamble of the *Constitution of the World Health Organization* recognized generally the “enjoyment of the highest attainable standard of health is one of the fundamental rights of every human being without distinction of race, religion, political belief, economic or social condition”. While arguably vague and preambular, two years later, the right to health was expressly included in the *Universal Declaration of Human Rights*.²⁷ Since then, the right to health has been included in numerous binding international and regional agreements,²⁸ and two-thirds of national constitutions.²⁹ Perhaps the most prominent legal source for the right to health is art 12 of the *International Covenant on Economic, Social, and Cultural Rights* (ICESCR).³⁰ Under art 12, states recognize “the right of everyone to the enjoyment of the highest attainable standard of physical and mental health”. States must take steps to the maximum of their available resources to progressively

²¹ IPCC (2014b), above n10: 19.

²² Ibid: 720.

²³ Ibid: 718, 1400.

²⁴ United Nations Office of the High Commissioner for Human Rights, *Report on the Relationship Between Climate Change and Human Rights* UN Doc A/HRC/10/61 (15 January 2009): [22]-[23].

²⁵ Ibid.

²⁶ A. E. Yamin, “Will we take suffering seriously? Reflections on what applying a human rights framework to health means and why we should care”, *Health and Human Rights* 10(1) (2008), citing J. M. Mann, S. Gruskin, M. A. Grodin, and G. J. Annas (eds), *Health and Human Rights* (New York, NY: Routledge, 1994).

²⁷ UN General Assembly, *Universal Declaration of Human Rights*, 10 December 1948, 217 A (III), available at: <http://www.refworld.org/docid/3ae6b3712c.html> (accessed 22 September 2015): art 25(1).

²⁸ International agreements with express protections for the right to health include the *Convention on the Rights of the Child* art 24, the *Convention on the Elimination of all*

²⁹ E.D. Kinney and B.A. Clark, “Provisions for Health and Healthcare in the Constitutions of the Countries of the World”, 37 *Cornell Int L J* (2004) 287: 291.

³⁰ UN General Assembly, *International Covenant on Economic, Social and Cultural Rights*, 16 December 1966, United Nations, Treaty Series, vol. 993, p. 3, (hereafter “ICESCR”) available at: <http://www.refworld.org/docid/3ae6b36c0.html> (accessed 22 September 2015).

achieve the full realization the right to health,³¹ but must immediately guarantee that all rights under ICESCR are exercised without discrimination of any kind.³² In addition to ICESCR, the right to health is expressly protected under the *Convention on the Rights of the Child*,³³ the *Convention on the Elimination of all Forms of Racial Discrimination*,³⁴ *Convention on the Elimination of Discrimination Against Women*,³⁵ and the *Convention on the Rights of Persons with Disabilities*.³⁶ Given the special importance of health for fulfilling human life and potential, the CESCR notes that the right to health is “indispensable for the exercise of other human rights”.³⁷ To realize the right to health, state parties must ensure that the requirements for health in all its forms are available, accessible (physically, economically, as information, and without discrimination), socially and culturally acceptable, and of good quality.³⁸

The impact of climate change on human health, directly and indirectly, is significant and will disproportionately impact children, young people, and the elderly.³⁹ Given the breadth of impacts climate change will have on health, the IPCC identifies direct and indirect climate impacts on health. Directly, global warming increases the frequency of severe weather events, resulting in a greater number of people suffering ill-health, disability, and death from heat waves (heat exhaustion and heat stroke), floods (injuries and drowning), storms (injuries), drought, and fire.⁴⁰ Indirectly, climate change will also have a profound impact on health mediated through both ecosystems and human institutions. Increasing temperatures and changes in rainfall patterns will change the habitable regions for mosquitoes, shifting the incidence of malaria and dengue fever.⁴¹ Food and water borne illness are predicted to increase, with temperature increases and increased rainfall.⁴² In particular, the IPCC predicts that diarrhoeal diseases, which disproportionately affect children in the developing world, will increase.⁴³ Respiratory and cardiovascular morbidity, caused by air pollution such as ground-level ozone, fine particulate matter, and smoke-particulate from fires,⁴⁴ is predicted to increase.⁴⁵ Additional projections estimate that

³¹ ICESCR: art 2(1).

³² ICESCR: art 2(2).

³³ CRC: art 6.

³⁴ UN General Assembly, *International Convention on the Elimination of All Forms of Racial Discrimination*, 21 December 1965, United Nations, Treaty Series, vol. 660, p. 195, available at: <http://www.refworld.org/docid/3ae6b3940.html> (accessed 22 September 2015)(hereafter “CERD”), art 5(1).

³⁵ UN General Assembly, *Convention on the Elimination of All Forms of Discrimination Against Women*, 18 December 1979, UNTS 1249, p. 13, available at: <http://www.refworld.org/docid/3ae6b3970.html> (accessed 22 September 2015)(hereafter “CEDAW”), art 11.

³⁶ UN General Assembly, *Convention on the Rights of Persons with Disabilities: resolution adopted by the General Assembly*, 24 January 2007, A/RES/61/106, available at: <http://www.refworld.org/docid/45f973632.html> (accessed 22 September 2015) (hereafter “CRPD”), art 25.

³⁷ UN Committee on Economic, Social and Cultural Rights (CESCR), *General Comment No. 14: The Right to the Highest Attainable Standard of Health (Art. 12 of the Covenant)*, 11 August 2000, E/C.12/2000/4, available at: <http://www.refworld.org/docid/4538838d0.html> (accessed 22 September 2015), [1].

³⁸ Ibid: [12].

³⁹ IPCC (2014b), supra 10: 717.

⁴⁰ Ibid: 720.

⁴¹ Ibid: 722 – 725.

⁴² Ibid: 726-727.

⁴³ Ibid.

⁴⁴ Ibid: 727 – 729.

climate change will further impact physical and mental health as mediated through human institutions, such as through increased conflict,⁴⁶ occupational hazards,⁴⁷ and poor nutrition.⁴⁸ As each of these impacts on human health demonstrate, climate change clearly results in a vast range of threats to minimum standards of realizing the right to health.

The Rights to Water and Sanitation

Water is fundamental to human life. The absence of potable water directly leads to human suffering through disease, illness, and death. The human rights to water and sanitation are well-established and were universally recognized by the United Nations General Assembly in 2010.⁴⁹ The rights to water and sanitation mean that every person, without discrimination, has the right to water and sanitation that is safe, socially and culturally acceptable, physically accessible, affordable, and is provided without discrimination.⁵⁰

While not expressly included in either of the most comprehensive human rights treaties – the ICCPR and the ICESCR – the inherent connection of clean water with the realization of express ICCPR and ICESCR rights has resulted in implied rights to water and sanitation under these treaties. For example, the right to life (art 6, ICCPR) may be violated where states fail to ensure access to clean water and sanitation, conceptually demonstrated in 2014 when the Mumbai High Court held that despite not being expressly referred to, the right to water is an “integral part” of the right to life under Art 21 of the Indian Constitution.⁵¹ The right to an adequate standard of living (art 11, ICESCR) and the right to health (art 12, ICESCR) are recognized as impliedly including the rights to water and sanitation by the Committee on Economic, Social and Cultural rights (CESCR) in General Comment 15.⁵² In addition to deriving the right to water from the ICCPR and ICESCR, the rights to water and sanitation are express obligations on ratifying states under the *Convention on the Rights of the Child*,⁵³ the *Convention on the Elimination of Discrimination Against Women*,⁵⁴ and the *Convention on the Rights of Persons with Disabilities*.⁵⁵

⁴⁵ Ibid: 727 – 730.

⁴⁶ Ibid: 732 – 733.

⁴⁷ Ibid: 731 – 732.

⁴⁸ Ibid: 730 – 731.

⁴⁹ United Nations General Assembly, *Resolution 64/292: The human right to water and sanitation*, A/RES/64/292, (28 July 2010), available at: <http://www.un.org/es/comun/docs/?symbol=A/RES/64/292&lang=E> (accessed: 22 September 2015).

⁵⁰ C. de Albuquerque, “United Nations Special Rapporteur on the Right to Safe Drinking Water and Sanitation Report – On the Right Track: Good practices in realizing the rights to water and sanitation” (2012), available at: http://www.ohchr.org/Documents/Issues/Water/BookonGoodPractices_en.pdf (accessed: 22 September 2015).

⁵¹ *Pani Haq Samiti & Ors v Brihan Mumbai Municipal Corporation & Ors* Bombay High Court, PIL-10-2012 (15 December 2014), at [11], available at: http://www.msihyd.org/pdf/pani_haq_samiti_hc_orders_on_water_to_all.pdf (accessed: 22 September 2015).

⁵² UN Committee on Economic, Social and Cultural Rights, *General Comment No. 15: The Right to Water (Arts. 11 and 12 of the Covenant)*, 20 January 2003, E/C.12/2002/11, available at: <http://www.refworld.org/docid/4538838d11.html> (accessed 22 September 2015).

⁵³ CRC, art 24.

⁵⁴ CEDAW, art 14(2)(h).

⁵⁵ CRPD, art 28(2)(a).

Climate change severely threatens the realization of the rights to water and sanitation. Climate change has profound effects on hydrological systems, affecting both the quantity and quality of water and the security of sanitation facilities.⁵⁶ Predicted consequences of climate change including run-off from melting snow and ice, changes in precipitation, drought, flooding, and water and sanitation infrastructure break-down from extreme weather events may all contribute to inadequate access to clean water.⁵⁷ For example, the “very likely” change of increased rainfall events and frequency is expected to have adverse impacts on the quality of both surface and groundwater and result in contamination of the water supply, as well as an increased risk of communicable diseases from flood waters.⁵⁸ Conversely, likely increases in the incidence of droughts will directly impact the availability of clean water.⁵⁹ It is evident that there are significant adverse impacts that climate change will have on realizing the rights to water and sanitation.

The Right to Food

The fourth and final specific human right subject to particular climate change analysis is the right to food. The right to adequate food is most authoritatively articulated under art 11 of ICESCR, which affirms “the right of everyone to an adequate standard of living for himself and his family [sic], including adequate food”,⁶⁰ and “the fundamental right of everyone to be free from hunger”.⁶¹ States are therefore obligated to not act so as to deprive individuals from food, but also a positive obligation to act to ensure access to adequate food. The CESCR’s General Comment 12 on the right to food notes that violations of the right to food can be caused by both the direct actions of states, but also through third parties inadequately regulated by the state.⁶²

The UN Special Rapporteur on the Right to Food, Olivier De Schutter, has stated that “climate change threatens the ability of entire regions to feed themselves”.⁶³ In addition to extremes including drought, storms and flooding, higher average temperatures and changes in rainfall patterns negatively impact the quality and quantity of food crops grown, including major food crops wheat, rice, and maize.⁶⁴ The effect of this on the realization of the right to food is substantial: with 2.5°C warming, there will be an estimated 45 to 55 million extra people at risk of hunger by 2080, and with 3°C warming, 65 to 75

⁵⁶ IPCC (2014b), above n10: 4.

⁵⁷ Ibid: 13; B. Bates, Z. W. Kundzewicz, S. Wu and J. Palutikof eds., “Climate Change and Water, Technical Paper VI, International Panel on Climate Change” (June 2008): 47.

⁵⁸ Bates et al (2008): 41, 43.

⁵⁹ Ibid: 41-42.

⁶⁰ ICESCR, art 11(1).

⁶¹ ICESCR, art 11(2).

⁶² UN Committee on Economic, Social and Cultural Rights (CESCR), *General Comment No. 12: The Right to Adequate Food (Art. 11 of the Covenant)*, 12 May 1999, available at: <http://www.refworld.org/docid/4538838c11.html> (accessed 22 September 2015).

⁶³ O. De Schutter, “Climate Change: What is the impact of climate change on the right to food”. Available at: <http://www.srfood.org/en/climate-change-2> (accessed: 22 September 2015)

⁶⁴ IPCC 2014b: 14, 17-18, and “Chapter 7: “Food security and food production systems”.

million people at risk of hunger.⁶⁵ The majority of these people will be in poor, highly vulnerable developing countries, however developed countries are not immune. In Australia, for example, a warming of 4°C will completely disable entire food production regions.⁶⁶ The destruction of entire food production regions, crop failures, and food shortages all contribute to global and regional food insecurity, amounting to violations of the right to adequate food.

⁶⁵ B. Hare, “Relationship between increases in global mean temperature and impacts on ecosystems, food production, water and socio-economic systems”: 179, in *Avoiding Dangerous Climate Change*, H.J. Schellnhuber (ed) (2006, Cambridge University Press): 177 – 185.

⁶⁶ Ibid.

II. Climate Change & Intellectual Property

The development and successful transfer of environmentally sound technologies (ESTs) – particularly from developed to developing nations – is an essential requirement of effective climate change mitigation and adaptation. Since the adoption of the United Nations Framework Convention on Climate Change (UNFCCC), subsequent international climate change agreements have expressly included obligations on developed countries to facilitate technology transfer to developing countries. The importance of technology transfer in addressing climate change is gaining greater prominence and is expected to form a central pillar of negotiations at the upcoming Paris 2015 UNFCCC Conference of Parties (COP21).⁶⁷ Despite this commitment, successful examples of large-scale EST technology transfer are lacking. It has been posited that the reason for this stagnation is due to the restrictive operation of international and domestic intellectual property regimes.⁶⁸ This part first defines technology transfer and obligations under international climate law. It then proceeds to examine the role of intellectual property in impeding technology transfer, followed by a human rights based analysis of proposed solutions, including direct and indirect human rights to technology transfer.

Defining Technology Transfer

Technology transfer is the process by which technology is disseminated, and subsequently adopted. Under the international climate law agreements, this is typically deemed to occur in the direction of developed to developing countries. The technology transfer process may include many types of technologies, typically categorised as being “hard” or “soft” (and even somewhere in between). Hard technologies tend to refer to patented technologies,⁶⁹ for example, climate change mitigation equipment or products that reduce or manage greenhouse gas emissions (like solar panelling), or adaptation technologies (such as irrigation systems or drought-resistant plants).⁷⁰ Soft technologies refer to broader know-how and experience, such as training, capacity building, and information,⁷¹ which in the adaptation setting could include crop rotation patterns or insurance schemes.⁷² The IPCC defines climate

⁶⁷ UNFCCC, “Technology Transfer Picking up Speed” (3 December 2014), available at:

<http://newsroom.unfccc.int/lima/technology-transfer-picking-up-speed/> (Accessed: 22 September 2015).

⁶⁸ See, for example: South Centre, *Accelerating Climate-Relevant Technology Innovation and Transfer to Developing Countries: Using TRIPS Flexibilities Under the UNFCCC*, SC/IAKP/AN/ENV/1, SC/GGDP/AN/ENV/8 (2009); Third World Network, *Some Key Points on Climate Change, Access to Technology and Intellectual Property Rights* (2008); M. Littleton, *Climate Change, Access to Technology and Intellectual Property Rights*, (2008); C. Hutchison, 'Does TRIPS Facilitate or Impede Climate Change Technology Transfer into Developing Countries?' (2006) 3(2) *U Ottawa Law Tech J* 517; F. M. Abbott, "Innovation and Technology Transfer to Address Climate Change: Lessons from the Global Debate on Intellectual Property and Public Health" (2009) *International Centre for Trade and Sustainable Development Issue Paper* 40.

⁶⁹ C. Hutchison, 'Does TRIPS Facilitate or Impede Climate Change Technology Transfer into Developing Countries?' (2006) 3(2) *University of Ottawa Law and Technology Journal* 517: 520.

⁷⁰ UNFCCC Secretariat, 'Technologies for Adaptation to Climate Change' (2004), available at: http://unfccc.int/resource/docs/publications/tech_for_adaptation_06.pdf (accessed 22 September 2015): 9.

⁷¹ Hutchison (2006), above n 69, 520; A. Adam, 'Technology Transfer to Combat Climate Change: Opportunities and Obligations Under TRIPS and Kyoto' (2009) 9 *J. High Tech. L.* 1, 10.

⁷² UNFCCC Secretariat (2004), above n 70: 9.

change related technology transfer as encompassing both hard and soft technologies.⁷³ Given that climate change related technology transfer is seen as flowing largely from developed to developing countries, it inherently requires the transfer of both hard and soft technologies, as developing countries who lack the transferred hard technologies, are unlikely to possess the associated know-how and soft technologies required for implementation.⁷⁴ Much of the debate about technology transfer focuses however on hard technologies as, unlike soft technologies, they can be protected under intellectual property rights mechanisms, in particular, patents. There is a wide range of potential stakeholders involved in the technology transfer process, including governments, the private sector, research and education institutions such as universities, non-governmental organisations, and financial institutions.⁷⁵ This broad cross-section begins to demonstrate the difficulties that may be faced in the development of international laws that enable climate change technology transfer.

Technology Transfer Obligations Under UNFCCC

In 1988, the World Meteorological Organization and the United Nations Environment Program formed the Intergovernmental Panel on Climate Change (IPCC); a scientific and policy hybrid charged with analysing and evaluating the available information on the science, impacts and economics of climate change, and to develop mitigation, and later adaptation, strategies.⁷⁶ The IPCC's initial responsibilities included producing Assessment Reports at regular intervals setting out the current state of climate change knowledge. In 1990, the IPCC produced its First Assessment Report, concluding that the Earth was warming, however it was not clear to what degree the greenhouse effect, and therefore the increased concentration of greenhouse gases caused by human activities, was contributing to the observed increases in temperature.⁷⁷ The findings of the First Assessment Report had a significant impact,⁷⁸ and ultimately resulted in the *United Nations Framework Convention on Climate Change* (UNFCCC).⁷⁹ The ultimate aim of the Convention, and any other related legal instruments that the Conference of Parties adopt,⁸⁰ is to stabilise atmospheric greenhouse gas concentrations at such a level as to prevent dangerous interference with the climate system.⁸¹ Even in its infancy, the UNFCCC acknowledged the essential role of technology transfer in addressing climate change. The UNFCCC requires developed countries to take all practicable steps to promote, facilitate and finance the transfer of environmentally sound

⁷³ Intergovernmental Panel on Climate Change, *Methodological and Technological Issues in Technology Transfer: A Special Report of the Intergovernmental Panel on Climate Change* (Intergovernmental Panel on Climate Change, 2000), 3.

⁷⁴ Hutchison (2006): 520.

⁷⁵ IPCC, *Methodological and Technological Issues in Technology Transfer: A Special Report of the Intergovernmental Panel on Climate Change* (Intergovernmental Panel on Climate Change, 2000).

⁷⁶ Ibid: v; Adam (2009), above n 71: 3.

⁷⁷ IPCC, 'Policymakers Summary' in J.T. Houghton, G.J. Jenkins and J.J. Ephraums (eds), *Climate Change 1990: Report prepared for the Intergovernmental Panel on Climate Change by Working Group I* (Cambridge University Press, 1990).

⁷⁸ S.R. Weart, *The Discovery of Global Warming* (Harvard University Press, 2003): 146.

⁷⁸ Ibid.

⁷⁹ Ibid.

⁸⁰ *United Nations Framework Convention on Climate Change*, opened for signature 9 May 1992, 1771 UNTS 107 (entered into force 20 July 2005), available at:

http://unfccc.int/files/essential_background/background_publications_htmlpdf/application/pdf/conveng.pdf (accessed 22 September 2015) (hereafter "UNFCCC"): art 2.

⁸¹ Ibid; IPCC 2000, above n75: 5, 3.

technologies and know-how to other UNFCCC parties, particularly developing country parties.⁸² The UNFCCC attempts to use the technology transfer obligation to offset developed countries' disproportionate contribution to historical and – at the time of the Convention, contemporary – global emissions.⁸³ Given the importance of economic development to alleviating poverty and reducing the human impacts of climate change, developing countries' desire to have the same development opportunities as wealthier countries cannot be dismissed. This is expressly recognized in the UNFCCC, which states that economic and social development, as well as poverty eradication, are the first and overriding priorities of developing country parties. The obligation on developed countries to engage in technology transfer of ESTs to developing countries to assist sustainable, low-emissions development therefore seeks to resolve this dynamic while promoting global transfer of climate change adaptation and mitigation technologies.

Since 1995, the Conference of Parties has developed various mechanisms for defining and facilitating the technology transfer obligation. In 2000, the IPCC produced a special report “Methodological and Technological Issues in Technology Transfer” recognizing that for the transfer of ESTs to occur, governments must take greater efforts to break down barriers to technology transfer.⁸⁴ The following year, the Marrakesh Accords included the *Framework for meaningful and effective actions to enhance the implementation of Article 4, paragraph 5, of the Convention* (Marrakesh Framework).⁸⁵ The Marrakesh Framework defined what constituted an environment conducive to public and private sector technology transfer; that is, an “enabling environment”.⁸⁶ Government actions that create an enabling environment include: fair trade policies, regulatory frameworks and the removal of technical, legal and administrative barriers to technology transfer.⁸⁷ Such actions specifically include the protection (not the dilution) of intellectual property rights,⁸⁸ categorising such rights as being conducive to the expansion of commercial and public technology transfer to developing countries.

In 2007, developing countries at the Bali Conference of Parties argued that developed countries had failed in delivering effective, measurable and verifiable transfer of ESTs, and as a result, developing countries refused to agree to post-Kyoto Protocol emissions reduction targets.⁸⁹ The Bali Action Plan sought to address developing countries' concerns by calling for enhanced actions on technology development and transfer, including boosting the technology transfer to developing countries, and removal of barriers to technology transfer,⁹⁰ to improve access to environmentally sound climate-related

⁸² UNFCCC: art 4.5.

⁸³ As reflected in the text of Ibid: preamble.

⁸⁴ Ibid: 5.

⁸⁵ *The Marrakesh Accords: Development and Transfer of Technologies*, 4/CP.7, FCCC/CP/2001/13/Add.1

⁸⁶ Ibid: Annex, para 12.

⁸⁷ Ibid: Annex, para 12.

⁸⁸ Ibid: Annex, para 14.

⁸⁹ D. Shabalala, 'Introduction to This Issue: Climate Change and Technology Transfer, An' (2008) 9 *Sustainable Dev. L. & Pol* 4, 4.

⁹⁰ UNFCCC, "Report of the Conference of the Parties on its thirteenth session, held in Bali from 3 to 5 December 2007", FCCC/CP/2007/6/Add.1 (entered into force 17 December 2007), available at: <http://unfccc.int/resource/docs/2007/cop13/eng/06a01.pdf> (accessed 22 September 2015)(hereafter “Bali Action Plan”): art 1(d)(i).

technologies.⁹¹ In 2009, the Conference of Parties in Denmark agreed to the Copenhagen Accord, taking a more substantive approach to technology transfer, seeing it as an essential method of mitigating and adapting to climate change. In order to achieve this, the Copenhagen Accord established the Copenhagen Green Climate Fund, a financing mechanism of the for UNFCCC projects, policies and activities in developing countries related to mitigation including technology development and transfer.⁹² However the primary relevant advancement was the establishment of the Technology Mechanism, tasked with accelerating technology development and transfer for adaptation and mitigation actions.⁹³

Cancun built upon the Technology Mechanism established under the Copenhagen Accord, formulating the composition and operating structure of the Technology Mechanism to include two pillars, a Technology Executive Committee (TEC) and a Climate Technology Centre and Network (CTCN).⁹⁴ The Cancun Agreements charged the TEC with providing policy and technical analysis of issues relating to the development and transfer of technologies, while facilitating technology transfer between governments, non-government organisations, academia, the private sector and other relevant stakeholders along with support from the CTCN.⁹⁵ While Cancun appeared to be a step in the direction of a clear strategic approach to technology transfer and climate change, successful dissemination and adoption of ESTs still lagged. The following year's climate talks in Durban failed to make any significant advances, but reinforced the work previously undertaken in Copenhagen and Cancun in the operations of the CTCN and, in particular, the procedures of the TEC.⁹⁶ While there now existed a formal body responsible for proposing policies and methods to encourage and facilitate technology transfer, developing countries and non-governmental organisations began pressing the TEC to provide guidance on intellectual property rights and technology transfer.⁹⁷ As a result, the TEC requested that the 2012 Doha negotiations provide greater clarity as to the TEC's role in matters relating to intellectual property.⁹⁸ While the Doha round saw the United Nations Environmental Program elected to host the Climate Technology Centre and Network, there was no resolution on the disagreements on intellectual property and technology transfer. This silence continued at the nineteenth and twentieth Conferences of Parties in Warsaw, Poland and Lima, Peru respectively. Neither of the public reports of these two meetings expressly mention intellectual property.⁹⁹ As of 21 September 2015, the CTCN has received 43

⁹¹ Adam (2009), above n71: 2; Bali Action Plan: art 1(d).

⁹² UNFCCC, "Report of the Conference of the Parties on its fifteenth session, held in Copenhagen from 7 to 19 December 2009", available at: <http://unfccc.int/resource/docs/2009/cop15/eng/11a01.pdf> (accessed 22 September 2015): art 10.

⁹³ Ibid: art 11.

⁹⁴ UNFCCC, "Report of the Conference of the Parties on its sixteenth session, held in Cancun from 29 November to 10 December 2010" FCCC/CP/2010/7/Add.1, available at: <http://unfccc.int/resource/docs/2010/cop16/eng/07a01.pdf#page=2> (accessed 22 September 2015): art 117.

⁹⁵ Ibid: arts 121 and 123.

⁹⁶ UNFCCC, "Report of the Conference of the Parties on its seventeenth session, held in Durban from 28 November to 11 December 2011", FCCC/CP/2011/9/Add.1 (1), available at: <http://unfccc.int/resource/docs/2011/cop17/eng/09a01.pdf> (accessed 22 September 2015).

⁹⁷ International Centre for Trade and Sustainable Development, 'UNFCCC Technology Executive Committee seeks more "clarity" on IPRs' (2012) 6(4) *Bridges Trade BioRes Review*.

⁹⁸ M. Rimmer, "The Doha deadlock: intellectual property and climate change" (10 December 2012) Available at: <http://theconversation.com/the-doha-deadlock-intellectual-property-and-climate-change-11244> (accessed: 19 September 2015).

⁹⁹ See: UNFCCC, "Report of the Conference of the Parties on its nineteenth session, held in Warsaw from 11 to 23 November 2013", FCCC/CP/2013/10/Add.3 (31 January 2014), Available at:

requests for technical assistance, however none of these requests have had full implementation completed.¹⁰⁰ For developing countries and many civil society organizations, the reason for these failures in technology transfer is clear: insufficient flexibilities within international intellectual property law regimes which serve as structural barriers to technology transfer.

The International Intellectual Property Law Regime

The main source of international intellectual property law is found in the *Agreement on Trade Related Aspects of Intellectual Property* (TRIPS).¹⁰¹ TRIPS forms part of the broader World Trade Organization suite of trade agreements, providing developing countries with access to developed country markets in exchange for compliance with minimum standards of intellectual property protections.¹⁰² Under TRIPS, member states must provide patent holders with a twenty-year monopoly.¹⁰³ In addition, patents granted by member states are subject to a series of particular standards including, *inter alia*, non-preferential treatment of domestic over foreign inventors,¹⁰⁴ non-discrimination as to the field of technology of the proposed invention,¹⁰⁵ and exclusivity of the patent rights for making, using, selling or importing the protected technology.¹⁰⁶ Technology transfer and the aims of TRIPS are closely aligned. Not only operating to protect intellectual property rights, TRIPS expressly requires 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”.¹⁰⁷ Furthermore, such contribution should be “to the mutual advantage of producers and users of technological knowledge and in a manner conducive to social and economic welfare, and to a balance of rights and obligations”.¹⁰⁸ The text of TRIPS itself therefore includes a balancing of intellectual property rights so to facilitate technology transfer, *and* the need to take into account broader policy considerations. This is supported by TRIPS’ interpretative provisions which provide that member states may implement domestic laws and policies to “protect public health” and to “promote the public interest in sectors of vital importance to their socio-economic and technological development” providing that these measures are consistent with TRIPS.¹⁰⁹ Member states may also “exclude from patentability inventions...necessary... to avoid serious prejudice to the environment”.¹¹⁰ There is debate over whether this subject matter exclusion would allow for flexibilities in treating ESTs differently to other patentable subject matter,¹¹¹ however

<http://unfccc.int/resource/docs/2013/cop19/eng/10a03.pdf> (accessed 22 September 2015) and UNFCCC, “Report of the Conference of the Parties on its twentieth session, held in Lima from 1 to 14 December 2014”, FCCC/CP/2014/10/Add.3 (2 February 2015), Available at: <http://unfccc.int/resource/docs/2014/cop20/eng/10a03.pdf> (accessed 22 September 2015).

¹⁰⁰ CTCN, “Technical Assistance Dashboard”, available at: <http://ctc-n.org/dashboard> (accessed: 22 September 2015).

¹⁰¹ *Agreement on Trade-Related Aspects of Intellectual Property Rights*, opened for signature 1869 UNTS 299 (entered into force 15 April 1994) (hereafter “TRIPS”).

¹⁰² Adam (2009), above n 71: 7.

¹⁰³ TRIPS: art 33.

¹⁰⁴ Ibid: art 3.

¹⁰⁵ Ibid: art 27.1.

¹⁰⁶ Ibid: art 28.

¹⁰⁷ Ibid: art 7.

¹⁰⁸ Ibid.

¹⁰⁹ Ibid: art 8.

¹¹⁰ Ibid: art 27(2).

¹¹¹ For an analysis of the debate on this point as well as the TRIPS Agreement and climate change, see M.

Rimmer, *Intellectual property and climate change: inventing clean technologies*. (2011, Edward Elgar Publishing): 83-119.

this provision could provide a legitimate basis for policy decisions to exclude ESTs to prevent or address climate change induced human rights violations.¹¹²

TRIPS also includes a specific provision for balancing intellectual property rights and the facilitation of technology transfer between developed and developing countries. Under art 66.2, developed country members must provide incentives to enterprises and institutions in their country with the express purpose of promoting and encouraging technology transfer to least-developing countries.¹¹³ However, this article gives developed countries large discretion when interpreting how to comply with this otherwise strictly worded obligation.¹¹⁴ As a result, there has been negligible action made under this provision,¹¹⁵ let alone within the specific realm of the transfer of environmentally sound technologies. At the request of least-developed countries, the Council for TRIPS (the governing body for the implementation of the TRIPS Agreement) adopted decision IP/C/28, '*Implementation of article 66.2 of the TRIPS Agreement*' in 2003 in an attempt to improve compliance with this article. Since then, developed countries have submitted reports on technology transfer to the least developing countries every three years.¹¹⁶

In contrast, many developed and middle-income countries, in particular the United States, reject calls for relaxing intellectual property protections for ESTs and rather push for stronger protections.¹¹⁷ Stronger evidence also exists for intellectual property protections and inward foreign domestic investment in middle-income and large developing countries.¹¹⁸ However, the assumption that strong intellectual property regimes are essential to the research and development of ESTs in developed countries, is receiving more challenge in light of the sharing economy and open source movements. Arguably, "the benefits of an intellectual property system tend at best to be long term and tenuous while in the short-term, intellectual property protection increases the cost of development, especially since in the globalized economy the patents awarded and resulting payment for the use of these technologies go primarily to foreign multinational corporations".¹¹⁹

While TRIPS is at its core a trade and intellectual property protection instrument, the provisions for a balance between intellectual property rights and socio-economic goals demonstrates the competing interests and perspectives of developed and developing countries. While there are a number of "flexibilities" within the TRIPS text, the reality is developing countries are yet to receive substantive technology transfer benefits under the international intellectual property regime. Rather than attempting to define the scope of TRIPS flexibilities, human rights frameworks may shift the debate out of the trade

¹¹² Ibid: 91.

¹¹³ Ibid: art 66.2.

¹¹⁴ Adam (2009), above n 71: 13; Hutchison (2006), above n 69: 524.

¹¹⁵ Hutchison (2006): 524.

¹¹⁶ A full list of these submissions can be found at: <http://goo.gl/w01cW>] however tangible efforts in the transfer of environmentally sound technologies under this article are still few and far between.

¹¹⁷ Rimmer (2011), above n111: 117.

¹¹⁸ K. Maskus, "Transfer of Technology and Technological Capacity Building", paper presented at *the ICTSD UNCTAD Dialogue, 2nd Bellagio Series on Development and Intellectual Property* (2003), available at: http://www.iprsonline.org/unctadictsd/bellagio/docs/Maskus_Bellagio2.pdf (accessed 22 September 2015): 7.

¹¹⁹ A. R. Chapman, "Towards an Understanding of the Right to Enjoy the Benefits of Scientific Progress and its Applications" 8 *J Hum Rts* 1, 1 (2009): 29.

sphere and inform alternative strategies for policy change and developments. In doing so, it is possible that the normative assumptions that underpin intellectual property will be challenged by the distributive justice human rights require. However, a range of options exist – from patent pools to impact based funds – that try to bring human rights and intellectual property together, and can be applied to the transfer of ESTs for climate change mitigation and adaptation.

III. A Human Rights Approach to Technology Transfer & Intellectual Property

ESTs for Human Rights

Technological development inherently seeks to advance and improve current practice by increasing efficiencies and beneficial outcomes. A human rights based approach to the development of ESTs makes the alleviation and prevention of human suffering the goal and priority of technological advances. As the harmful effects of climate change increase, technologies that mitigate further escalation or – or improve adaptability to – climate harms become even more important. Such technologies may have a global impact or targeted impact. Global impact technologies may involve mitigation ESTs, including emissions reduction technologies or renewable energy technologies like solar, wind, hydro or artificial photosynthesis processes. In this arena, technological developments may include improving efficiencies or the scalability and ease of replicability of technologies. More interventionist global impact technologies may involve geoengineering strategies such as atmospheric carbon dioxide removal or the management of solar radiation.

Targeted impact technologies may involve adaptation measures for specific climate concerns. The right to life and right to health for example could be ensured through vaccines, diagnostics or antibiotics for emerging or reemerging diseases such as dengue, malaria, and tick-borne encephalitis, or through more efficient and affordable air conditioning, building technologies, and insulation reducing heat stress. The right to adequate food could be upheld through access to drought tolerant, insect resistant or improved nutrition crops. Water treatment, capture, or desalination processes as well as sea-walls or other physical-barrier technologies would uphold the right to water.

Human rights frameworks have already begun to hold states to account when denying access to ESTs amount to violations of human rights. In 2008, the CESCR noted its deep concern with the extreme hardship experienced by farmers in India exacerbated by increasing farming costs as result of the introduction of genetically modified seeds owned by multinational corporations.¹²⁰ The CESCR noted that India's regulation of seeds under a proposed Seeds Bill 2004 risked violating the right to food by limiting farmers to using seeds that have been formally registered and expanding intellectual property protections over seeds for up to 30 years.¹²¹ With no mechanism to regulate seed supply or price, or a compulsory licensing regime or similar safeguard, states risk violating the right to food with expansive intellectual property regulation such as the Indian Seeds Bill 2004. Concentrated control on the seed sector has further had profound consequences on the right to life and the right to health. The global agriculture company, Monsanto, has been accused of contributing to the “epidemic of farmers suicides in India from its growing control over the cotton seed supply”, particularly in regard to patented,

¹²⁰ CESCR, Consideration of reports submitted by States parties under articles 16 and 17 of the Covenant [on Economic, Social and Cultural Rights] : concluding observations of the Committee on Economic, Social and Cultural Rights : India, 8 August 2008, E/C.12/IND/CO/5, available at: <http://www.refworld.org/docid/48bbdac42.html> (accessed 22 September 2015): 6.

¹²¹ L.R. Helfer and G.W. Austin. *Human rights and intellectual property: mapping the global interface*. (2011, Cambridge University Press, Cambridge, United Kingdom): 419-420.

genetically engineered, climate ready crops.¹²² Monsanto rejects these allegations, pointing to multiple societal issues, particularly financial instability, as the cause of such large numbers of farmers committing suicide.¹²³ As the case study of India's seeds demonstrates, the intertwining of human rights issues with accessing environmentally sound technologies is complex and multifaceted.

A Human Right to Technology Transfer?

Despite its little known status, there in fact exists an express, specifically identifiable human right to technology transfer itself: the right to enjoy the benefits from scientific progress and its applications (REBSPA). The REBSPA has remained a relatively unexamined human right, described as “so obscure and its interpretation so neglected that the overwhelming majority of human rights advocates, governments, and international human rights bodies appear to be oblivious to its existence”.¹²⁴ The right however is not a creation of recent academic discourse or human rights theory,¹²⁵ but rather has been enumerated in two main international human rights instruments, under art 27 of the UDHR and art 15(1)(b) of ICESCR. REBSPA has been described as “so obscure and its implementation so neglected”¹²⁶ in comparison to other ICESCR and UDHR human rights, attributable perhaps to its content: scientific progress and its applications.

Unlike other ICESCR rights, CESCR has not prepared a General Comment on the content, scope and application of the REBSPA¹²⁷. However in 2009, the sunlight began to penetrate the canopy cover and illuminate REBSPA, with UNESCO hosting the first international expert discussion on the right in Venice, culminating in the *Venice Statement on the Right to Enjoy the Benefits of Scientific Progress and its Applications* (Venice Statement).¹²⁸ The Venice Statement recognised not only the continued neglect of REBSPA, but also the increasing relevance of science as a substantive human right in of itself. Importantly, the Venice Statement is the first international document to examine the normative content of REBSPA¹²⁹, defined to include¹³⁰ the enjoyment of the applications of the benefits of science in a non-discriminatory way, including by way of technology transfer.¹³¹ In addition, the statement noted that REBSPA “may create tensions with the intellectual property regime, which is a temporary monopoly with a valuable social function that should be managed in accordance with common

¹²² V. Shiva, “Seeds of suicide and slavery versus seeds of life and freedom” *Al Jazeera*, available at: <http://www.aljazeera.com/indepth/opinion/2013/03/201332813553729250.html> (accessed 22 September 2015).

¹²³ Monsanto, “Is Bt or GMO Cotton the Reason for Indian Farmer Suicides”, available at: <http://www.monsanto.com/newsviews/pages/india-farmer-suicides.aspx> (accessed 22 September 2015)

¹²⁴ A. R. Chapman, 'Towards an Understanding of the Right to Enjoy the Benefits of Scientific Progress and Its Applications' (2009) 8(1) *Journal of Human Rights* 1.

¹²⁵ Compared with, for example, the Right to Development.

¹²⁶ Chapman (2009), above n124.

¹²⁷ Interestingly, the UN CESCR has released General Comment 17, which covers article 15(1)(c), the right to intellectual property protections arising from a scientific, literary or artistic production. General Comment 17 recognises the possibility for a future General Comment on the REBSPA, and advises that each sub-article of article 15 is interrelated, being “mutually reinforcing and reciprocally limitative”.

¹²⁸ UNESCO, 'Venice Statement on the Right to Enjoy the Benefits of Scientific Progress and its Applications' (2009).

¹²⁹ Ibid.

¹³⁰ Ibid: art 13.

¹³¹ Ibid: art 13(b).

responsibility to prevent the unacceptable prioritization of profit for some over benefit for all”.¹³² the Venice Statement urges states to “apply human rights-based approaches to their policies and activities in the field of science and technology...to ensure that science and technology policy [for example, intellectual property laws] serve human needs in addition to economic prosperity”.¹³³ Therefore, the right to benefit from scientific progress and its applications “cannot be reduced to the right to *wait* to benefit from any trickle-down effects that may result from the aggregate increase in societal welfare flowing from the technological progress that intellectual property encourages”.¹³⁴ Developing the scope of REBSPA within the climate context, and promoting its existence, may provide a specific human right which can underpin direct human rights justifications for equitable global access to technologies that mitigate and adapt to the effects of climate change.

In addition to REBSPA and specifically identifiable rights, the binding UNFCCC obligation for states to take steps to realize technology transfer under art 4.5 UNFCCC, may also be construed as having a parallel human rights based obligation. Under art 2(1) of ICESCR, states have a duty to provide international assistance and cooperation to fulfill economic, social and cultural rights. Within the context of climate change, art 2(1) of ICESCR may therefore add a powerful rights-based component to the technology transfer obligations on developed states under the UNFCCC where the realization of economic, social and cultural human rights affected by climate change – such as the right to health, the right to water, and the right to food – require access to technologies in developed countries.

Addressing Intellectual Property Impediments

The tension between human rights, the transfer of climate change technologies, and intellectual property is not a new tension. Over the past thirty years, similar debates have played out with regard to the right to life, right to health, and access to medicines debates. Some of the lessons learnt from these debates are relevant to a human rights based approach to accessing climate change technologies and intellectual property. Here, four proposed solutions are examined: a Doha-Style Declaration, Compulsory Licensing, Patent Pools, and Impact Funds. These are by no means an exhaustive list of possible policy approaches, however they provide important lessons for the advantages and limitations of continuing to work within an intellectual property regime framework for climate technology transfer.

A Doha-Style Declaration for TRIPS, Climate Change, and Technology Transfer

In the years following the implementation of TRIPS, developing countries raised their concerns over the impact of TRIPS and its pharmaceutical patent provisions on access to essential medicines.¹³⁵ In particular, developing nations sought to clarify the interpretation of existing flexibilities in TRIPS in a manner consistent with global public health issues, in particular, HIV/AIDS.¹³⁶ The result of this lobbying by developing countries and civil society was the adoption of the *Declaration on the TRIPS*

¹³² Ibid: 10.

¹³³ Ibid: art 24.

¹³⁴ Helfer (2011), above n 121: 237.

¹³⁵ A. R. Chapman, 'The Human Rights Implications of Intellectual Property Protection' (2002) 5(4) (Nov 30) *Journal of International Economic Law* 861: 881.

¹³⁶ Ibid: 881.

Agreement and Public Health (Doha Declaration) in late 2001.¹³⁷ This declaration reaffirmed the right of WTO member states to interpret and use the existing flexibilities under TRIPS to support broader socio-economic and policy concerns, such as access to medicines,¹³⁸ the granting of compulsory licences at member state discretion,¹³⁹ and the sovereign right to determine when doing so is necessary (such as by giving member states the power to define what constitutes a public health emergency).¹⁴⁰ The Doha Declaration is remarkable in that it was the first clearly articulated statement from the WTO on how the internal development and socio-economic needs of a country allow interpretive flexibility of international legal intellectual property protections. In that particular instance, the public health good of allowing the transfer of technologies, such as through compulsory licensing of pharmaceuticals in matters of serious public health concern like malaria and HIV/AIDS, was deemed sufficient to outweigh the international trade obligations contained in the TRIPS Agreement.

As the site of the pivotal intellectual property and public health negotiations that resulted in the Doha Declaration eleven years previously, the 2012 UNFCCC COP in Doha was an appropriate forum for discussions on climate change and intellectual property. In fact, the similarities with the 2001 Doha Declaration negotiations were striking. The non-governmental organisation, the Climate Action Network called for the development of a *Declaration on Intellectual Property and Climate Change* in order to facilitate the “rapid and efficient uptake of technologies to address mitigation and adaptation”.¹⁴¹ The Philippines took a leading position on the need for such a text, with a particular concern with respect to climate related emergencies, stating that the Technology Executive Committee should consider issues “related to intellectual property rights as they arise in the development and transfer of technologies”.¹⁴² South Africa supported this approach but went further as to state that the Doha climate talks should address “questions of equitable access to sustainable development, intellectual property rights and unilateral trade measures”,¹⁴³ while the “Progressive Latin Americans”, led by Venezuela, proposed a draft text on a broad variety of measures relating to intellectual property and climate change.¹⁴⁴ India attempted to provide a compromise, recognising developed countries’ concerns with a dilution of intellectual property rights, and called for a fund to be established enabling access to intellectual property protected clean technologies. Even though the instigating request to clarify intellectual property rights and climate change came from the Technology Executive Committee, this push by developing countries for a new intellectual property and climate change regime was rejected by developed countries. This rejection came from the similar position developed countries had previously taken, echoing the pro-intellectual property argument that strong enforcement is necessary to encourage

¹³⁷ *Declaration on the TRIPS Agreement and Public Health*, WT/MIN(01)/DEC/2, 14 November 2001, Doha Declaration (20 November 2001)

¹³⁸ *Ibid.*: art 4.

¹³⁹ *Ibid.*: art 5(b).

¹⁴⁰ *Ibid.*: art 5(c).

¹⁴¹ M. Rimmer, “The Doha deadlock: intellectual property and climate change” (10 Dec 2012) *The Conversation*, available at: <http://theconversation.com/the-doha-deadlock-intellectual-property-and-climate-change-11244> (accessed 22 September 2015).

¹⁴² *Ibid.*; *Submission from the Philippines to the Ad Hoc Working Group on Long-term Cooperative Action under the Convention*, Fifteenth, two, 3(d), FCCC/AWGLCA/2012/CRP.6 (28 November 2012) .

¹⁴³ “Africa: Molewa Delivers South Africa's Position at Cop18”, *allAfrica* (6 December 2012), available at: <http://allafrica.com/stories/201212070382.html>.

¹⁴⁴ Rimmer (2012), above n141.

investment and development in clean technologies.¹⁴⁵ The United States and the European Union were resolute Doha should remain silent on providing a specific position on intellectual property and climate change, and rather, rely on alternative, more broad forums, like the World Intellectual Property Organization and the World Trade Organization, to address the climate change and intellectual property.¹⁴⁶ The draft text of the Doha negotiations sought to address developing countries' concerns, albeit indirectly, by providing that the Technology Executive Committee should be "examining effective mechanisms that promote access to affordable environmentally sound technologies, reward innovators and increase the dynamic of global innovation". However, by the time the final texts of the Doha climate talks were complete, this sentence was removed, leaving the position of intellectual property and technology transfer murky.¹⁴⁷ Developing countries and non-governmental organisations seem resolute that a Doha Declaration style statement on climate change and technology transfer is the only way forward. However, it is arguable whether, even with such a declaration, the current flexibilities under TRIPS are sufficient to address concerns about the possible barrier that such rights may impose on the transfer of ESTs.

Compulsory Licensing

Compulsory licensing is a means by which governments can bypass patent owners' permission to use, produce, or sell a patented product. TRIPS contains express protections against arbitrary compulsory licences, requiring governments or third parties to first attempt to obtain a voluntarily given licence from the patent holder.¹⁴⁸ However, in "other circumstances of extreme emergency", governments are not required to abide by this requirement.¹⁴⁹ The Doha Declaration took this provision further, interpreting art 31 to mean that it is in the absolute discretion of a country to decide for itself what constitutes a circumstance of extreme urgency. Following a decision of the World Trade Organization in 2003,¹⁵⁰ any member country may export generic pharmaceutical products made under an importing country's compulsory licence for domestic use. Arguably, this interpretation could be extended to other applications of art 31 of TRIPS.¹⁵¹ The International Centre for Trade and Sustainable Development has proposed that 'compulsory licensing be utilised for the transfer of environmentally sound technologies, arguing that:

[c]limate mitigation or adaptation could provide valid ground for compulsory licensing, and could even be considered to be included in general references to 'public interest' in most patent laws. Some countries also foresee compulsory licences in cases in which the invention is not exploited in the country, or is insufficiently exploited. Such a measure could restrain the anti-

¹⁴⁵ Ibid.

¹⁴⁶ Ibid

¹⁴⁷ Ibid.

¹⁴⁸ TRIPS: art 31.

¹⁴⁹ Ibid: art 31(b).

¹⁵⁰ WTO, *Implementation of Paragraph 6 of the Doha Declaration on the TRIPS Agreement and Public Health*, WT/L/540, (30 August 2003)

¹⁵¹ Adam 2009, above n 71: 9.

competitive practices feared as potentially impeding the transfer of climate-related technologies to developing countries.¹⁵²

The International Centre for Trade and Sustainable Development concludes that “compulsory licences could thus prove an effective tool to ensure rapid access to critical climate-related technologies in developing countries”.¹⁵³ The Third World Network has supported this position, arguing that “compulsory licensing is an option that developing countries can seriously consider for those patented climate-friendly technologies for which they have need, which are expensive, and in cases where negotiations with the patent holder are unable to result in a sufficiently affordable price either for the original product or for a license for an intended generic product”.¹⁵⁴ However some scholars have argued that there are limitations in using art 31 of TRIPS, with climate change not being deemed a significant enough emergency causing a threat to human life.¹⁵⁵ This position however is no longer legitimate, given the growing body of science into the seriousness of climate change’s impact on human life. Other scholars have raised concerns with the use of compulsory licenses in respect of clean technologies, given the number of different solutions that will be required to address climate change,¹⁵⁶ and the absence of know-how and other soft technologies in the compulsory transfer process.¹⁵⁷ While these criticisms may be valid, they do not necessarily undermine the potential of compulsory licensing to act as one solution to address developing countries concerns. Furthermore, until a more appropriate solution, or solutions, is devised, a flawed model is likely to be better than no action at all.

Patent Pools

Patent pools are by no means a new strategy to addressing the balance between intellectual property rights and the wider public good. Typically, patent pools are used in the commercial sphere as risk mitigation strategies whereby patent holders cross-license their patents for a particular technology in order to save time, money, and in certain cases, move products to market as soon as possible. Patent pooling has become a successful method of balancing intellectual property rights with broader international social-economic issues. Funded by UNITAID, the Medicines Patent Pool was established in July 2010 to serve as a voluntary licensing service to patent holders and interested manufacturers for HIV/AIDS medicines. The Medicines Patent Pool operates by allowing “for more affordable and adapted” generic versions of patented drugs to be developed and distributed prior to the expiration of a patent’s 20 year protection term. In normal circumstances, if a generic company wishes to manufacture patented medicines it must negotiate directly with each company holding the originator patent, for each

¹⁵² International Centre for Trade and Sustainable Development, *Climate Change, Technology Transfer and Intellectual Property Rights* (International Institute for Sustainable Development, 2008): 6.

¹⁵³ Ibid: 6.

¹⁵⁴ Martin Khor, 'Climate Change, Technology And Intellectual Property Rights: Context And Recent Negotiations' (2012) 45 (May 11) *South Centre Research Papers* : 15.

¹⁵⁵ Fiona Macmillan, *The World Trade Organisation and the Environment* (Sweet & Maxwell, 2001), 31-32 as cited in Rimmer (2011), above n 111: 99.

¹⁵⁶ S Rosenzweig, 'Cooling the world by misappropriating patent rights', *IP Watch* 1 April 2009 2009 Available at: <<http://www.ip-watch.org/weblog/2009/04/01/cooling-the-world-by-misappropriating-patent-rights/>> as cited in Rimmer (2011), above n 111: 100.

¹⁵⁷ Keith E Maskus, *Differentiated Intellectual Property Regimes for Environmental Technologies* (Organization for Economic Cooperation and Development, 2009): 23 as cited in Rimmer (2011), above n 111: 99-100.

of the countries in which the generic company wants to manufacture and sell the medicine. Under the patent pool model, originator patent holders are invited to voluntarily submit their patents to the Medicines Patent Pool by granting a license to the Medicines Patent Pool on specified public-health terms. These typically include the limitation that supply is to developing nations only, or in a particularly adapted formulation. The Medicines Patent Pool therefore acts as a central repository from which generic companies can apply for sub-licenses from the pool. Sub-licences are granted for the development, production and sale of medicines in permitted countries, and with regard to the Medicines Patent Pool's priorities, such as fixed-dose combination drugs, climate-adapted formulations and medicines formulated for children. This pooling results in one of the Medicines Patent Pool's key advantages for complex diseases like HIV/AIDS: the ability to cross-combine licenses allowing for a blending of technologies, such as advantageous drug delivery through fixed-dose combination pills (reducing multiple drugs into a single dose), medicines developed for children, and more environmentally suitable medicines (by including patented technologies as heat-resistance). Similar benefits could be seen equally for environmentally sensitive technologies, where a cross-pollination of sub-licences has the capacity to produce a wider variety of geographical and circumstance-modified technologies.¹⁵⁸

The limitations of the Medicines Patent Pool have been the focus of civil society criticisms, and would likely be similar to criticisms lobbied to any climate change technology patent pool by developing countries or non-governmental organisations. Such criticisms include the fact that patent holders effectively dictate the geographical scope and application of their patents in the pool; limiting access to technologies on commercially driven decisions on the capacity for market reward.¹⁵⁹ This is a valid criticism of the Medicines Patent Pool, however with growth and expansion, it is possible that patent pools have the ability to overcome these limitations. Importantly, the Medicines Patent Pool model appears to have been welcomed by the international intellectual property community,¹⁶⁰ and is an important first step in attempting to close the gap between intellectual property protections and access to medicines for the developing world, and possibly access to environmentally sound technologies.¹⁶¹

Climate Impact Fund

The proposed Health Impact Fund, led by Thomas Pogge and Aidan Hollis, attempts to reconcile the disparity between access to essential medicines and the financial motivations behind pharmaceutical

¹⁵⁸ For a detailed discussion on the utility of patent pools for cross-pollination in climate change technologies, see: J. Reichman, A.K. Rai, R.G. Newell, and J. Weiner, "Intellectual Property and Alternative Strategies for Green Innovation". *Chatham House Programme Paper* (2008), available at: http://scholarship.law.duke.edu/cgi/viewcontent.cgi?article=2915&context=faculty_scholarship (accessed 22 September 2015).

¹⁵⁹ William New, 'Medicines Patent Pool Signs Deal With Indian Generics Producer', *IP Watch* (11 October 2011), available at: <http://www.ip-watch.org/2011/10/11/medicines-patent-pool-signs-deal-with-indian-generics-producer>, (accessed 22 September 2015).

¹⁶⁰ E. t'Hoen et al, 'Medicines Patent Pool: Facilitating Access to HIV Treatment' (2011) 3 *WIPO Magazine* .

¹⁶¹ Broader than patent pools, patent commons have been suggested to address the technology transfer of ESTs – for example, the World Business Council for Sustainable Development's "Eco Patent Commons". Under a patent commons, participants pledge their patented technologies and agree not to assert patent rights against uses of the technology for humanitarian or other public interest grounds. See: Rimmer 2011, above n111: 318.

research and development.¹⁶² Rather than facilitating negotiations for patents and licensing (like under the patent pool model), the Health Impact Fund establishes a fund (initially set at US\$6 billion) to incentivise pharmaceutical development in essential medicines.¹⁶³ The Health Impact Fund does this by rewarding the success of pharmaceuticals registered with the Health Impact Fund. In effect, the Health Impact fund operates as a theoretical “second track” upon which pharmaceutical companies distribute medicines. Under the traditional model, the “first track”, pharmaceutical companies exercise their patent rights, maximising their profits in developed markets, and, if they wish, engaging in licensing regimes, such as the Medicines Patent Pool, for making medicines available in developing countries.¹⁶⁴ The “second track” provides an extra option for pharmaceutical companies.¹⁶⁵ Pharmaceutical companies may register their drug with the Health Impact Fund, requiring the company to sell its product worldwide at close to cost price.¹⁶⁶ Contrary to other funding models that operate as a “push” to research essential medicines (by providing subsidies and funding into targeted research), the Health Impact Fund is described as a “pull” model; rewarding pharmaceutical companies on the basis of the success of their medicines.¹⁶⁷ “Success” is assessed by examining the quantitative health outcomes of the medicines, referenced to the health measurement standard Quality-Adjusted Life Years (QALYs). Measurement of the impact of health care through QALYs is not a new technique, and is utilised by developed countries for assessing the effectiveness of health care institutions and expenditures.¹⁶⁸ A medicine’s success, in QALYs, then forms the proportionate share that the pharmaceutical company will receive from the fund. The pharmaceutical company will receive its proportionate health impact share each year for ten years, after which, the product would be open to the general market.¹⁶⁹

If tailored to environmentally sound technologies, a Climate Impact Fund could be similarly established, recognising the incentive for research and development into clean technologies through the “first track”, whereby developed country markets would access environmentally sound technologies in the same way they presently do, and may engage in patent pooling or other available options to transfer technology while maximising returns. The “second track” would function to provide transfer these technologies to developing countries. Patent holding companies and inventors could register their technology with the Climate Impact Fund, requiring the technology to be made available worldwide at a closest-to-cost price. Rather than success being assessed on QALYs, success could be measured on total emissions reduced in comparison to a, for example, year 2000 standard emissions for the relevant product and industry.

An impact fund model is unique to other existing models in that it formulates a structure in which both the ultimate social and environmental aim and intellectual property rights can coexist. In addition, an

¹⁶² P. Grootendorst et al, 'New approaches to rewarding pharmaceutical innovation' (2011) 183(6) *Canadian Medical Association Journal* 681, 681.

¹⁶³ A. Hollis and T. Pogge, *The Health Impact Fund: Making New Medicines Accessible for All* (Incentives for Global Health, 2008), 44.

¹⁶⁴ *Ibid*: 1.

¹⁶⁵ Grootendorst et al, above n 162, 683.

¹⁶⁶ Hollis and Pogge, above n 163, 15.

¹⁶⁷ *Ibid*: 1.

¹⁶⁸ *Ibid*: 27.

¹⁶⁹ *Ibid*: 3.

impact fund is geographically open, and does not undermine existing regimes (such as through compulsory licensing). Most importantly however, impact funds aim to spur and promote innovation and development in neglected areas. While compulsory licensing and the patent pool model improve developing nations' access to technologies, the impact fund model creates an incentive structure that rewards companies for investment in technologies that will have the most impact. This is particularly significant for environmentally sound technologies targeted to emissions intensive products and processes that are mainly, or even solely, present in low-income markets due to their cost (such as brown coal power plants, mining, and construction materials such as concrete). This model is perhaps the most innovative, and ultimately the largest-scale model, but appears to address the concerns raised by existing models, such as compulsory licensing, and even very recent ones, such as patent pooling. Fundamentally though, each of these models seek to actively address the central issue of the transfer of environmentally sound technologies to developing countries, with their success to be judged not in dollars, or contracts, or patents, or pilots, but in tangible examples of successful transfers and emissions reduced.

Questioning Existing Intellectual Property Laws as the Correct Framework

None of Doha Declaration, Compulsory Licensing, the Medicines Patent Pool, or the Health Impact Fund has resolved the tensions between human rights, access to medical technologies, and intellectual property. Matters of distributive justice “do not typically inform intellectual property’s analytical frameworks”.¹⁷⁰ Each of the proposals essentially accept the legitimacy of using flexibilities in intellectual property laws to carve out issues of human rights, equity, and justice. As a result, it is arguable whether any of these solutions – together or apart – will achieve the large-scale, global, and equitable transfer of technologies essential to address the human rights implications of climate change.

¹⁷⁰ Helfer (2011), above n 121: 237.

IV. Components of a Human Rights Based Climate Technology Framework

A human rights based climate technology framework promotes the transfer of climate technologies to alleviate suffering from climate change's impact on the realization of human rights. The elements of such a framework are extensive, however the following ten recommendations to governments contain the main components for domestic, regional, and international policy development.

1. Increasing commitments to capacity development and technology transfer, including active support of the UNFCCC's Technology Mechanism and Climate Technology Centre and Network.
2. Prioritizing the transfer of technologies that promote or protect human rights impacted by climate change, particularly in vulnerable population groups.
3. Prioritizing technology transfer policies that seek to alleviate the root causes of barriers to realizing human rights affected by climate change.
4. Identify and develop traditional knowledge for climate strategies.
5. Support national, regional, and international environmental litigation that seeks to reduce the impacts of climate change upon human rights.
6. Support national, regional, and international administrative mechanisms and National Human Rights Institutions in efforts to develop policies, laws, and innovations that seek to reduce the impacts of climate change upon human rights.
7. Support efforts to clarify flexibilities within intellectual property regimes in a manner that prioritizes human rights.
8. Establish, finance, and lead innovative mechanisms for technology transfer, such as patent pools or impact funds.
9. Incorporate UNFCCC technology transfer obligations into international and regional aid efforts.
10. Recognize that even historically innovative solutions to technology transfer may not be radical enough to address the profound challenge of climate change.

In the words of Mary Robinson, “[u]ltimately, achieving sustainability and a low-carbon economy will not only depend on technological innovation, but will require far-ranging social and political innovation. Let us not forget that technology does not have the ability to eliminate poverty, respect human rights, stop climate change and build a sustainable society – people do”.¹⁷¹

¹⁷¹ M. Robinson, “Foreword”: xvii – xx, in *Human Rights and Climate Change* S. Humphreys (ed.), (2010, Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA).

V. References

International Instruments

World Trade Organization, *Agreement on Trade-Related Aspects of Intellectual Property Rights*, opened for signature 1869 UNTS 299 (entered into force 15 April 1994).

World Trade Organization, *Declaration on the TRIPS Agreement and Public Health*, WT/MIN(01)/DEC/2, 14 November 2001, Doha Declaration (20 November 2001)

UN General Assembly, *Universal Declaration of Human Rights*, 10 December 1948, 217 A (III).

UN General Assembly, *International Convention on the Elimination of All Forms of Racial Discrimination*, 21 December 1965, United Nations, Treaty Series, vol. 660, p. 195.

UN General Assembly, *International Covenant on Civil and Political Rights*, 16 December 1966, United Nations, Treaty Series, vol. 999, p. 171.

UN General Assembly, *International Covenant on Economic, Social and Cultural Rights*, 16 December 1966, United Nations, Treaty Series, vol. 993, p. 3.

UN General Assembly, *Convention on the Elimination of All Forms of Discrimination Against Women*, 18 December 1979, UNTS 1249, p. 13.

UN General Assembly, *Convention on the Rights of the Child*, 20 November 1989, UN Treaty Series 1577, p. 3.

UN General Assembly, *Convention on the Rights of Persons with Disabilities: resolution adopted by the General Assembly*, 24 January 2007, A/RES/61/106.

United Nations Framework Convention on Climate Change, opened for signature 9 May 1992, 1771 UNTS 107 (entered into force 20 July 2005).

International Treaty Body Documents

World Trade Organization, *Implementation of Paragraph 6 of the Doha Declaration on the TRIPS Agreement and Public Health*, WT/L/540, (30 August 2003)

World Trade Organization, *Submission from the Philippines to the Ad Hoc Working Group on Long-term Cooperative Action under the Convention*, Fifteenth, two, 3(d), FCCC/AWGLCA/2012/CRP.6 (28 November 2012)

UN Human Rights Committee, *CCPR General Comment No. 6: Article 6 (Right to Life)*, 30 April 1982.

UN Committee on Economic, Social and Cultural Rights (CESCR), *General Comment No. 12: The Right to Adequate Food (Art. 11 of the Covenant)*, 12 May 1999.

UN Committee on Economic, Social and Cultural Rights, *General Comment No. 14: The Right to the Highest Attainable Standard of Health (Art. 12 of the Covenant)*, 11 August 2000, E/C.12/2000/4.

UN Committee on Economic, Social and Cultural Rights, *General Comment No. 15: The Right to Water (Arts. 11 and 12 of the Covenant)*, 20 January 2003, E/C.12/2002/11.

UN Committee on Economic, Social and Cultural Rights, *Consideration of reports submitted by States parties under articles 16 and 17 of the Covenant [on Economic, Social and Cultural Rights]: Concluding observations of the Committee on Economic, Social and Cultural Rights: India*, 8 August 2008, E/C.12/IND/CO/5.

UNESCO, 'Venice Statement on the Right to Enjoy the Benefits of Scientific Progress and its Applications' (2009).

UNFCCC, *The Marrakesh Accords: Development and Transfer of Technologies*, 4/CP.7, FCCC/CP/2001/13/Add.1

UNFCCC, "Report of the Conference of the Parties on its thirteenth session, held in Bali from 3 to 5 December 2007", FCCC/CP/2007/6/Add.1 (entered into force 17 December 2007).

UNFCCC, "Report of the Conference of the Parties on its fifteenth session, held in Copenhagen from 7 to 19 December 2009"

UNFCCC, "Report of the Conference of the Parties on its sixteenth session, held in Cancun from 29 November to 10 December 2010" FCCC/CP/2010/7/Add.1

UNFCCC, "Report of the Conference of the Parties on its seventeenth session, held in Durban from 28 November to 11 December 2011", FCCC/CP/2011/9/Add.1 (1)

UNFCCC, "Report of the Conference of the Parties on its nineteenth session, held in Warsaw from 11 to 23 November 2013", FCCC/CP/2013/10/Add.3 (31 January 2014).

UNFCCC, "Report of the Conference of the Parties on its twentieth session, held in Lima from 1 to 14 December 2014", FCCC/CP/2014/10/Add.3 (2 February 2015).

United Nations General Assembly, *Resolution 64/292: The human right to water and sanitation*, A/RES/64/292, (28 July 2010), available at: <http://www.un.org/es/comun/docs/?symbol=A/RES/64/292&lang=E> (accessed: 22 September 2015).

Regional Instruments

European Union, *Charter of Fundamental Rights of the European Union*, 26 October 2012, 2012/C 326/02.

Organization of African Unity (OAU), *African Charter on Human and Peoples' Rights ("Banjul Charter")*, 27 June 1981, CAB/LEG/67/3 rev. 5, 21 I.L.M. 58 (1982).

Organization of American States (OAS), *American Convention on Human Rights, "Pact of San Jose", Costa Rica*, 22 November 1969.

Cases

Pani Haq Samiti & Ors v Brihan Mumbai Municipal Corporation & Ors Bombay High Court, PIL-10-2012 (15 December 2014), at [11], available at:

http://www.msihyd.org/pdf/pani_haq_samiti_hc_orders_on_water_to_all.pdf (accessed: 22 September 2015).

Reports

Climate Council of Australia, *Climate Change 2015: Growing Risks, Critical Choices* (2015), available at: <https://www.climatecouncil.org.au/uploads/153781bfef5afe50eb6adf77e650cc71.pdf> (accessed 22 September 2015).

C. de Albuquerque, "United Nations Special Rapporteur on the Right to Safe Drinking Water and Sanitation Report – On the Right Track: Good practices in realizing the rights to water and sanitation" (2012), available at: http://www.ohchr.org/Documents/Issues/Water/BookonGoodPractices_en.pdf (accessed: 22 September 2015).

IPCC, 'Policymakers Summary' in J.T. Houghton, G.J. Jenkins and J.J. Ephraums (eds), *Climate Change 1990: Report prepared for the Intergovernmental Panel on Climate Change by Working Group I* (Cambridge University Press, 1990) .

International Centre for Trade and Sustainable Development, *Climate Change, Technology Transfer and Intellectual Property Rights* (International Institute for Sustainable Development, 2008).

IPCC, *Methodological and Technological Issues in Technology Transfer: A Special Report of the Intergovernmental Panel on Climate Change* (2000).

IPCC, "Climate Change and Water, Technical Paper VI, International Panel on Climate Change" [B. Bates, Z. W. Kundzewicz, S. Wu and J. Palutikof eds.] (2008).

IPCC, *Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Stocker, T.F., D. Qin, G.-K.

Plattner, M. Tignor, S. K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex and P.M. Midgley (eds.]). (2013, Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA).

IPCC, *Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Core Writing Team, R.K. Pachauri and L.A. Meyer (eds.)]. (2014a, IPCC, Geneva, Switzerland).

IPCC, *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* Field, C.B., V.R. Barros, D.J. Dokken, K.J. Mach, M.D. Mastrandrea, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, and L.L. White (eds.), (2014, Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA).

South Centre, *Accelerating Climate-Relevant Technology Innovation and Transfer to Developing Countries: Using TRIPS Flexibilities Under the UNFCCC*, SC/IAKP/AN/ENV/1, SC/GGDP/AN/ENV/8 (2009)

Third World Network, *Some Key Points on Climate Change, Access to Technology and Intellectual Property Rights* (2008)

UNFCCC Secretariat, *Technologies for Adaptation to Climate Change* (2004), available at: http://unfccc.int/resource/docs/publications/tech_for_adaptation_06.pdf (accessed 22 September 2015).

United Nations Office of the High Commissioner for Human Rights, *Report on the Relationship Between Climate Change and Human Rights* UN Doc A/HRC/10/61 (15 January 2009).

Books

S. Caney, "Climate change, human rights, and moral thresholds", 69-90: 75, in *Human Rights and Climate Change*, S. Humphreys (ed) (2010, Cambridge University Press, Cambridge, UK).

L.R. Helfer and G.W. Austin. *Human rights and intellectual property: mapping the global interface*. (2011, Cambridge University Press, Cambridge, United Kingdom).

S. Humphreys (ed.), *Human Rights and Climate Change* (2010, Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA).

M. Littleton, *Climate Change, Access to Technology and Intellectual Property Rights*, (2008).

F. Macmillan, *The World Trade Organisation and the Environment* (Sweet & Maxwell, 2001).

J. M. Mann, S. Gruskin, M. A. Grodin, and G. J. Annas (eds), *Health and Human Rights* (New York, NY: Routledge, 1994).

M. Rimmer, *Intellectual property and climate change: inventing clean technologies*. (2011, Edward Elgar Publishing).

S.R. Weart, *The Discovery of Global Warming* (Harvard University Press, 2003).

Book Chapters

B. Hare, "Relationship between increases in global mean temperature and impacts on ecosystems, food production, water and socio-economic systems" in *Avoiding Dangerous Climate Change*, H.J. Schellnhuber (ed) (2006, Cambridge University Press): 177 – 185.

Journal Articles

A. Adam, 'Technology Transfer to Combat Climate Change: Opportunities and Obligations Under TRIPS and Kyoto' (2009) 9 *J. High Tech. L.* 1.

A. R. Chapman, 'The Human Rights Implications of Intellectual Property Protection' (2002) 5(4) (Nov 30) *Journal of International Economic Law* 861

A. R. Chapman, 'Towards an Understanding of the Right to Enjoy the Benefits of Scientific Progress and Its Applications' (2009) 8(1) *Journal of Human Rights* 1.

P. Grootendorst et al, 'New approaches to rewarding pharmaceutical innovation' (2011) 183(6) *Canadian Medical Association Journal* 681.

C. Hutchison, 'Does TRIPS Facilitate or Impede Climate Change Technology Transfer into Developing Countries?' (2006) 3(2) *U Ottawa Law Tech J* 517.

International Centre for Trade and Sustainable Development, 'UNFCCC Technology Executive Committee seeks more "clarity" on IPRs' (2012) 6(4) *Bridges Trade BioRes Review*.

E.D. Kinney and B.A. Clark, "Provisions for Health and Healthcare in the Constitutions of the Countries of the World", 37 *Cornell Int L J* (2004) 287.

D. Shabalala, 'Introduction to This Issue: Climate Change and Technology Transfer, An' (2008) 9 *Sustainable Dev. L. Policy* 4.

E. t'Hoen et al, 'Medicines Patent Pool: Facilitating Access to HIV Treatment' (2011) 3 *WIPO Magazine*.

A. E. Yamin, "Will we take suffering seriously? Reflections on what applying a human rights framework to health means and why we should care", (2008) 10(1) *Health and Human Rights*.

Conference and Research Papers

F. M. Abbott, "Innovation and Technology Transfer to Address Climate Change: Lessons from the Global Debate on Intellectual Property and Public Health" (2009) *International Centre for Trade and Sustainable Development Issue Paper 40*.

M. Khor, 'Climate Change, Technology And Intellectual Property Rights: Context And Recent Negotiations' (2012) 45 (May 11) *South Centre Research Papers*

K. E. Maskus, *Differentiated Intellectual Property Regimes for Environmental Technologies* (Organization for Economic Cooperation and Development, 2009).

K. Maskus, "Transfer of Technology and Technological Capacity Building", paper presented at *the ICTSD UNCTAD Dialogue, 2nd Bellagio Series on Development and Intellectual Property* (2003), available at: http://www.iprsonline.org/unctadictsd/bellagio/docs/Maskus_Bellagio2.pdf

J. Reichman, A.K. Rai, R.G. Newell, and J. Weiner, "Intellectual Property and Alternative Strategies for Green Innovation". *Chatham House Programme Paper* (2008), available at: http://scholarship.law.duke.edu/cgi/viewcontent.cgi?article=2915&context=faculty_scholarship

A. Hollis and T. Pogge, *The Health Impact Fund: Making New Medicines Accessible for All* (Incentives for Global Health, 2008).

News and Opinion Articles

"Africa: Molewa Delivers South Africa's Position at Cop18", *allAfrica* (6 December 2012), available at: <http://allafrica.com/stories/201212070382.html>.

O. De Schutter, "Climate Change is a human rights issue - and that's how we can solve it", *The Guardian UK* (24 April 2012) Available at: <http://www.theguardian.com/environment/2012/apr/24/climate-change-human-rights-issue> (accessed: 22 September 2015).

W. New, 'Medicines Patent Pool Signs Deal With Indian Generics Producer', *IP Watch* (11 October 2011), available at: <http://www.ip-watch.org/2011/10/11/medicines-patent-pool-signs-deal-with-indian-generics-producer>, (accessed 22 September 2015).

M. Rimmer, "The Doha deadlock: intellectual property and climate change" (10 Dec 2012) *The Conversation*, available at: <http://theconversation.com/the-doha-deadlock-intellectual-property-and-climate-change-11244> (accessed 22 September 2015).

M. Robinson, "Climate change is an issue of human rights" (10 December 2008) *The Independent*, available at: <http://www.independent.co.uk/voices/commentators/mary-robinson-climate-change-is-an-issue-of-human-rights-1059360.html> (accessed: 22 September 2015)

S. Rosenzweig, 'Cooling the world by misappropriating patent rights', *IP Watch* 1 April 2009 2009
Available at: <http://www.ip-watch.org/weblog/2009/04/01/cooling-the-world-by-misappropriating-patent-rights/>

V. Shiva, "Seeds of suicide and slavery versus seeds of life and freedom" *Al Jazeera*, available at: <http://www.aljazeera.com/indepth/opinion/2013/03/201332813553729250.html> (accessed 22 September 2015).

Websites

CTCN, "Technical Assistance Dashboard", available at: <http://ctc-n.org/dashboard>

Monsanto, "Is Bt or GMO Cotton the Reason for Indian Farmer Suicides", available at: <http://www.monsanto.com/newsviews/pages/india-farmer-suicides.aspx>

Special Rapporteur on the Right to Food, "Climate Change: What is the impact of climate change on the right to food", Available at: <http://www.srfood.org/en/climate-change-2>

UNFCCC, "Technology Transfer Picking up Speed" (3 December 2014), available at: <http://newsroom.unfccc.int/lima/technology-transfer-picking-up-speed/>