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What Would Form Part of an Answer?

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Towards a Holistic Approach to Technology and Climate Change: What Would Form Part of an Answer?

Abbe Brown

Lecturer in IT Law;
Associate, AHRC/SCRIPT
Research Centre

University of Edinburgh School of Law

Keith Culver

Econoving International Chair in
Generating Eco-Innovation
Université de Versailles Saint-Quentin-en-
Yvelines

Anna Davies

Trinity College Dublin

Estelle Derclaye

University of Nottingham

Suzanne Kingston

University College Dublin

David McGrory

Maclay Murray & Spens

Kathryn McMahon

University of Warwick

Elisa Morgera

University of Edinburgh

Jon Santamauro

Sidley Austin LLP; funding provided by
the Biotechnology Industry Organization
and CropLife International

Douglas Taylor

Davidson Chalmers

Baskut Tuncak

Formerly of the Center for International
Environmental Law, now a Consultant



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Abstract

This multi-authored piece conducts an interdisciplinary analysis of the fields and principles which could be relevant to securing access to climate change technologies, while at the same time encouraging the initial development of the technologies. The paper is the first part of a project funded by the British Academy, 'Obtaining, protecting and using essential environmental technologies: a holistic analysis'.

Keywords

Climate Change, Regulation, Intellectual Property, Kyoto Protocol, Human Rights, Competition, Investment, Partnership

Introductory Note¹

Technology and innovation have played an increasing role in the work of the United Nations Framework Convention on Climate Change ('UNFCCC').² There is potential for technology to contribute to two key elements of responding to climate change: mitigating its impact (eg using renewable energies), forms of adapting behaviours to respond to and tolerate the impact of climate change (eg new seeds which can be used in different conditions), and also for technology to contribute to new means of obtaining and disseminating information about climate change and its impact.³ An exploration of the relationship between technology and climate change also raises questions of funding, other forms of regulation, sharing of technology, reward of innovators and how best to bring about an equitable outcome.⁴

The UNFCCC's work on technology has been led by the Expert Group on Technology Transfer ('EGTT') which was established in 2001. Technology acquired a more central role with the Bali Action Plan of 2007.⁵ This established the Ad Hoc Working Group on Long-Term Co-operative Action under the Convention. Draft documents of this body generated prior to its meetings at Copenhagen in December 2009⁶ and in Bonn in June 2010⁷ address technology, intellectual property ('IP') and approaches which could be taken to IP in seeking to achieve the Bali objectives regarding technology transfer.

As is considered in more detail later in this paper, however, the place of IP in the UNFCCC remains unclear. This also begs a deeper question: what is the importance of IP in encouraging innovation and investment in it regarding mitigation, adaptation and information

¹ All weblinks are accurate as at early October 2010. Note that all contributions represent the personal views of the authors, rather than any organisation with which they are linked. Many thanks to Katie Fitzgerald and Lorna Gallacher, both of the University of Edinburgh, for their support and assistance. Valuable contributions to our discussions were made by Mervyn Jones of Aquamarine Power and Navraj Singh Ghaleigh, University of Edinburgh.

² See website <http://unfccc.int/2860.php>.

³ See remit of Intergovernmental Panel on Climate Change http://www.ipcc.ch/working_groups/working_groups.htm; Working II focuses on adaptation, Working Group III focuses on mitigation and the Task Group on Data and Scenario Support for Impacts and Climate Analysis is based on information.

⁴ For this last issue, see eg Davies, A. 'Rescaling Climate Justice: sub-national issues and innovations for low carbon futures' accessible via http://regulation.upf.edu/index.php?id=dublin_2010.

⁵ See http://unfccc.int/meetings/cop_13/items/4049.php.

⁶ See Non paper 47

http://unfccc.int/files/meetings/ad_hoc_working_groups/lca/application/pdf/awglcatnp47061109.pdf

⁷ Ad Hoc Working Group on Long-term Cooperative Action under the Convention, Tenth Session, Bonn 11 June 2010, FCCC/AWGLCA/2010/6 see

http://unfccc.int/documentation/documents/advanced_search/items/3594.php?rec=j&preref=600005797#beg.

provision in respect of climate change? Are the appropriate questions being asked by the relevant international bodies? Funding has graciously been provided by the British Academy to Dr Abbe Brown of the University of Edinburgh for a project '*Obtaining, protecting and using essential environmental technologies: a holistic approach.*' This seeks to identify the impact of IP in relation to climate change and then to evaluate how, if necessary, the power of the IP owner could be managed.⁸

Since 2008, this issue has been receiving increasing attention not only from the UNFCCC bodies but also from academics and policymakers.⁹ In preparation for the first expert meeting of the British Academy funded project, Dr Brown explored the basic principles, literature and possible arguments relating to IP and climate change, and some other disciplines which should form part of the discussion, in her working paper '*Securing Access to Climate Change Technologies: Answers and Questions*'.¹⁰

The questions of access to essential technologies, and the place of IP, were explored at the first meeting of the project. This was an invitation only gathering of experts from the wide range of relevant fields, including competition law, human rights law and corporate social responsibility, which were considered to be relevant to the holistic scope pursued by the project. The participants, some of whom attended in person and some remotely, were Dr Abbe Brown, Navraj Singh Ghaleigh, Professor Anna Davies, Baskut Tuncak, David McGrory, Professor Keith Culver, Jon Santamauro, Associate Professor Estelle Derclaye, Associate Professor Kathryn McMahon, Mervyn Jones, Dr Suzanne Kingston, Douglas Taylor, Dr Elisa Morgera and Dr Kati Kulovesi.¹¹

As a means of stimulating our first discussions, all experts gave a presentation in response to the following (deliberately vague and controversial) motion: 'Technologies which are

⁸ The aims and objectives of the project can be found at <http://www.law.ed.ac.uk/essentialtechnologies/detailsoftheproject.aspx>.

⁹ See eg The Ad Hoc Working Group on Long-term Action Under the Convention, '*Ideas and Proposals on Paragraph 1 of the Bali Action Plan*,' FCCC/AWGLCA/16/Rev.1 [2008], Copenhagen Economics (2009) 'Are IPR a Barrier to the Transfer of Climate Change Technology' http://trade.ec.europa.eu/doclib/docs/2009/february/tradoc_142371.pdf cf Lee, B. et al (2009) 'Who Owns Our Low Carbon Future? Intellectual Property and Energy Technologies' Chatham House www.chathamhouse.org.uk/files/14699_r0909_lowcarbonfuture.pdf.

¹⁰ Brown, A.E.L. 'Securing access to climate change technologies: answers and questions', *University of Edinburgh School of Law Working Paper Series* (SSRN, 2010) http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1622024.

¹¹ For fuller details of participants and the breadth of expertise, see <http://www.law.ed.ac.uk/essentialtechnologies/events.aspx>.

essential to address climate change should be made available to all'. Copies of power-point presentations, and written summaries (together with other information relating to the project) can be found on the project website: <http://www.law.ed.ac.uk/essentialtechnologies/>.

Deep discussion and questioning followed each presentation, following the Chatham House principle for those that wished to avail themselves of it, and a full and confidential note was taken. Although all the participants did not agree in relation to all issues, there was a strong sense of agreement as to important themes, and as to the other disciplines which should be asked to form part of the ongoing work of the project. All those listed as authors have expressed views that have been incorporated into this working paper. Inevitably, the final paper does not represent the agreed views of these authors; it provides, however, an agreed overview of the points raised in the June 2010 meeting, and of the arguments explored and positions put forward. The meeting, discussions, and the successful collaboration in relation to this piece suggests that, despite differences in viewpoints, it is indeed possible for a holistic approach to be taken to obtaining, protecting and using essential environmental technologies and for a broad ranging debate to continue.

We have all learned a great deal from our discussions, from the opportunity to reflect upon one's ideas when these are challenged from the perspective of an apparently unrelated discipline and also from discussion of arguments from different jurisdictions and of the extent to which they may suggest avenues to be pursued elsewhere. If anyone would like to become involved in the project, or would like further information, they are welcome to contact Dr Brown at abbe.brown@ed.ac.uk. The next step in the project will be a further expert meeting in December 2010, at which more detailed papers will be presented developing in greater depth the points explored here, and which will form the base for a scholarly edited collection. For now, all comments on the work done so far are most welcome.

How important is IP in responding to climate change?

If groundbreaking and unique technology is developed which can have a significant impact on mitigation, adaptation or information provision in relation to climate change; and if a patent is obtained in respect of it; then this would lead to the patent owner having the ability to exclude others from making or using that technology. This would mean that the patent

owner could control the use of technology which, if it was made available more widely, could offer greater benefits to society.

Concern at the potential power of patent owners has already received significant attention in other industries, such as health, biotechnology and communications.¹²

How apt is a comparison between these other fields and climate change technologies; can climate change technologies really be said to be ‘essential’? In relation to mitigation, the prevailing view from our discussions was that in most cases, the comparison is not fitting. Firstly, there are alternative sources of renewable energy. The power of a patent owner is limited to the technology which is the subject of the patent; a wave-power related patent would control only the invention in question, not all innovation in the wave sector, and not all renewable technologies. Even if a patent had been obtained at the birth of harnessing wave power in the 1970s,¹³ this would not have an adverse impact on the ability of innovators and business to work in other sectors of renewable energy, for example wind power.¹⁴

Secondly, patents are national rights. Thus, even if one patent owner owned all patents in relation to wave power in the UK, this would not in itself enable it to control work in wave technologies, throughout the world.¹⁵ Even if a patent owner did own patents for these wave-power technologies in several countries, then, given the point made above, other forms of renewable technologies could still be explored in those countries, and may indeed be more suitable as a result of geographical differences—say, Wind Power in Continental Europe or Anaerobic Digestion, used to produce Biogas, in China.

Thirdly, studies regarding technologies and climate change suggest that more than one technology will continue to be relevant. The McKinsey Curve¹⁶ sets out the deployment cost

¹² For wide and deep discussion of this, see this important edited collection Maskus, K.E. and Reichman, J.H. (eds) (2005) *International Public Goods and Transfer of Technology Under a Globalized Intellectual Property Regime* Cambridge University Press, Cambridge, UK.

¹³ The Salter Duck, developed by Professor Steven Salter of the University of Edinburgh lay at the start of harnessing wave power. For more information, see <http://www.technologystudent.com/energy1/tidal7.htm> and <http://www.mech.ed.ac.uk/research/wavepower/>.

¹⁴ See eg patent obtained by City University, London in 2010, see press report http://www.city.ac.uk/news/archive/2010/05_May/040510_1.html.

¹⁵ See also discussion in Barton, J. (2007) ‘Intellectual Property and Access to Clean Energy Technologies in Developing Countries. An Analysis of Solar Photovoltaic, Biofuel and Wind Technologies’ <http://ictsd.org/i/publications/3354/> and Srinivas, K.R. ‘Climate Change, Technology Transfer and Intellectual Property Rights’ RIS-EP #153 April 2009 http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1440742.

¹⁶ Enkvist, P.A., Naucler, T. And Rosander, J, ‘*A Cost Curve for Greenhouse Gas Reduction*,’ [2007] 1 McKinsey Quarterly 35.

of a range of technologies necessary to reduce global warming by 2 degrees centigrade by 2030, and suggests that all options should be explored for there to be a prospect of emissions being reduced.¹⁷ Yet a 2010 study should also be borne in mind, as it argued that the public is more likely to respond to new technologies (eg buy more efficient light bulbs) rather than make changes to their own behaviour (eg turn out the lights).¹⁸

This discussion suggests that new technologies can make a contribution in relation to mitigation, even if they are not essential. Yet it can be argued that it is indeed appropriate to use the term ‘essential technologies’ in relation to mitigation. The first situation when this would be so involves cement. At present, 3.8% of global carbon dioxide (CO₂) emissions come from cement.¹⁹ Much of this is generated by those economies which are becoming affluent quickly; for example, China is reliant on cement. If there were to be new technologies which allow for the production of cement with minimal emissions of CO₂ and other associated pollutants such as mercury, and such technology was patented, this may enable private control of steps which could be taken to mitigate climate change.²⁰ Secondly, a patent owner may obtain or purchase patents for important technologies across the renewable sector- for example, wave, wind and biogas. Each patent may not confer power, but the combined suite may do so—producing what could be termed an essential patent owner. It is not clear, however, if this is a significant practical concern, given the differences between these different industry sectors. Thirdly, a patent may involve an element of infrastructure upon which several sectors of renewable energy may depend.

Finally, an entirely new form of generating power may be developed which is so clean and economical that alternative sources of energy (including conventional energy sources), are too inefficient and cannot compete. This could provide a different, and much more effective

¹⁷ The McKinsey Curve suggests that insulation has the potential to abate roughly 4 giga-tonnes of CO₂ per year which would cost around €9 per tonne; new forms of energy generation such as solar could abate 30 giga-tonnes of CO₂ per year, but it would cost €20 per tonne.

¹⁸ Dietz, T. ‘Narrowing the US Efficiency Gap’ PNAS September 14, 2010 vol. 107 no. 37 16007-16008

¹⁹ See the International Energy Agency’s 2007 Report ‘*Tracking Industrial Energy Efficiency and Co₂ Emissions*,’ available at <http://www.iea.org/Textbase/npsum/tracking2007SUM.pdf>.

²⁰ Regarding ongoing work in this area, see Cement Sustainability Initiative ‘New Cement Industry Figures on CO₂ and Energy Performance Show Reduction in Emissions Intensity’ (July 2010) <http://www.wbcsd.org/Plugins/DocSearch/details.asp?DocTypeId=251&ObjectId=Mzg1MzM&URLBack=/templates/TemplateWBCSD2/layout.asp%3Ftype%3Dp%26MenuId%3DMzcx%26doOpen%3D1%26ClickMenu%3DRightMenu> and http://wbcsdcement.org/index.php?option=com_content&task=view&id=57&Itemid=118. It is noteworthy, however, that some new technologies for sequestering/storing captured CO₂ from coal power plants into cement bricks have raised their own concerns over the overall environmental benefit, due to embedded heavy metals in building materials, see e.g. <http://ipsd.typepad.com/ipsd/2010/07/energy-ministers-endorse-clean-tech-measures-back-ccs-group.html>.

means, of mitigating climate change. The prospects of this may seem unlikely, and one example, Cold Fusion, has long been the subject of sceptical discussion.²¹ Yet it should be borne in mind that one prominent theory of innovation teaches that even if an innovation may appear unlikely to the incumbents in a field, there is always the prospect of an unexpected and radical innovation, which sweeps away established approaches.²²

The prospects of essential technologies existing may be more likely in relation to adaptation and information. If climate change does, as suggested by the Intergovernmental Panel on Climate Change lead to an increased incidence of vector-borne disease (such as malaria) or to the decimation of crops,²³ then new vaccines or plant varieties may be required. In terms of information provision, software for assessing and forecasting climate change impacts, or for measuring, reporting and verifying emission reductions may be important. Also important may be access to geospatial data and monitoring information.²⁴ Legislation does exist in the European Union to ensure that there can be wide access to some of this information, through the Directive On Public Access to Environmental Information and also the Directive on the re-use of Public Sector Information.²⁵ These instruments apply only to public authorities. The term ‘public authorities’ does include, in this context, private entities having public functions

²¹For overview of the fate of Cold Fusion, see discussion in Nature <http://www.nature.com/news/2007/070329/full/news070326-12.html>, and http://blogs.nature.com/news/blog/2010/03/acs_cold_fusion_calorimeter.html; and LENR-CANR.org <http://lenr-canr.org/>.

²²Schumpeter, A. (1943) ‘*Capitalism, Socialism and Democracy*’ George, Allen & Unwin Ltd, London, UK, 84, Geroski, P.A. ‘Intellectual Property Rights, Competition Policy and Innovation: Is There a Problem?’, (2005) 2:4 *SCRIPT-ed* 422 @: <http://www.law.ed.ac.uk/ahrc/script-ed/vol2-4/geroski.asp>, 427

²³See IPCC Working Group II Assessment Report 4 ‘Climate Change: Impacts, Adaptation and Vulnerability’ (2007) http://www.ipcc.ch/publications_and_data/publications_ipcc_fourth_assessment_report_wg2_report_impacts_a_daptation_and_vulnerability.htm, esp chapter 8 ‘Human Health’. For discussion of food more generally, see Haugen, H.M. (2007) *The Right to Food and the TRIPs Agreement with a Particular Emphasis on Development Countries Measures for Food Protection and Distribution*, Brill, Netherlands

²⁴See eg Infoterra <http://www.infoterra-global.com/> as an example of a company involved in this area. From the IP perspective, there has been increasing scholarly discussion regarding information control : see Waelde, C. ‘Databases and lawful users: the chink in the armour’ I.P.Q. 2006, 3, 256-282; Saxby, S. ‘Public policy and the digital geospatial representation of designated land use in the UK: Part 1’ and ‘Public policy and the digital geospatial representation of designated land use in the UK: Part 2’ J. Env. L. 2007, 19(1), 5-28 and J. Env. L. 2007, 19(2), 227-246; and Derclaye, E. ‘Intellectual property rights and global warming’ [2008] 12 *Marquette Intellectual Property Law Review*, 263

²⁵Directive 2003/4/EC, implemented in the UK by The Environmental Information Regulations 2004 (SI 2004 No. 3391) and Directive 2003/98/EC, implemented in the UK in the Re-use of Public Sector Information Regulations 2005 (SI 2005 1515). See discussion in Derclaye, E. ‘Does the Directive on the Re-use of Public Sector Information affect the State’s database sui generis right?’, in Gaster, J, Schweighofer, E and Sint, P. (eds.), *Knowledge rights—legal, societal and related technological aspects*. Austrian Computer Society, (2008)

or responsibilities;²⁶ it is highly unlikely, however, to cover the types of private entities which are more likely to be IP owners.²⁷

Thus as with other technologies, the owner of a software patent may be in a position of significant power if it could be established that an invention is particularly important for addressing climate change and no feasible substitutes are available. Owners of copyright and database rights could also be in a position of significant power in respect of the dissemination of particular data sets—and in some jurisdictions, the data sets themselves could be the subject of IP.

For such technologies, additional issues arise. For example, if standards are developed in relation to a particular technology, this would mean that businesses and customers would be either obliged, or feel obliged, to use the same or similar technology. Standards can be developed either formally, for example through the International Telecommunications Union,²⁸ or more informally through industry and consumer adoption of de facto standards. This has been seen in the communications industry in relation to Microsoft and Rambus which has led to cases considered below.²⁹ In order to address these matters, many organizations have patent policies which require disclosure of patents prior to consideration and adoption of the standard by the relevant body.³⁰

Thus in the case of an entirely new and radical innovation, a means of addressing existing significant outputs such as cement, some adaptation technologies and information monitoring, it can be argued that technologies could be essential to prevent and respond to climate change. If they are also the subject of IP, then a number of questions arise. On the one hand, some argue that the IP owner and investors in the technology should be rewarded for their innovation and creativity,³¹ and that imposing limits or exceptions on IP may

²⁶ The Carbon Trust which was found not to be a public authority and as such not open to consideration for disclosure—see decision of Information Commissioner www.ico.gov.uk/upload/documents/decisionnotices/2009/fs_50154684.pdf.

²⁷ See *HM Stationery Office v Green Amps Ltd* [2007] EWHC 2755, discussed in Derclaye, E. 'Of maps, Crown copyright, research and the environment' E.I.P.R. 2008, 30(4), 162-164

²⁸ See details of activity in relation to climate change at <http://www.itu.int/themes/climate/> and in relation to standardization at <http://www.itu.int/ITU-T/>

²⁹ See p34 et seq

³⁰ See, eg. the 'common patent policy' of the ISO, ITU and IEC from 2006 <http://isotc.iso.org/livelink/livelink/fetch/2000/2122/3770791/customview.html?func=ll&objId=3770791&objAction=browse>.

³¹ This is a wide and deep debate. See eg Mackaay, E. (1990 'Economic Incentives in Markets for Information and Innovation', *Harvard Journal of Law and Public Policy*, **13**(3), Summer, 867-909 and Merges, R.P.

preclude such important technologies, and their contribution to combating climate change, from being developed in the first instance. On the other hand, one may argue that limits should be imposed on the power of the IP owner to encourage the dissemination of these essential technologies. These perspectives will now be explored.

Limiting or enhancing the power of IP

The international framework

The relationship between private IP rights and public bodies and interests is, as noted, a topic of considerable debate. Some identify a clash between private IP rights and public interests, while others consider the two to be mutually supportive. This range of views is also reflected at the international level. States may have ratified, and have obligations under, the Kyoto Protocol to the UNFCCC in relation to the reduction of their greenhouse gas emissions.³² These states may also, like the United Kingdom, be members of the World Trade Organization ('WTO').³³ One of the annexes to the Agreement establishing the WTO is TRIPS—the Agreement on Trade-related Aspects of Intellectual Property Rights.³⁴

TRIPS sets out minimum requirements in relation to the level of protection to be provided to IP.³⁵ TRIPS also permits (but does not require) states to introduce some exceptions to the rights, and also to have compulsory licensing (that is, the use of an invention without the authorization of the patent owner), provided requirements are met.³⁶ There are also articles 7 and 8 TRIPS, which articulate that not only should IP contribute to the promotion of technological innovation as well as the transfer and dissemination of technology, but also that

(1994), 'Of Property Rules, Coase, and Intellectual Property', *Columbia Law Review*, **94**, 2655-73 both in Towse, R. and Holzhammer, (eds) (2002) *The Economics of Intellectual Property: vol I Introduction and Copyright* The International Library of Critical Writing in Economics 145, Edward Elgar Publishing Ltd, Cheltenham, UK at 8 and 95 respectively and Scherer, F.M. 'The Innovation Lottery' 3 in Dreyfuss, R.C. et al (eds) (2001) *Expanding the Boundaries of Intellectual Property. Innovation Policy for the Knowledge Society* Oxford University Press, Oxford, UK and New York, USA.

³²http://unfccc.int/kyoto_protocol/items/2830.php, see in particular articles 2 and 3. For details of ratification, see http://unfccc.int/kyoto_protocol/status_of_ratification/items/2613.php.

³³http://www.wto.org/english/docs_e/legal_e/legal_e.htm#wtoagreement. See list of member states at http://www.wto.org/english/thewto_e/whatis_e/tif_e/org6_e.htm

³⁴ The Agreement on Trade Related Aspects of Intellectual Property Rights, Annex 1C: see http://www.wto.org/english/tratop_e/trips_e/t_agm0_e.htm.

³⁵ Regarding patents, see article 27, regarding copyright see article 9

³⁶ Regarding patents, see article 30 and 31 and regarding copyright see article 9. For some history of compulsory licences, see Wadlow, C. 'The great pharmaceutical patent robbery, and the curious case of the Chemical Foundation' *I.P.Q.* 2010, 3, 256-292

members may adopt measures necessary to promote the public interest in areas of fundamental importance to their socio-economic and technological development—where such measures are consistent with the obligations provided for in TRIPS. Further, article 6 TRIPS states that TRIPS shall not address exhaustion of rights. This leaves it open to states to choose the approach they wish to take to goods which are the subject of IP being imported from another country where the IP-protected good has already been subject to a ‘first sale’ authorized by the right holder.³⁷ Finally, article 66(2) TRIPS mandates that developed country members shall implement policies to promote and encourage the transfer of technologies to least developed country members, although the implementation and effect of this provision has been questioned.³⁸ Conversely, article 1 (1) TRIPS provides that states may implement more extensive protection than is required, provided that such protection does not contravene the provisions of the TRIPS Agreement.

Against this backdrop, a state concerned about the relationship of IP and climate change may consider that it wishes to impose limits on IP to pursue its obligations under the UNFCCC or, if it is a member, under the Kyoto Protocol (or any regime which might follow the Kyoto Protocol, after the expiry of its first commitment period at the end of 2012). Conversely, a state may take a different approach and want to provide higher levels of IP protection, to encourage domestic innovation in relation to climate change.

The state seeking to impose limits on IP may consider that this is consistent with articles 7 and 8 TRIPS, the provisions regarding exceptions and compulsory licensing (articles 27(2), 30 and 31) and the silence of TRIPS regarding the importing of goods the subject of IP from another country.³⁹ Yet the WTO Dispute Settlement Understanding (another annex to the WTO Agreement)⁴⁰ enables states to complain about the conduct of other states.⁴¹ A

³⁷For a brief introduction to this, see Cottier, T. ‘The exhaustion of intellectual property rights—a fresh look’ IIC 2008, 39(7) 755-757

³⁸Moon, S. ‘Does TRIPS Article 66.2 encourage Tech Transfer to LDCs?’ (2008) http://www.unctad.org/en/docs/iprs_pb20092_en.pdf

³⁹See arguments in Gervais, D. ‘Intellectual Property and Human Rights: learning to live together’ 3 in Torremans, P. (ed) (2008) *Intellectual Property and Human rights* Wolters Kluwer and Yu, PK. ‘The Objectives and Principles of the TRIPS Agreement’ Houston Law Review [2009] 46(4) 979

⁴⁰Dispute Settlement Understanding (Annex 2 to the WTO Agreement) http://www.wto.org/english/docs_e/legal_e/28-dsu_e.htm. For resources regarding dispute resolution, see http://www.wto.org/english/tratop_e/dispu_e/dispu_e.htm.

⁴¹See eg *Canada — Patent Protection of Pharmaceutical Products* DS 114 http://www.wto.org/english/tratop_e/dispu_e/cases_e/ds114_e.htm. Canada was challenged when it sought to facilitate quicker access to products in its pharmaceutical industry by passing legislation enabling generic manufactures (that is, those other than the patent owner) to take steps towards obtaining regulatory clearance

developed country such as the United States, for example, may complain about the new legislation,⁴² possibly at the behest of the many IP based businesses which are based in that country.⁴³ If there is a finding that a state has acted inconsistently with its obligations under TRIPS, then trade sanctions may be imposed.⁴⁴ It should also be borne in mind that if a country has acted inconsistently with non-IP related obligations, the aggrieved Member State may waive the IP it would otherwise be obliged to offer to the other member states.⁴⁵ This differs from the arrangements available under the UNFCCC⁴⁶ and the compliance procedures which were set up in relation to the Kyoto Protocol.⁴⁷

Accordingly, states who wish to limit IP in a manner which goes beyond the existing flexibilities in TRIPS, or if states are concerned that other states might consider their measures to go beyond TRIPS, might wish to encourage, or take, action at the international level. One route could be seeking a new international declaration addressing access to essential technologies in relation to climate change; and another route could be arguing that if a complaint should be made about their national legislation, then the WTO bodies should look, in addition to TRIPS as a whole, to other fields of law when determining if there was indeed conduct which was inconsistent with TRIPS.

and manufacturing products before patents had expired. The panel found that part of the Canadian initiative (that relating to regulatory clearance) was consistent with Canada's obligations under TRIPS, but that the rest was not.

⁴² For details of environment related WTO disputes, see http://www.wto.org/english/tratop_e/envir_e/edis00_e.htm. For discussion of climate change and WTO more generally, see Cottier et al (eds) (2009) *International Trade Regulation and the Mitigation of Climate Change World Trade Forum* Cambridge University Press, UK

⁴³ See Shaffer, G.C. (2003) *Defending Interests: Public-Private Partnerships in WTO Litigation* Brookings Institution Press, Washington, USA

⁴⁴ See eg Warren F. Schwartz and Alan O. Sykes (2002) 'The Economic Structure of Renegotiation and Dispute Resolution in the World Trade Organization' *Journal of Legal Studies*, XXXI (1, Part 2), January, S179-S204, 52 and Steve Charnovitz (2001) 'Rethinking WTO Trade Sanctions' *American Journal of International Law*, 95(4), October, 792-832, 247) both in Mavroidis, P.C. and Sykes, A.O. (eds) (2005) *The WTO and International Trade Law/Dispute Settlement* Edward Elgar, Cheltenham, UK and Northampton, MA, USA.

⁴⁵ For example, see the dispute between the United States and Brazil over US cotton subsidies, WT/DS 267 http://www.wto.org/english/tratop_e/dispu_e/cases_e/ds267_e.htm. An August 2009 WTO arbitration report gave Brazil the right to use trade countermeasures against the US, and in specific circumstances to suspend intellectual property rights obligations—see discussion in *IP Watch, WTO/TRIPS, 7 September 2009*. See also see Grosse Ruse-Kahn, H. 'A pirate of the Caribbean? The attractions of suspending TRIPS obligations' *J.I.E.L.* 2008, 11(2), 313-364

⁴⁶ See article 14 UNFCCC regarding settlement of disputes

⁴⁷ See article 18 Kyoto Protocol, Decision 27/CMP 1 <http://unfccc.int/documentation/decisions/items/3597.php?such=j&volltext=27/CMP.1#beg> and details of activities at . See discussion in Oberthür, S. and Lefeber, R. 'Holding countries to account: The Kyoto Protocol's compliance system revisited after four years of experience' (2010) 1 *Climate Law* 133-158 and Doelle, M. 'Early Experience with the Kyoto Compliance System: Possible Lessons for MEA Compliance System Design' (2010) http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1628083.

The Declaration(s) route

As a matter of principle...

The likelihood of a declaration being made would form part of complex web of international politics in relation to IP.⁴⁸ Firstly, a declaration could be sought from an international institution which could require, or permit, that states take steps regarding the sharing of essential technologies. A declaration could be sought in the WTO, the UNFCCC (which might seem most appropriate for a declaration in relation to climate change), or the World Intellectual Property Organization ('WIPO'), the UN body responsible for administering international IP treaties.⁴⁹

A model for this could be the Declaration on the TRIPS Agreement and Public Health, passed by the WTO at Doha ('The Doha Declaration').⁵⁰ This declaration states that it is consistent with article 31 TRIPS⁵¹ for states to pass legislation which limits the power of IP owners in relation to national health emergencies, provided that the legislation meets the requirements set forth in article 31. The legal status of declarations is, however, unclear.⁵² It is also debatable whether or not the Doha Declaration did have an impact on the attitude of IP owners, and of states, to the licensing of IP to deal with national health emergencies.⁵³ Further, the Doha Declaration was made in an entirely different context, motivated by the threat of the spread of the AIDS epidemic in sub-Saharan Africa. The need for climate

⁴⁸ For discussion of the politics and power in relation to IP, see Sell, S.K. 'Cat and Mouse: Industries', States' and NGOs' Forum—Shifting in the Battle Over Intellectual Property Enforcement' (September 1, 2009) available at SSRN: <http://ssrn.com/abstract=1466156>; Dinwoodie, G. D. 'The international intellectual property law system: new actors, new institutions, new sources' (2006) 10:2 *Marquette Intellectual Property Law Review* 205-214; and Yu, P.K. 'Currents and crosscurrents in the International Intellectual Property Regime' (2004) *Loyola of Los Angeles Law Review* Vol 38

⁴⁹ For website, see <http://www.wipo.int/portal/index.html.en>.

⁵⁰ World Trade Organization 'Declaration on the TRIPS agreement and public health' DOHA WTO MINISTERIAL 2001: TRIPS. Adopted on 14 November 2001. WT/MIN(01)/DEC/2 20 November 2001 http://www.wto.org/english/thewto_e/minist_e/min01_e/mindecl_trips_e.htm.

⁵¹ See p11

⁵² Charnovitz, S. 'The legal status of the Doha Declarations.' *J.I.E.L.* 2002, 5(1), 207-211; Gathii, J.T. 'The Doha Declaration on Trips and Public Health Under the Vienna Convention of the Law of Treaties' *Harvard Journal of Law and Technology*, Vol. 15, No. 2, 2002, 292; Shanker, D. 'The Vienna Convention on the Law of Treaties, the Dispute Settlement System of the WTO and the Doha Declaration on the TRIPS Agreement' *J.W.T.* 2002 36(4) 721-772; and Hestermeyer, H. (2007) *Human Rights and the WTO. The Case of Patents and Access to Medicines* Oxford University Press, New York, USA 122 et seq, 129, 255-87

⁵³ Brazil did issue a compulsory licence for a patented AIDS drug after failing to reach an agreement with the patent holder with regards to lowering prices—see <http://ictsd.org/i/news/bridgesweekly/6490/> cf Abbott, F. and Reichman, J. 'The Doha Round's public health legacy: strategies for the production and diffusion of patented medicines under the amended TRIPS provisions.' *J.I.E.L.* 2007, 10(4), 921-987 and Kuanpoth, J. 'Patents and access to medicines in Thailand—the ddi case and beyond.' *I.P.Q.* 2006, 2, 149-158

mitigation, adaptation and information technologies can be argued to be distinct from the urgent need for medicines to address an unanticipated epidemic rapidly advancing through a population. Some may consider the two issues to be linked, however, if it could be established that a particular spread of disease occurred as a result of climate change, rather than being one which would have been expected in any event. Yet there is a great risk that such a declaration in the climate context could, in a counterproductive manner, delay implementation of more pragmatic, and less contentious, solutions, such as encouraging the further development of climate-related technologies.

More practically, if a declaration were to be pursued, in spite of these risks, what might it say?

The technology and information

How might the term ‘essential technology’ be described in a clear and transparent manner, consistent with good governance which has sought for the UNFCCC and other international institutions implicated by climate change?⁵⁴ A declaration could refer to the introduction by states of legislation regarding the provision of access to those technologies that have been established to be able to have a significant impact on greenhouse gas emissions, their evaluation and impact. For mitigation, this could cover the cold fusion-esque and cement type examples; from the adaptation perspective, it might include technologies for responding to an increased incidence of malaria; it could cover information which is important to assess macro and micro climate change developments. There may be arguments, however, as to what the appropriate levels of impact are and how this could be assessed properly. Consider, for example, the discussion in 2010 about the accuracy of the 2007 report of the Intergovernmental Panel on Climate Change⁵⁵ and indeed the fact that relevant data may, as noted, be under private control.

⁵⁴ See eg EGGT Report for Copenhagen 11 November 2009 FCCC/SB/2009/4/Summary <http://unfccc.int/resource/docs/2009/sb/eng/04sum.pdf>, referring to linkages with other UNFCCC bodies, para 3(b) and to its design process, para 5; UNESCAP, ‘What Is Good Governance’ (UNESCAP, 2009), available at <http://www.unescap.org/pdd/prs/ProjectActivities/Ongoing/gg/governance.asp>; and more generally Esty, D.C ‘Good governance at the World Trade Organization: building a foundation of administrative law’ *J.I.E.L.* 2007, 10(3), 509-527

⁵⁵ IPCC 4th Assessment Report 2007 http://www.ipcc.ch/publications_and_data/publications_and_data.htm cf: ‘Assessing an IPCC Assessment: An Analysis of Statements on Projected Regional Impacts in the 2007 Reports’ [2010] The Hague/Bilthoven located at <http://www.pbl.nl/en/publications/2010/Assessing-an-IPCC-assessment.-An-analysis-of-statements-on-projected-regional-impacts-in-the-2007-report.html>; and

A more straightforward approach, as a legal matter, may be for the declaration to refer to a national emergency, following the existing article 31(b) TRIPS and the approach taken by the Doha Declaration. One could argue, however, that this is merely storing up problems for a later date. As was noted above in relation to the Doha Declaration, there have been arguments that some countries are imposing compulsory licensing in situations which other countries do not consider to be a national emergency.⁵⁶ As also noted above, it is not clear whether or not the ability to access one component of ‘greenhouse-gas related technology’ (which may or may not be established to be required to respond to the emergency in question) would be viewed in the same light as the need to obtain particular medicines in the face of an advancing, infectious epidemic such as HIV/AIDS, tuberculosis or malaria⁵⁷ as noted in the Doha Declaration.⁵⁸ Further, the notion that patents are a barrier to access in the public health area is still a subject of great controversy. Given arguments in the context of climate change that a multiplicity of new technologies are needed over a sustained period of time, and the complex web of the politics and IP, there would appear to be even less likelihood of acceptance that individual patents pose obstacles to a national emergency.

Access on what terms

Yet if there is to be a declaration, and essential technology can be identified, what about matters of detail? Would licensing arrangements apply only to local manufacturers who wish to manufacture technology following the patent, or would it also cover those who wish to import from elsewhere—or indeed who must do, as they are unable to manufacture themselves?⁵⁹ And in terms of finances and reward, would the focus of any declaration be to

Interacademy Council (30 August 2010) ‘Review of the Process and Procedures of the IPCC’ <http://reviewipcc.interacademycouncil.net/report/Climate%20Change%20Assessments,%20Review%20of%20the%20Processes%20&%20Procedures%20of%20the%20IPCC.pdf>.

⁵⁶ See p13 and Doha Declaration, article 5(c).

⁵⁷ Subject to the points made above regarding adaptation

⁵⁸ See comparison of the validity of a comparison between health and climate change in Abbott. F.M. (2009) ‘Innovation and Technology Transfer to Address Climate Change Lessons from the Global Debate on Intellectual Property and Public Health’ <http://ictsd.org/i/publications/50454>.

⁵⁹ The Doha Declaration was noted to be of little help for those states with limited manufacturing capacity; and in 2003 there was a Decision at Cancun which looked beyond the present scope of TRIPS. This permitted (but did not require) the states to permit manufacture of drugs for export to and import by countries where there was a public health emergency, and where complex preliminary procedures were observed. See World Trade Organization ‘Implementation of paragraph 6 of the Doha Declaration on the TRIPS agreement and public health’ Decision of the General Council on 30 August 2003 WT/:/540 and Corr.1 http://www.wto.org/english/tratop_e/trips_e/implem_para6_e.htm and Chairperson’s statement 13 November 2003 WT/GC/M/82 http://www.wto.org/english/tratop_e/trips_e/gc_stat_30aug03_e.htm and World Trade

ensure that there can be no private control of relevant information or technology, with all those who wish to use it able to do so for payment? Or is it indeed to ensure that the information and technology is open to all for no charge?

The first option, from the viewpoint of IP owners and investors, would at least leave open the potential for some form of reward.⁶⁰ This would be consistent with TRIPS article 31(h), which states in relation to compulsory licences that ‘the right holder shall be paid adequate remuneration in the circumstances of each case, taking into account the economic value of the authorization’. That payment is still likely, however, to be less than that which IP owners may wish to charge others⁶¹ or what could be argued by those supporting IP as being required to justify investment in the research and development needed to stimulate the creation of the product. It would also still undermine the central right of the patents system—the right to exclude—and may hinder, rather than enhance, the development and dissemination of climate-related technologies. This is likely in turn to lead to IP owners resisting the imposition of limits on what can be done on the basis of IP.

In terms of the level of direction imposed by any declaration, should it require that countries have legislation which mandates IP owners to share the technologies in question on particular terms—a model which would be the inverse of TRIPS, and strongly resisted? Would it require that countries have legislation which permits IP owners to share the technologies in question on particular terms? Or would it provide that states may have legislation which permits IP owners to share the technologies in question on particular terms—a format closer to TRIPS and the Doha Declaration? Once again, the final option may raise the least objection from IP owners, but it may not be favoured by other interests.

Organization Ministerial statement adopted 14 September 2003
http://www.wto.org/english/thewto_e/minist_e/min03_e/min03_14sept_e.htm. For details of the use made of this, see ‘TRIPS and public health: dedicated webpage for notifications’
http://www.wto.org/english/tratop_e/trips_e/public_health_e.htm. A formal amendment to TRIPS in these respects has been agreed, with a deadline for acceptance of 2011. World Trade Organization Decision of the General Council 6 December 2005 ‘Amendment of the TRIPS Agreement’ WT/L/641
http://www.wto.org/english/tratop_e/trips_e/wtl641_e.htm and Chairperson’s statement
http://www.wto.org/english/news_e/news05_e/trips_319_e.htm. The deadline for acceptance has been extended to December 2011—for status update, see http://www.wto.org/english/tratop_e/trips_e/amendment_e.htm.

⁶⁰See p9

⁶¹ See discussion in Taubman, A. ‘Rethinking TRIPS: ‘adequate remuneration’ for non-voluntary patent licensing’ J.I.E.L. 2008, 11(4), 927-970

Finally, reverting to the question of fora, where could any declaration be made—and there is the accompanying question, of which body should make the decision as to whether or not a technology is essential.

Forum

At the WTO, the Doha Declaration came after difficult political negotiations—even after, as has been noted, a backdrop of strong international concern at the use of patent based arguments to prevent access to essential medicines, for example in relation to legislation passed in South Africa.⁶² As noted above, there is scope for some arguments to be made in relation to the existence of essential technologies regarding adaptation and information technologies and possibly also in relation to new mitigation technologies. These arguments must be acknowledged, however, to be less forceful than those in relation to pharmaceutical drugs, with the possible exception, once again, of diseases, eg tropical diseases such as malaria, whose spread may be directly linked to climate change. Another declaration in the WTO may not be feasible.

At WIPO, there have been significant changes in approach and outlook within WIPO, leading to the establishment of the WIPO Development Agenda.⁶³ There have been attempts to discuss climate change issues in relation to IP, for example at the discussions of WIPO Patent Standing Committee,⁶⁴ but there has not been swift progress. This again suggests that a declaration may not be feasible.

⁶²Medicines and Related Substances Control Act 1965 as amended by the Medicines and the Related Substances Control Amendment Act 1997. See also Murakyembe, H. and Kanja, G.M. ‘Implications of the TRIPS Agreement on the Access to Cheaper Pharma Drugs by Developing Countries: Case Study of South Africa v The Pharmaceutical Companies’ Zambia Law Journal vol 34, 2002, 111 and Cameron, E. and Berger, J. ‘Patents and Public Health: Principle, Politics and Paradox’ Inaugural British Academy Law Lecture <http://www.law.ed.ac.uk/ahrc/script-ed/docs/cameron.asp>.

⁶³ Geneva Declaration on the Future of the World Intellectual Property Organization <http://www.cptech.org/ip/wipo/futureofwipodeclaration.html> and ‘The 45 Adopted Recommendations under the WIPO Development Agenda’ <http://www.wipo.int/ip-development/en/agenda/recommendations.html> and see generally <http://www.wipo.int/ip-development/en/agenda/>. See also Deere-Birkbeck, C. and Marchant, R. ‘The Technical Assistance Principles of the WIPO Development Agenda and their Practical Implementation’ ICTSD Issue Paper No. 28 March 2010 http://ictsd.org/downloads/2010/04/deere_marchant_new2.pdf.

⁶⁴ See report of 13th Meeting at http://www.wipo.int/edocs/mdocs/scp/en/scp_13/scp_13_7.pdf. and 14th meeting at http://www.wipo.int/edocs/mdocs/scp/en/scp_14/scp_14_9_rev.pdf and report from Knowledge Ecology International <http://keionline.org/node/776>. The 15th meeting was held in mid October 2010 http://www.wipo.int/meetings/en/details.jsp?meeting_id=19684 (see item 20 on non exhaustive list of issues http://www.wipo.int/edocs/mdocs/scp/en/scp_15/scp_15_inf_2.doc and the inclusion of climate change in the list of issues for in the Chair’s Summary of 15 October 2010 (see annex) although not in the list of future work (see para 12) http://www.wipo.int/edocs/mdocs/scp/en/scp_15/scp_15_5.doc).

Discussions within the UNFCCC have also not proceeded swiftly, as can be seen from the Copenhagen Climate Change Conference discussions in December 2009.⁶⁵ Prior to Copenhagen there were discussions in the policy and academic sphere about introducing some form of compulsory licensing of IP to facilitate the transfer of climate change related technologies—albeit without deep discussion as to why and how this might be required.⁶⁶ There were strong objections to this within some⁶⁷ of the IP owning community in the United States, culminating in a letter written to President Obama arguing that there should be no declaration.⁶⁸ In the light of these divergent views, work on IP does still proceed.⁶⁹

Given the slow movement of the international climate change meetings, it might seem counterproductive for a declaration relating to IP to be sought within the UNFCCC—given that there is at least some focus on IP within WIPO and the WTO. Yet one may ask whether it is preferable for the discussions about IP to continue now in the UNFCCC even if this might mean that progress at the UNFCCC regarding climate change is delayed for a time? One's attitude to this will depend on a number of factors. If the prospects of a new groundbreaking technology, a significant impact on existing emissions, information control or addressing the impacts of climate change on health and food provision are not perceived to be likely or of importance, then focus on this in the UNFCCC is unlikely. However, some would argue that deeper discussion of IP at the UNFCCC would be worthwhile if there is concern at what might arise from the private ownership of technology.

⁶⁵ For meeting reports, see http://unfccc.int/meetings/cop_15/conference_programme/items/5071.php.

⁶⁶ See footnote 9 and Abbott, F.M. (2009) 'Innovation and Technology Transfer to Address Climate Change Lessons from the Global Debate on Intellectual Property and Public Health' <http://ictsd.org/i/publications/50454/>. See also Copenhagen Economics (2009) 'Are IPR a Barrier to the Transfer of Climate Change Technology' http://trade.ec.europa.eu/doclib/docs/2009/february/tradoc_142371.pdf cf Lee, B. et al (2009) 'Who Owns Our Low Carbon Future? Intellectual Property and Energy Technologies' Chatham House www.chathamhouse.org.uk/files/14699_r0909_lowcarbonfuture.pdf.

⁶⁷ Apple and Nike parted ways with the US Chamber of Commerce over differences of opinion on climate policies. <http://ipsd.typepad.com/ipsd/2009/10/dissent-in-the-ranks-apple-joins-pge-nike-and-others-in-parting-ways-with-us-chamber.html>.

⁶⁸ See letter from US senators to the President of the United States sent 2 November 2009, which has been accessed via <http://www.ip-watch.org/weblog/wp-content/uploads/2009/11/110209obamasenateletter1.pdf>. This refers repeatedly to weakening IP.

⁶⁹ Eg IP is, along with many other items, on the agenda of the Ad Hoc Working Group on Long-term Cooperative Action under the Convention, Tenth Session, Bonn 11 June 2010, FCCC/AWGLCA/2010/6 see https://unfccc.int/documentation/documents/advanced_search/items/3594.php?rec=j&preref=600005797.

In addition, views regarding which UN agency is most suitable to handle IP discussions will have an impact. UNFCCC is concerned with stabilizing greenhouse gases and preventing dangerous impacts of climate change.⁷⁰ WIPO is a ‘specialized agency of the UN’ dedicated to IP and is generally acknowledged as the UN agency with the most expertise in that topic.⁷¹ This suggests that if the aim is to address IP, the discussions and any declaration should be pursued in the UN forum most suited to topic—WIPO. This argument does not, however, address the complex question of the relationship between the WTO and WIPO in relation to IP,⁷² and the fact that a non UN body, the WTO, arguably is the main international body now in relation to IP.⁷³

In summary, there is the potential (albeit slim), for a declaration to be made. It could be made at the WTO, WIPO or the UNFCCC. Consistent with our aim of a holistic approach, a declaration could be pursued in parallel, in each of the three bodies. This would be a novel approach; but if there were such declarations, this would send a strong statement as to the balance of interests between private and public, reward and openness, which the international community considered appropriate. It would also remove some of the opportunities for forum shopping and regime shifting which may arise if, say, a declaration is made only at WIPO, which could be argued to be irrelevant if dispute should arise in relation to, say, the Kyoto Protocol or TRIPS.

Scope for a wide approach to existing international obligations

Given the points made above regarding international dispute settlement, the system of most interest is that of TRIPS. Regarding the impact of declarations made outside the WTO, the key issue is the stance which is taken by the WTO dispute settlement bodies to fields other than trade law (specifically, here, IP), such as the Kyoto Protocol and human rights. This could arise if a state has legislation which seeks to limit the power of patent owners and the WTO body must determine whether or not a state has acted consistently with its obligations

⁷⁰ See UNFCCC, Article 2.

⁷¹ See ‘About WIPO,’ available at http://www.wipo.int/about-wipo/en/what_is_wipo.html.

⁷² A fascinating starting point in this field in Drahos, P. with Braithwaite, J. (2002) *Information Feudalism : who owns the knowledge economy*, Earthscan

⁷³ Although note that discussions also continue in relation to IP in fora quite outside the WIPO and WTO. For details of the ongoing secret negotiations, in 2010 of the proposed new agreement outside, Anti-Counterfeiting Trade Agreement, see the resources at <http://www.laquadrature.net/en/ACTA>. The politics of IP (see footnote 48) continue to run deep.

under TRIPS or has moved beyond the flexibilities available in articles 27(2) 30 and 31 TRIPS discussed above. Article 31 of the Vienna Convention on the Law of Treaties 1969,⁷⁴ which determines how these provisions might be interpreted, is highly relevant to this discussion.⁷⁵

The more traditional view is that fields other than trade law are not relevant.⁷⁶ For those who move beyond that, there is also disagreement between scholars as to whether regard could be had to other instruments in interpreting TRIPS where the parties to TRIPS and the other instruments (say, the Kyoto Protocol) are not the same.⁷⁷ The point has been raised at the WTO. In the *Shrimp Turtle* case, the WTO decision makers had regard to the Cartagena Protocol on Biosafety to the Convention on Biological Diversity, even though not all parties to the dispute were members of it.⁷⁸ This has been much criticised as inconsistent with the Vienna Convention on the Law of Treaties.⁷⁹ In the *Biotech* case,⁸⁰ it was argued that the Panel could look to the Cartagena Protocol when considering the ‘ordinary meaning’ of WTO provisions.⁸¹ The Panel considered that it could look to this as informative of widely

⁷⁴ UNTS vol 1155, p331

⁷⁵ See article 3.2 Dispute Settlement Understanding and *United States — Standards for Reformulated and Conventional Gasoline* DS2 http://www.wto.org/english/tratop_e/dispu_e/cases_e/ds2_e.htm, see also discussion of the Vienna Convention in eg *Korea — Measures Affecting Government Procurement* DS 163 http://www.wto.org/english/tratop_e/dispu_e/cases_e/ds163_e.htm. Article 31(1) Vienna Convention states that treaty provisions are to be interpreted in good faith, in accordance with the ordinary meaning to be given to the terms of the treaty, in their context and in light of their object and purpose; Article 31(2) provides that the context will include agreements made between the parties in relation to the treaty; Article 31 (3) states that account shall also be taken of agreements between the parties regarding its interpretation and sub-section (c) provides that any relevant rules of international law which are applicable in the relations between the parties should be taken into account when interpreting a treaty.

⁷⁶ For discussion of this and the extent to which decision makers could or should look more widely, see Howse, R. ‘The Most Dangerous Branch? WTO Appellate Body Jurisprudence on the Nature and Limits of the Judicial Power’ 11 in Cottier, T and Mavroidis, P.C.(eds) (2003) *The Role of the Judge in International Trade Regulation. Experience and Lessons for the WTO* University of Michigan Press, Ann Arbor, USA

⁷⁷ See McLachlan, C. ‘The principle of systemic integration and Article 31(3)(c) of the Vienna Convention’ *I.C.L.Q.* 2005, 54(2), 279-319 and French, D. ‘Treaty interpretation and the incorporation of extraneous legal rules’ *I.C.L.Q.* 2006, 55(2), 281-314

⁷⁸ *United States — Import Prohibition of Certain Shrimp and Shrimp Products* DS 58 http://www.wto.org/english/tratop_e/dispu_e/cases_e/ds58_e.htm.

⁷⁹ See eg Kulovesi, K. ‘A link between interpretation, international environmental law and legitimacy at the WTO dispute settlement?’ *Int. T.L.R.* 2005, 11(6), 188-196; Francioni, F. ‘WTO Law in context: the integration of International norms on human rights and environmental protection in the dispute settlement process.’ 143 and Weiss, F. ‘The limits of the WTO: facing non-trade issues’ 155 in Sacerdoti, G. et al (eds) (2006) *The WTO at Ten: the Contribution of the Dispute Settlement System* Cambridge University Press, Cambridge, UK; Howse, R. ‘The Appellate Body Rulings in the Shrimp/Turtle Case: A New Legal Baseline for the Trade and Environment Debate’, available at <http://www.worldtradelaw.net/articles/howshrimp.pdf> published at 2002 27 *Colum. J. Envtl. L.*; and Howse at footnote 76.

⁸⁰ *EC—Measures Affecting the Approval and Marketing of Biotech Products* DS291 http://www.wto.org/english/tratop_e/dispu_e/cases_e/ds291_e.htm.

⁸¹ Within Vienna Convention article 31(1)(a).

(although not wholly) accepted intentions of nations—but it considered that this was not required in that dispute.⁸²

More widely, work from some scholars does argue that human rights and the environment should be considered alongside trade law⁸³ although this has received more attention from commentators than from WTO dispute settlement bodies. It may therefore seem less likely that a state would be minded to rely on human rights arguments. Nonetheless, a state may choose to argue, say in support of legislation requiring that malaria vaccines and drought resistant seeds are made more widely available, that the WTO dispute settlement body should have regard to rights set out in international human rights treaties.⁸⁴ Relevant rights⁸⁵ would be to life,⁸⁶ to health⁸⁷ and to share in the benefits of scientific progress and its application.⁸⁸ Note also the resolution of the Office of the High Commissioner for Human Rights that rights to life, health, food, clean drinking water and adequate housing are likely to be implicated by the effects of climate change.⁸⁹ Regional human rights instruments (which may have a place before the WTO, depending on the position taken in relation to the parties to the dispute and the treaty, as discussed above) also include some provisions which could appear relevant to a dispute involving IP and the environment. Article 24 African Charter on Human and People's Rights,⁹⁰ provides that all people shall have a right to a general satisfactory environment

⁸² See *EC—Measures Affecting the Approval and Marketing of Biotech Products* DS291

http://www.wto.org/english/tratop_e/dispu_e/cases_e/ds291_e.htm paras 7.92-5

⁸³ Marceau, G. 'WTO dispute settlement and human rights.' *E.J.I.L.* 2002, 13(4), 753-814; Petersmann, E-U. 'Human Rights and International Trade: Defining and connecting the Two Fields' 29 in Cottier, T., Pauwelyn, J. and Burgi Bonamoi, E. (eds) (2005) *Human Rights and International Trade* Oxford University Press, Oxford, UK; and Frankel, S. 'WTO Application of 'the Customary Rules of Interpretation of Public International Law' to Intellectual Property' 46 *Va. J. Intl L.* 365 2005-6

⁸⁴ For membership of international human rights treaties at <http://treaties.un.org/Pages/Treaties.aspx?id=4&subid=A&lang=en>.

⁸⁵ For discussion of these articles and IP, see Shaver, L. 'The Right to Science and Culture' *Wisconsin Law Review*, Vol. 2010, p. 121 and Matthews, D. 'Intellectual Property, Human Rights and the Right to Health' in Grosheide, W. (ed) 2010 *Intellectual Property and Human Rights. A Paradox* Edward Elgar, UK. Regarding human rights and the environment more generally, see Boyle, A. 'Human Rights or Environmental Rights? A Reassessment' (2007) *Fordham Environmental Law Review* Vol XVIII, pp.471-511.

⁸⁶ See eg Article 6 International Covenant on Civil and Political Rights 1966 <http://www2.ohchr.org/english/law/ccpr.htm>.

⁸⁷ See eg Article 12 Covenant on Economic, Social and Cultural Rights 1966 <http://www2.ohchr.org/english/law/cescr.htm>.

⁸⁸ See Article 27 Universal Declaration on Human Rights 1948 <http://www.un.org/en/documents/udhr/>, Article 15 Covenant on Economic, Social and Cultural Rights 1966 and Article 15 Universal Declaration on Bioethics and Human Rights 2005 http://portal.unesco.org/en/ev.php-URL_ID=31058&URL_DO=DO_TOPIC&URL_SECTION=201.html.

⁸⁹ See recital 7 of the Resolution of the Human Rights Council of the Office of the High Commissioner for Human Rights 25 March 2009 http://www2.ohchr.org/english/issues/climatechange/docs/resolution10_4.doc.

⁹⁰ See <http://www.hrcr.org/docs/Banjul/afhr.html>.

favourable to their development; article 37 EU Charter of Fundamental Rights,⁹¹ which has been recognised as having the same legal value than the EU Treaties since the entry into force of the Treaty of Lisbon,⁹² articulates that the European Union must integrate into its policies a high level of environmental protection as well as improvement to the quality of the environment; and article 11 of the Treaty on the Functioning of the European Union states that : ‘Environmental protection requirements must be integrated into the definition and implementation of the Union’s policies and activities, in particular with a view to promoting sustainable development.’

Yet even if a decision maker was minded to look to the human rights discussed above, this would not necessarily lead to a decision that legislation regarding wider access to particular technology was consistent with WTO obligations. There is also an international human right to ‘benefit from the protection of the moral and material interests resulting from any scientific, literary or artistic production’ which a person has authored.⁹³ If the European Union is involved, the European Convention of Human Rights, whose rights have been found to be fundamental rights of the EU,⁹⁴ includes a right to property which has been held in the *Budweiser* case to extend to IP;⁹⁵ and the EU Charter refers to IP, and states that it must be protected.⁹⁶

Regarding the international right, a General Comment from the UN Committee on Economic Social and Cultural Rights does make it clear that this should be limited to individual creators, rather than corporate IP owners, and should also be seen as strongly dependent upon

⁹¹ Charter of Fundamental Rights of the European Union 2000/C/264/01 see http://www.europarl.europa.eu/charter/pdf/text_en.pdf.

⁹² See article 6 (1) Treaty on European Union.

⁹³ Article 15(1)(c) of the International Covenant on Economic, Social and Cultural Rights 1976. See also Chapman, A.R ‘Approaching intellectual property as a human right: obligations related to Article 15(1)(c)’ Copyright Bulletin, vol XXXV No. 3, July-September 2001 UNESCO Publishing; CIPR p6.

⁹⁴ *Internationale Handelsgesellschaft mbH v Einfuhr- und Vorratsstelle fur Getreide und Futtermittel* (11/70) [1970] E.C.R. 1125

⁹⁵ There is a right in ECHR Protocol 1, article 1—right to enjoyment of property, which the ECtHR held was a right to property *Marckx v Belgium* (A/31) (1979-80) 2 E.H.R.R. 330, para 63; *Anheuser-Busch Inc v Portugal* (73049/01) [2007] E.T.M.R. 24 (2007) 45 E.H.R.R. 36 confirmed that this right applied to an application for a trade mark. For comprehensive analysis of decisions of European human rights bodies in relation to IP, see Helfer, L.R. ‘The New Innovation Frontier? Intellectual Property and the European Court of Human Rights’ Harvard Journal of International Law Vol 49. No. 1 Winter 2008.

⁹⁶ MacCormick, N. ‘Human Rights and Competition Law: Possible Impact of the Proposed EU Constitution’, (2005) 2:4 *SCRIPTed* 444 @: <http://www.law.ed.ac.uk/ahrc/script-ed/vol2-4/maccormick.asp> and Geiger, C. ‘Intellectual property shall be protected!? Article 17(2) of the Charter of Fundamental Rights of the European Union: a mysterious provision with an unclear scope’ *E.I.P.R.* 2009, 31(3), 113-117.

other human rights.⁹⁷ Nonetheless, this point raises again the question of the positive contribution which can be made by IP. There will be those who have, or may develop health needs in areas where treatments are not yet available. It could be argued that stronger IP incentives may enhance the future delivery of this set of rights.

Accordingly, the human rights contribution to the decision making process is likely to be balanced, or in favour of the obligations imposed by TRIPS in relation to patents, rather than to support limits on patents. If patented technology could be argued to be essential, then the focus shifts to access. This could contribute, then, to a discussion of what is an appropriate limit on the rights of a patent owner within TRIPS, in particular to article 31; but it still may not prevail.

A different declaration

The review so far has focused on the view of those states that would seek to limit IP. As can be seen there are a number of difficult issues that confront these states. To the contrary, there may be states that seek exploit the flexibilities of TRIPS to strengthen IP rights, by seeking this as the best means of providing incentives for the development and dissemination of climate-related technologies. For these states, what is sought is greater clarity and workability within the existing IP regime, to deliver a system more favourable to IP owners, in order to incentivise the creation and, through licensing, the distribution of what could be essential, new technologies. As a result, states may choose to enhance IP, for example through patent term extensions, so-called ‘wild card’ patent extensions, substantive patent law harmonization, and other means of enhancing legal certainty and new incentives to innovate.⁹⁸

The declaration approach could also be used to try to accomplish these quite different goals. A declaration of this nature could recognise the possibility of extending patent terms to overcome processing delays that impede the dissemination of particular technologies.⁹⁹ However, just as was seen in relation to declarations limiting the power of IP, the political

⁹⁷ General Comment No. 17 (2005) <http://www2.ohchr.org/english/bodies/cescr/comments.htm>. See also discussion in Brown, A.E.L. ‘Socially responsible intellectual property: a solution?’ (2005) SCRIPT-ed Vol.2, Issue 4, 519-550.

⁹⁸ See eg. Maskus, ‘Differentiated Intellectual Property Regimes for Environmental and Climate Technologies’, OECD Environment Working Papers, No. 17, OECD Publishing (2010).

⁹⁹ See p26 regarding new approaches taken by national patent offices

feasibility of achieving a declaration of this type is unlikely. In the future, this project will further consider the relationship of IP in facilitating the development and distribution of climate-related technologies.

Summary

This review suggests so far that only a small range of technologies are likely to be capable of being considered essential such that they must be shared, be that for free or for payment. It also suggests that the present international regimes which are relevant to this question—UNFCCC, WIPO, WTO do not provide straightforward means for this to be achieved, either through declaration or through dispute resolution. This is particularly so given the wide range of views which exist in relation to the topic, notably the positive points which can be made about IP and arguably the strong linkage between IP and human rights. Does this mean that a focus on access to technologies in the broader context is misconceived?

The importance of technologies

It is submitted that it is not. The Accord resulting from the Copenhagen Climate Change Conference in 2009 notes the importance of technology in responding to climate change and proposes a new fund and mechanism to assist in technology transfer.¹⁰⁰ Technologies, in particular groups of established technologies (for example a set of solar panel components), may not be essential—but they can be very important. There may be other options which could be used rather than these established groups, but there might not be the local capacity or resources available for this to be done. This may not warrant interference with IP (indeed, older technologies may no longer be the subject of IP), but it does suggest that some activity in relation to access to technology, and technology transfer, may be worthwhile. What other approaches could be taken? Some options in this respect are now set out.

Better IP more quickly...

¹⁰⁰ Copenhagen Accord FCCC/CP/2009/11/Add.1 <http://unfccc.int/resource/docs/2009/cop15/eng/11a01.pdf>, paras 10 and 11. See also detailed discussion of IP and technology transfer in relation to climate change in Hall, B.H. and Hemers, C. 'The role of patent protection in (clean/green) technology transfer' March 2010 Santa Clara High Technology Law Journal http://elsa.berkeley.edu/~bhhall/papers/HallHelmers10_SCHTLJ_techtransfer.pdf, and in relation to IP and the Copenhagen Accord in Bonadio, Enrico, 'Climate Change and Intellectual Property' (October 05, 2010). European Journal of Risk Regulation, p. 72, March 2010. Available at SSRN: <http://ssrn.com/abstract=1686962>.

The relationship between IP and innovation is well established, although as noted it is challenged by some.¹⁰¹ It is clear that some will not invest in innovation if they cannot obtain IP. This is particularly so in respect of venture capitalists, a very important source of funding for start up enterprises so that they can commercialise their inventions.¹⁰² It can also take years before IP can be obtained, and this can mean that businesses and investors are proceeding on the basis of IP, and advice in relation to it, even though it is unclear if the IP will be granted.¹⁰³ In the light of this, it is important that, as suggested above in relation to the declaration, efforts are made to encourage the quicker and more efficient examination of patents and their grant where appropriate. It should also be borne in mind, however, that a more slow moving system can allow more time to assess the environmental consequences of a particular technology. If patents are to be granted more quickly, then there is a need for IP policies which facilitate accelerated assessment of the environmental consequences, such as a broader research or experimental-use exemption.¹⁰⁴ There is also uncertainty as to what will be considered novel and inventive, and this can impose a risk which could deter investors.¹⁰⁵ Greater predictability, always a goal for investors and patent seekers, as to what might be granted would be important here.

From a practical perspective, some steps are being taken to enhance the contribution of the positive elements of IP which were discussed above. The UK Intellectual Property Office ('UK-IPO') has launched new procedures to enable an application to be considered as quickly as possible, and moreover is establishing 'a new database of green inventions'.¹⁰⁶

¹⁰¹ See footnotes 15 and 31.

¹⁰² See eg WIPO page 'Intellectual Property—the Basis for Venture Capital Investments' http://www.wipo.int/sme/en/documents/venture_capital_investments.htm and BVCA Term Sheet Guide, p2,11 http://admin.bvca.co.uk/library/documents/Term_Sheet.DOC.

¹⁰³ See discussion in the UK Gowers Review of Intellectual Property 2008, http://webarchive.nationalarchives.gov.uk/+/http://www.hm-treasury.gov.uk/d/pbr06_gowers_report_755.pdf, sections 3.16-8.

¹⁰⁴ Cf from biotechnology perspective Bor, F. 'Exemptions to patent infringement applied to biotechnology research tools' *E.I.P.R.* 2006, 28(1), 5-14 and Cook, T. 'Responding to concerns about the scope of the defence from patent infringement for acts done for experimental purposes relating to the subject matter of the invention' *I.P.Q.* 2006, 3, 193-222

¹⁰⁵ See discussion in Derclaye, E. 'Not Only Innovation but also Collaboration, Funding, Goodwill and Commitment: Which Role for Patent Laws in Post-Copenhagen Climate Change Action' 9 *J.Marshall Rev. Intell. Prop. L.* 657 (2010).

¹⁰⁶ See 2009 Press Release of the UK Intellectual Property Office <http://www.ipo.gov.uk/about/press/press-release/press-release-2009/press-release-20090512.htm> and from 2010 <http://www.ipo.gov.uk/about/press/press-release/press-release-2010/press-release-20100604.htm>.

Similar arrangements exist in Canada¹⁰⁷ and the United States.¹⁰⁸ In 2010, the European Patent Office launched a reclassification scheme, with a new symbol for sustainable energy technologies.¹⁰⁹

....bearing in mind other forms of encouraging innovation

A patent is not necessarily the most appropriate course of action for all innovation; collaboration, prizes and trade secrets can all have a role. Yet education in innovation is based strongly in IP; it would be of interest to note the impact of new wider education in relation to other forms of supporting innovation, for example from the UK perspective by a combination of the Department for Environment, Food and Rural Affairs¹¹⁰ and the UK IPO. Even for those who seek patents, education could include reminders of initiatives such as Eco Patent Commons¹¹¹ and the Industry Technology Facilitator,¹¹² and from the software field Creative Commons,¹¹³ as evidence that new forms of sharing innovation can be embraced by innovators, creators and business.

Continuing this theme, there could be more state funding of innovation, for example through UK's Technology Strategy Board.¹¹⁴ But there are questions, at least in 2010, as to the funding which can be available for state sponsored innovation or indeed, encouraging greater investment by banks. Some steps have been taken in relation to climate change, for example there is a prize in the UK in relation to carbon capture storage.¹¹⁵ In Scotland, the Saltire

¹⁰⁷ See Canadian Intellectual Property Office <http://www.cipo.ic.gc.ca/eic/site/cipointernet-internetopic.nsf/eng/wr02462.html>.

¹⁰⁸ See US Patent and Trademark Office http://www.uspto.gov/news/pr/2009/09_33.jsp. Note also ongoing consultation regarding technologies that address humanitarian needs—see <http://www.federalregister.gov/articles/2010/09/20/2010-23395/request-for-comments-on-incentivizing-humanitarian-technologies-and-licensing-through-the>.

¹⁰⁹ See discussion from EPO at <http://www.epo.org/topics/news/2010/20100727.html>. and on Green Patent Blog (10 June 2010) <http://greenpatentblog.com/2010/06/20/shedding-light-on-green-patents-epo-and-ukipo-launch-clean-tech-patent-databases/>.

¹¹⁰ <http://ww2.defra.gov.uk/>.

¹¹¹ <http://www.wbcds.org/templates/TemplateWBCSD5/layout.asp?ClickMenu=special&type=p&MenuId=MTU10Q>

¹¹² <http://www.oil-itf.com/>.

¹¹³ <http://creativecommons.org/>

¹¹⁴ <http://www.innovateuk.org/aboutus.ashx>.

¹¹⁵ For Government comment and links, see Department of Energy and Climate Change http://www.decc.gov.uk/en/content/cms/what_we_do/uk_supply/energy_mix/ccs/demo_comp/demo_comp.aspx. For discussions in March 2010 regarding the prospects of Scottish Power, see <http://news.scotsman.com/scotland/ScottishPower-to-get-share-of.6126349.jp>.

Prize launched in 2008¹¹⁶ offers a state funded reward of £10million to the team that successfully demonstrates a commercially viable wave or tidal stream energy technology in Scottish waters and which produces the greatest volume of electrical output over a set minimum. The Saltire Prize does allow, however, entrants to retain ownership of their IP¹¹⁷ State funded prizes raise questions of the extent to which the state can properly judge future directions of innovation and seek to regulate it;¹¹⁸ and also whether or not it is appropriate for there to be private ownership of IP which has resulted from work which has been rewarded with a state funded prize. Conversely, there are some privately-funded innovation awards, notably €25m Virgin Earth Challenger climate change innovation.¹¹⁹

Another form of protecting innovation (with the Coca-Cola formula being the quintessential example), is relying on trade secrets. Patents and trade secrets are strongly intertwined—as can be seen from the 1985 UNCTAD definition of technology transfer, which focuses on the transfer of systematic knowledge to enable the manufacture of a product. If innovators chose to rely on trade secrets they can control their innovation permanently, so long as the information remains secret.¹²⁰ This raises a number of questions. On the one hand, trade secrets provide greater protection in the sense that protection does not expire after a set term, as patents do when they expire. There are also rules regarding the extent to which there is disclosure of the invention (and in the United States, through disclosure of the best mode), thus suggesting that patents do make a contribution to the public dissemination of innovation.¹²¹ On the other hand, the trade secret owner runs the risk that a competitor either independently develops the same or similar technology or derives it through reverse engineering. Once this occurs, the trade secret owner loses the ability to control the technology itself.

It should be borne in mind, however, that often an innovation cannot be used effectively unless patents, know how and information are all transferred. It is important, therefore, to develop a solution which includes both patents and information when considering technology

¹¹⁶ See Scottish Government Press Release <http://www.scotland.gov.uk/News/Releases/2008/12/02082120>.

¹¹⁷ <http://www.scotland.gov.uk/Topics/Business-Industry/Energy/Action/leading/saltire-prize>.

¹¹⁸ See also Geroski, footnote 22

¹¹⁹ See website <http://www.virgin.com/subsites/virginearth/> and discussion on launch at <http://www.washingtonpost.com/wp-dyn/content/article/2007/02/09/AR2007020900693.html>

¹²⁰ A useful example of the interface between the two fields is the English decision *Pall Corp v Commercial Hydraulics (Bedford) Ltd* [1990] F.S.R. 329; see also Carty, H. 'An analysis of the modern action for breach of commercial confidence: when is protection merited?' I.P.Q. 2008, 4, 416-455

¹²¹ See p16.

transfer; but also to avoid a system which imposes such restrictions on patents that an innovator may be tempted to choose to rely exclusively on trade secrets—and thus, potentially, permanent and private control of the information, which undermines the information dissemination goal which the patent system perpetuates.

Other forms of encouraging innovation can be learnt from diverse and individual activities carrying on throughout the world, where IP and control of information is not sought.¹²² Lessons may also be learnt from approaches taken to biotechnology and traditional knowledge, which will be explored more as this project progresses.¹²³ In isolation, these initiatives will not change the face of innovation; however the introduction of wider forms of innovation generation and onward transfer of technology, such as under the umbrella of the Technology Innovation for Sustainable Societies, may aid this process.¹²⁴

It should also be borne in mind that most innovations cannot be put in a box, sent elsewhere, and used there with success. The demands of one country differ from another: more wind, fewer people, less money, different levels of expertise and technical know how, and varying regulatory regimes. If planning permission cannot be obtained or the tax incentive schemes are not efficiently attractive, then even free and effective technology may not be put in place in a country.

Funding

There may be a range of forms of encouraging innovation and transferring the results. Yet the question frequently returns to money. In 2010, the need for more investment in private companies working with climate change technologies has been the subject of press comment

¹²² See for example the Technology Innovation for Sustainable Societies' Berkeley-Darfur Project: <http://darfurstoves.org/>. This initiative seeks to provide fuel-efficient stoves which reduce fire-wood requirements.

¹²³ See discussion in Morgera, E. and Tsioumani, E. 'The evolution of benefit-sharing: linking biodiversity and community livelihoods' 19:2 Review of European Community and International Environmental Law (forthcoming 2010). For details of the debate relating to the role of IP regarding the work of the Convention on Biological Diversity in relation to access to genetic resources, see report of the resumed ninth meeting of the Ad Hoc Open-ended Working Group on Access and Benefit-sharing (ABS) of the Convention on Biological Diversity (CBD) was held from 10-16 July 2010, in Montreal, Canada, of the International Centre for Trade and Sustainable Development 'Bridges Trade BioRes' 19 July 2010 <http://ictsd.org/i/trade-and-sustainable-development-agenda/81017/> and Earth Negotiations Bulletin 19 July 2010 <http://www.iisd.ca/vol09/enb09527e.html>. Note the EU proposal to add reference to 'the importance of genetic resources for ... climate change adaptation' in the context of a provision on access for non-commercial research and in emergency situations.

¹²⁴ See footnote 122.

and wide discussion.¹²⁵ The lack of clarity regarding the future policy of the United States in relation to climate change also is said to be a deterrent to investors.¹²⁶ If there is no IP, or there are more limits on IP, would a potential investor feel assured of its ability to control the technology, without a competitor able to reproduce it more cheaply, given that the other need not seek to recover the investment costs? For this reason, venture capitalists see the obtaining and protection of IP as being at the heart of any technology investment.¹²⁷ In addition to venture capital funds, there are initiatives such as the Co-operative Bank's £200million green energy vow which provides funds to assist businesses in engaging in environmentally sustainable activities. It is unclear what stance will be taken to any IP.¹²⁸ Prizes, discussed above, are also relevant here.

When considering funding options, there is again the question of a holistic approach. How readily can businesses pursue these opportunities? For example, does the security sought by the banks impose a great burden on businesses (eg a mortgage over the entire farm), such that the farmer will not choose to pursue a project such as the generation of bio-gas from waste (say, on a small part of the farm)? These positions may seem reasonable from the perspective of both the banks and the farmer—but they lead to a lack of action and the contribution to responding to climate change (albeit likely minimal) which would have come about if one particular project had been pursued.¹²⁹ If a government wishes to encourage new technologies in responding to climate change, then steps should be taken to make it much easier for investors to invest and businesses to accept.

Towards a (really) holistic approach

Thus the attitude of venture capitalists, banks, and IP owners might be less important than a collaborative (state *and* private) and collective (global *and* national) stance to addressing climate change. This stance would need to involve individuals, states (who pass regulations and legislation, provide some funding, and have international treaty responsibilities),

¹²⁵ Eg The Guardian (19 August 2010) regarding PV Crystalox Solar <http://www.guardian.co.uk/business/2010/aug/19/pv-crystalox-solar-energy-profits-slump> and the Scottish Low Carbon Investment Conference held in Edinburgh in September 2010 <http://www.slconference.com/>.

¹²⁶ See Reuters comment (11 August 2010) <http://www.reuters.com/article/idUSTRE67A3JK20100811>.

¹²⁷ See p25

¹²⁸ For details see <http://www.thenews.coop/news/Wider%20Co-op%20Movement/1779>

¹²⁹ See discussion of some of these points in 'Incentives for generating renewable energy' (April 2010) <http://www.greenwisebusiness.co.uk/resources/incentives-for-generating-renewable-energy-6.aspx>.

international bodies, investors, businesses and IP owners—with a focus less on control and mandatory limits on it, and more on partnership.

As has been seen, obligations, other than those relating to IP, do already exist in relation to states—in relation to human rights and through the UNFCCC and Kyoto Protocol. There are systems in place in the UNFCCC to encourage more collaboration, such as flexibility mechanisms which can engage private companies in the climate change effort¹³⁰ and which allow countries to lower the costs of achieving emissions targets by accessing opportunities in countries where it is most cost effective to do so.¹³¹ With IP rights being more firmly placed in the private sector, from the IP side it will be a question of whether or not private businesses will share technologies (of different levels of importance) or choose to engage in practices which might not appear the most profitable in the short term. If a cogent reason can be provided for businesses to do this (such as medium- or long-term profitability, positive public relations or activities forming part of a corporate social responsibility programme, as is discussed below), there is greater prospect of action in the private sector, or by the private and state sectors together, than from the state acting alone.

International bodies have been taking some steps to encourage greater activity by companies in this respect,¹³² for example through the UN Global Compact, which describes itself as ‘a strategic policy initiative for businesses that are committed to aligning their operations and strategies with ten universally accepted principles in the areas of human rights, labour, environment and anti-corruption.’¹³³ In June 2010, the UN Global Compact Leaders Summit called for the crucial role of Governments in promoting corporate responsibility and engaging

¹³⁰See Kyoto Protocol, articles 3, 6(3) and 4, 12. See discussion in ‘Compilation and analysis of available information on the scope, effectiveness and functioning of the flexibility mechanisms under the Kyoto Protocol. Note by the secretariat’ Poznan, December 2008

http://unfccc.int/documentation/documents/advanced_search/items/3594.php?rec=j&preref=600004941#beg; Kulovesi, K. ‘The Private Sector and the Implementation of the Kyoto Protocol: Experiences, Challenges and Prospects’ (2007) 16 *Review of European Community and International Environmental Law* 145; and also see DIRECTIVE 2004/101/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 27 October 2004 the Kyoto project-based mechanisms to the Community scheme, regarding the use of credits.

¹³¹ See detail about other steps being taken between states in relation to sustainable development in Grosse Ruse-Khan, H. ‘A real partnership for development? Sustainable development as treaty objective in European economic partnership agreements and beyond’ *J.I.E.L.* 2010, 13(1), 139-180. See also de Sepibus, J. ‘Reforming the Clean Development Mechanism to Accelerate Technology Transfer’, NCCR Trade Regulation Working Paper 2009/42, Nov 2009

¹³² See discussion in Morgera, E. (2009) *Corporate Accountability in International Environmental Law* Oxford University Press, UK

¹³³ <http://www.unglobalcompact.org/>.

the private sector in achieving the Millennium Development Goals.¹³⁴ This group also issued a statement on climate change, although it does not refer to innovation.¹³⁵ From the more corporate perspective, there have also been more arguments for more companies to engage in environmentally sustainable conduct, and report on it, as part of a corporate social responsibility programme. This can amount to a positive change in behaviour, rather than being mere window dressing.¹³⁶ One example was the now completed UN Business Leaders' Initiative on Human Rights,¹³⁷ in which some large IP owning companies were involved; this initiative aimed to become the starting point for any businesses committed to taking the first steps in mapping human rights into their existing management systems—see, for example, the Novartis living wage commitment to its employees all over the world.¹³⁸ Initiatives in this area continue, with a meeting held in Edinburgh in October 2010, led by the Scottish Human Rights Commission, which aims to lead to an Edinburgh Declaration on Business and Human Rights.¹³⁹

These initiatives, together with, say, Creative Commons, the Eco-Patent Commons or public-private partnering arrangements suggest that new models could be developing of working with technology and practices, which could impact upon climate change. Regarding climate change and information data, consider also the collaborative work of the Global Spatial Data Infrastructure Association, comprising companies and universities. This seeks to promote international cooperation and collaboration in support of local, national and international spatial data infrastructure developments, to allow nations to better address social, economic,

¹³⁴ <http://www.unglobalcompact.org/news/45-06-23-2010>

¹³⁵

http://www.unglobalcompact.org/docs/issues_doc/Environment/climate/CARING_FOR_CLIMATE_STATEMENT_2010.pdf. Resources setting out existing and possible achievements in relation to the Global Compact are found at <http://www.leaderssummit2010.org/sitecore/content/be-bruga/leaderssummit2010/publications%20and%20multimedia.aspx>.

¹³⁶ McBarnet, D. et al (eds) (2007) *The New Corporate Accountability Corporate Social Responsibility and the Law* Cambridge University Press, Cambridge, UK

¹³⁷ <http://www.blihr.org/>.

¹³⁸ For details see <http://www.corporatecitizenship.novartis.com/people-communities/human-rights.shtml>.

¹³⁹ See Miller, A. 'Respecting human rights is the business of all our companies' 3 October 2010 <http://thescotzman.scotzman.com/scotland/Allan-Miller-Respecting-human-rights.6562888.jp?articlepage=2>; see also Scottish Human Rights Commission website <http://scottishhumanrights.com/international/biennial>.

and environmental issues of pressing importance.¹⁴⁰ An example in relation to health is GlaxoSmithKline, the world's second largest pharmaceutical drug company, which decided to donate details of patents and confidential data to the Malaria Consortium.¹⁴¹

A range of contracts could be developed to service the new model. Businesses may choose to make some technologies more openly available as part of a pool like the Eco-Patent Commons—they could pledge a patent to the pool and not assert the patent against any implementers' environmentally beneficial use of the pledged patent,¹⁴² but still relying on patent rights in relation to other activities. The question does of course arise as to whether or not businesses are likely to agree to donate their most important or profitable patents to such a pool.¹⁴³ Other options could be a model following Creative Commons, with a set of licences ranging from the most basic- allowing people to copy and distribute your work provided they give you credit- to the more specific, which would prevent or allow for commercial uses of your work or modifications to it.¹⁴⁴ This might work well with IP relating to software climate change information. Use could also be made of the UNCTAD Draft International Code of Conduct on Technology Transfer from 1985,¹⁴⁵ which has been used as the base for some technology transfer contracts.¹⁴⁶

Another model would be to follow examples of public-private partnership models which have created incentives for partnerships that might not otherwise exist, given the lack of a more traditional market demand. Public entities or non-profit organisations may agree to provide funding or assume certain risks to stimulate an environment in which private firms can perform and be rewarded. The resulting product would then be able to be made accessible at

¹⁴⁰ The Global Spatial Data Infrastructure Association is an inclusive organization of organizations, agencies, firms and individuals from around the world. See <http://www.gsdi.org/> and list of members and sponsors at http://www.gsdi.org/Mbrs_Spnrs.

¹⁴¹ For details see http://www.malariaconsortium.org/news/gsk_boost_to_malaria_fight.htm.

¹⁴² See <http://www.wbcd.org/web/projects/ecopatent/EcoPatentGroundRules.pdf>.

¹⁴³ Note press comment regarding patents pledged by DuPont in 2009 <http://www.wbcd.org/Plugins/DocSearch/details.asp?DocTypeId=251&ObjectId=MzM3ODM>.

¹⁴⁴ <http://creativecommons.org/choose/>.

¹⁴⁵ Also included in UNCTAD 2001 'Technology Transfer' document. www.unctad.org/en/docs/psiteiid28.en.pdf (see p 52 et seq). In 2001 the UNCTAD also produces a compendium of the bilateral, regional and international instruments which relate to technology transfer www.unctad.org/en/docs/psiteipcm5.en.pdf.

¹⁴⁶ See discussion in Raja, Vivek, Essential Clauses in a Transfer of Technology Contract—A Perspective of the Host Nation (April 30, 2010) available at SSRN: <http://ssrn.com/abstract=1629300>.

minimal costs. This model has been successful in relation to treatments for so-called ‘neglected diseases.’¹⁴⁷

Suggestions for models of contracts and structures should be developed in collaboration with national and international bodies dealing with climate change and IP—eg the ongoing tripartite project between the European Patent Office, International Council for Trade and Sustainable Development and the UN Environmental Programme.¹⁴⁸ It should also be ensured that the possible contractual models are as clear as possible, and take fairly into account the interests of stakeholders, do not conflict with the likely standard terms and conditions of banks and investors, take into account the subsidy and other regulatory systems and also ensure that the necessary skills and know-how, as well as IP, are transferred to ensure the successful operation of transferred technologies (in the widest sense) by the recipient. Within governments and business, there would need throughout to be liaison between those involved in innovation, funding, environmental protection and finance. If all of this does not occur, then this could mean that a new approach is not taken or would not operate effectively.¹⁴⁹

The proposal made so far for a holistic new legal and corporate approach to IP and sharing and regulation of innovation is worthy of further discussion. Yet it is clearly complicated. Could a more straightforward (yet still holistic) approach be sought now, within the existing legal regimes?

A role for competition?

Concerns about the power of IP owners can be phrased by reference to competition. Unlike IP and climate change, however, there is no international competition agreement. There are synergies between existing regional and national competition agreements,¹⁵⁰ although as the BRIC countries (Brazil, Russia, India and China) seek to develop their own competition law

¹⁴⁷ See eg Caines, K. (2004) ‘GHP Study Paper 4 Global Health Partnerships and Neglected Diseases’ DFID Health Resource Centre http://www2.ohchr.org/english/issues/development/docs/WHO_4.pdf.

¹⁴⁸ See details of project at <http://ictsd.org/i/research/51361/> and <http://www.epo.org/topics/news/2009/20090427.html>; and September 2010 report <http://ictsd.org/i/publications/85126/>.

¹⁴⁹ See for instance, the conclusion in favour of an integrated approach to international climate policy-making in Roberts, J. and Parks, B. (2006) *A Climate of Injustice: Global Inequality, North-South Politics, and Climate Policy* MIT Press.

¹⁵⁰ See discussion in Marsden, P. (2003) *A Competition Policy for the WTO* Cameron May, London, UK

and economics, there is a view that there may in the future be more variety in approaches taken.¹⁵¹ Even when there are similar approaches taken, there will be a question of jurisdiction; for example, EU competition law will intervene only if the conduct in question has an impact on market in the EU; this can cover a global market, but not a situation where there is no global market and access is sought in a non-EU market. From this perspective, the manner of evolution of competition laws of developing countries, and the large BRIC economies, will be important.

For now, several countries have legislation addressing abuse of market power or a dominant position. If an IP owner which has a significant degree of market power refuses to share technology, a competition regulator may require the IP owner to do so if particular circumstances exist. Generally speaking, the typical exercise of IP does not, in and of itself, raise competition concerns. Against this backdrop, the relevant circumstances for competition concerns to arise in relation to IP were found in the EU in relation to *IMS v NDC* and *Microsoft*¹⁵² and in the US, in *Image Technical Services, Inc v Eastman Kodak Co*¹⁵³ although a different approach was taken in *In re Independent Service Organizations Antitrust Litigation (CSU)*.¹⁵⁴ The area is governed by the general rules on a refusal to supply set out in *Aspen Skiing*, which was not an IP case.¹⁵⁵

The US Supreme Court has sought to limit the doctrine to when there is an existing relationship of supply.¹⁵⁶ In the EU, case law suggests that refusal to licence will be an abuse of a dominant position only in ‘exceptional circumstances’, where the refusal prevents the development of a new product or technical development, for which there is unmet consumer demand in a (possibly hypothetical) other market, in respect of which there is a risk of elimination of viable competition and there is no objective justification for the refusal.¹⁵⁷

¹⁵¹ See eg the BRIC International Competition Conference held in 2009 <http://www.bric-competition.com/>.

¹⁵² *IMS Health GmbH & Co OHG v NDC Health GmbH & Co KG* (C418/01) [2004] All E.R. (EC) 813 [2004] E.C.R. I-5039; *Commission Decision relating to a proceeding under article 82 of the EC Treaty (Case COMP/C-3/37.792 Microsoft)* March 2004 Available at <http://ec.europa.eu/competition/antitrust/cases/decisions/37792/en.pdf> and *Microsoft Corp v Commission of the European Communities* (T-201/04) [2007] 5 C.M.L.R. 11

¹⁵³ 125 F.3d 11195 (9th Cir. 1997)

¹⁵⁴ 203 F.3d 1322 (Fed. Cir. 2000); see generally US DoJ & FTC, Antitrust Guidelines for the Licensing of Intellectual Property (1995) <http://www.usdoj.gov/atr/public/guidelines/0558.pdf>.

¹⁵⁵ *Aspen Skiing v Aspen Highlands Skiing Corp* 472 U.S. 585

¹⁵⁶ *Verizon Communications, Inc. v. Law Offices of Curtis V. Trinko, LLP*, 540 U.S. 398

¹⁵⁷ *Radio Telefis Eireann v Commission of the European Communities* (C-241/91 P) [1995] E.C.R. I-743; *IMS Health GmbH & Co OHG v NDC Health GmbH & Co KG* (C418/01) [2004] All E.R. (EC) 813 [2004] E.C.R. I-5039 ; *Microsoft Corp v Commission of the European Communities* (T-201/04) [2007] 5 C.M.L.R. 11.

For this to be relevant in relation to access to technologies and climate change, the question of the importance of the technology again arises—here, in relation to market definition. Before an IP owner can be found to be in a dominant position in a market, and questions of abuse and refusal to share are considered, the market in which the IP exists must be defined.

Market definition

Similar approaches are taken to this in different regimes, with key questions being measuring demand and supply substitutability for the market for products or services and the geographic market definition, given a sufficient price change or incentive.¹⁵⁸ Market definition can be viewed as at the heart of the question of access to essential technologies. Is the market ‘technologies which can assist in addressing climate change’? If so, then there are many substitutes available—wind, wave, biogas, insulation. A wide definition might be supported by the fact that Governments do have some choices, under the flexibility mechanisms discussed above, as to how they choose to meet their obligations under the Kyoto Protocol. This might suggest that a wider definition of the market is appropriate. This in turn will make it less likely that any one patent owner will be in a dominant position in such a wide market.¹⁵⁹

On the other hand, a company might choose to exploit its local infrastructure and climate eg is there a natural resource such as wave or wind? Both are present in Scotland. Yet if a company chooses to trade in wind, and wishes access to a patent in relation to wind technologies, then the fact that the company could move to wave and utilise other natural resources will not mean that wind technologies are part of the same market as wave technologies. For this, it would need to be shown that the same expertise and infrastructure could be used to move from one to the other—unlikely so. If, however, there are different technologies for working within one sector to which suppliers and customers could readily adapt—eg within different forms of tidal technologies, then these may be part of the same market. Yet it does not follow that all products within one sector are necessarily part of the

¹⁵⁸ See Commission Notice on the definition of the relevant market for the purposes of Community competition law O.J. C 372/03 9.12.1997

¹⁵⁹ The key question is can an entity act to an appreciable extent independently of the other, without a reaction by consumers—eg by moving to another supplier. See *United Brands Co v Commission of the European Communities* (27/76) 1978] E.C.R. 207, para 65.

same market; again, the substitutability analysis must be carried out. For example, in the wave sector, shoreline technologies¹⁶⁰ differ from near shore technologies,¹⁶¹ and both of these differ from deep water technologies.¹⁶²

This analysis suggests that from the competition perspective, several markets may exist under the broad umbrella of responding to climate change. Within these markets, competition law may be able to play a role, where the ‘exceptional circumstances’ noted above exist, in requiring greater sharing of, say, a wave technology within a distinct market which comprises only wave technology. It may also have a wider impact if there is a significant new technology, adaptation technology or controlling of information, which can be found to be markets in themselves.

Abuse and its consequences

Even if a market is narrowly defined, or can include a suite of patents, and a patent owner is in a dominant position, a finding of abuse for refusing to share technology will be made rarely. Applying the tests discussed above in the climate change context, there may often be no previous relationship, there are as yet no formal or de facto standards¹⁶³ and what is sought might be access to the existing key technology, rather than access to it to build a new one or new product development.

If the tests were met, then the *Microsoft* (and *IMS*)¹⁶⁴ decisions in the EU suggest that if there is a finding of abuse, the IP owner will be required to license the IP on ‘fair reasonable and non discriminatory (FRAND) terms. The meaning of FRAND in an individual case remains to be determined. It is interesting to note that there could be parallels between this and the Convention on Biological Diversity’s provision¹⁶⁵ regarding access to and transfer of technology on fair and most favourable terms—although in the context of the Convention on Biological Diversity, such terms are subject to being ‘mutually agreed.’ This will also be explored further in the project.

¹⁶⁰ Eg the Limpet of Wavegen http://www.wavegen.co.uk/what_we_offer_limpet.htm.

¹⁶¹ Eg the Oyster of Aquamarine Power <http://www.aquamarinepower.com/technologies/>.

¹⁶² Eg the Pelamis of Pelamis Wave <http://www.pelamiswave.com/our-technology/pelamis-wec>.

¹⁶³ See p8

¹⁶⁴ *IMS Health GmbH & Co OHG v NDC Health GmbH & Co KG* (C418/01) [2004] All E.R. (EC) 813 [2004] E.C.R. I-5039, see footnote 157.

¹⁶⁵ See <http://www.cbd.int/convention/convention.shtml>, article 16(2) and footnote 123.

For refusal to share to be abuse when access is sought to an existing essential technology which will merely be reproduced, and not developed or made into something new, a new approach to ‘exceptional circumstances’ would be required. There is some support for this in the EU in early decisions and also in the decision of the European Commission in *Microsoft*, which calls for all relevant matters to be taken into account, rather than a more rigid and structured test.¹⁶⁶

Other roles for competition

Arguments have also been made in the US and in the EU¹⁶⁷ that it can be in breach of competition law to fail to disclose the ownership of a patent in relation to a formal standard¹⁶⁸—fixed by say an international organisation such as the ITU, as is discussed above, by a private industry group such as the ETSI¹⁶⁹ or the W3C¹⁷⁰—or to license the patent on FRAND terms. There have been no decided cases on this issue by courts.¹⁷¹

A role for competition may also be found in relation to concerns expressed regarding so-called ‘patent trolls’. The ‘troll’ is a fairly new and unclear term. It is one which could arguably be applied to any IP owner who seeks to enforce or assert its exclusivity, the very purpose of IP rights; it is becoming increasingly used, however, in relation to non practising entities. These bodies either buy patents and then charge fees for others to license them (rather than making or developing the invention themselves); or obtain patents with a broad

¹⁶⁶ See *IMS Health GmbH & Co OHG v NDC Health GmbH & Co KG* (C418/01) [2004] All E.R. (EC) 813 [2004] E.C.R. I-5039 para 38—the tests were ‘sufficient’—not necessary; *Volvo AB v Erik Veng (UK) Ltd* (238/87) [1988] E.C.R. 6211 para 8 and *Commission Decision relating to a proceeding under article 82 of the EC Treaty (Case COMP/C-3/37.792 Microsoft)* March 2004 paras 555-558

¹⁶⁷ In the Matter of Rambus, Inc. Docket No. 9302 <http://www.ftc.gov/os/adjpro/d9302/060802commissionopinion.pdf> and *Rambus Inc v Federal Trade Commission* 522 F.3d 456

¹⁶⁸ For discussion of the relationship between IP and standards, see Lemley, M. ‘Intellectual Property Rights and Standard Setting Organizations’ *California Law Review*, Vol. 90, p. 1889, 2002 and see also p8

¹⁶⁹ <http://www.etsi.org/WebSite/homepage.aspx>.

¹⁷⁰ <http://www.w3.org/>.

¹⁷¹ *Rambus Inc v Federal Trade Commission* 522 F.3d 456 found there to have been no breach of antitrust law. The appeals court rejected an application for a further appeal on 26 August 2008 see Reuters ‘U.S. trade commission loses bid for Rambus appeal’ <http://uk.reuters.com/article/rbssTechMediaTelecomNews/idUKN2748830020080827>.

scope of protection and then license them to others to see if there is a marketplace, thus incurring only opportunity costs and the initial patent application/maintenance fees.¹⁷²

The focus on the development of climate change technologies driven partly by the Kyoto Protocol and ongoing UNFCCC work on technology transfer, could lead to non practising entities seeking to acquire a suite of patents related to climate change—both within and across industries, eg some relating to wind and some to cement. If such an entity were to refuse to license its patents, and thereby fail to work the invention in the marketplace, solutions to this might lie within patent law itself. Article 5A of the Paris Convention provides that states can introduce compulsory licensing where there is insufficient working of an invention—but this applies only after three years from grant.¹⁷³

In the early period after grant, therefore, there could be an important role for competition law if such acts result in an abuse of market power. This may be so if overly high licence fees are sought or refusals are made in respect of each of the suite, when isolated refusals or requests in relation of each of the patents would not have raised competition concerns. Yet it is not clear to what extent such a scenario will arise, in light of the significant incentives that non-practising entities have to license their technology. This will be considered in more detail as the project progresses.

Competition questions can also arise when partnerships are reached, just as suggested by the proposal above. Competition law is concerned about agreements being reached by players in a market.¹⁷⁴ In the past, competition regulators in the USA and the EU did not accept that it could be in the interests of competition for there to be exclusive licensing of IP.¹⁷⁵ The current regimes accept that licensing of IP can be in the interests of competition.¹⁷⁶ In the EU

¹⁷² See discussion in McDonough, J. ‘The Myth of the Patent Troll: An Alternative View of the Function of Patent Trolls in an Idea Economy’ *Emory Law Journal*, Vol. 56, p. 189, 2006 and Ng, E.S.K. ‘Patent Trolling: Innovation at Risk’ *E.I.P.R.* 2009, 31(12), 593-608.

¹⁷³ For the text of article 5A Paris Convention, see http://www.wipo.int/treaties/en/ip/paris/trtdocs_wo020.html#P123_15283. For discussion of the approach to this adopted by the UK, see MacQueen et al (2010) *Contemporary Intellectual Property Law and Policy* OUP, UK, paras 11.143, 21.40-21.43. Note also article 31 TRIPS, see p11,13,16.

¹⁷⁴ See eg Article 101 Treaty on Functioning of the European Union.

¹⁷⁵ See The ‘Nine No Nos’ of the 1970s set out by Bruce B. Wilson, Deputy Assistant Attorney General, Antitrust Division, before the Michigan State Bar Antitrust Law Section, September 21, 1972 <http://www.cptech.org/cm/ninenonos.html>, in the EC Regulation 240/96 of 31 January 1996 on the application of Article 85 (3) of the Treaty to certain categories of technology transfer agreements OJ L 31, 9.2.1996

¹⁷⁶ Regulation (EC) on the application of article 81(3) of the Treaty at categories of technology transfer agreements No. 772/2004 Official Journal L 123, 27.04.2004, pages 11-17 and Commission Notice Guidelines

again, it should also be borne in mind that draft Guidelines were issued in 2010 on Horizontal Cooperation Agreements. These suggest that environmental benefit is to be a relevant (although unlikely a decisive) factor when considering competition questions.¹⁷⁷ These factors combine to suggest that if there was to be greater use of partnership, competition may not object.

State Aid

A further issue to be explored is state aid. The UK may decide that it would encourage greater use of wave or wind power and impose more subsidies or incentives, eg Feed In Tariffs introduced in the UK in April 2010,¹⁷⁸ or the UK might fund prizes as discussed above in relation to carbon capture storage. There is also an argument that the state should purchase essential patents and then license these in its country, and exchange or cross license patents to other states which have taken a similar approach.¹⁷⁹ But would this be consistent with EU competition law regarding state aid?¹⁸⁰ These points will also be explored further in the project.

Conclusion

We are at the start of an exciting journey. There is a need for a wide and holistic consideration of the importance of IP, and different types of technology, in responding to climate change. This project has sought to provide an initial discussion. It will introduce further new perspectives as it proceeds, in the first instance through a second meeting of experts in Edinburgh on 10 December 2010. In addition to the new fields referred to in this working paper, regard should also be had to the possible contributions to be made by the

on the application of article 81 of the EC Treaty to technology transfer agreements O.J. C 101, 27.04.2004, pages 2-42 and US Department of Justice and Federal Trade Commission Antitrust Guidelines for the Licensing of Intellectual Property (1995) available at <http://www.usdoj.gov/atr/public/guidelines/0558.htm> and see footnote 154.

¹⁷⁷ In the EU, Draft Guidelines on Horizontal Co-operation Agreements (May, 2010)

http://ec.europa.eu/competition/consultations/2010_horizontals/guidelines_en.pdf paras 300, 319

¹⁷⁸ <http://www.fitariffs.co.uk/>.

¹⁷⁹ See discussion in Derclaye, E. 'Not Only Innovation but also Collaboration, Funding, Goodwill and Commitment: Which Role for Patent Laws in Post-Copenhagen Climate Change Action' 9 J.Marshall Rev. Intell. Prop. L. 657 (2010).

¹⁸⁰ In the EU, see Community Rules on State Aid for Environmental Protection (2008/C 82/01) <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2008:082:0001:0033:EN:PDF>.

interfaces between economics and innovation, economics and geosciences and labour and employment questions.

Although there is an important role for high level scrutiny involving academics, practitioners and international organisations, there is also a need for clear and workable solutions which can be used—and which can be used now, without too much of a burden being placed on business and international institutions. Based on our initial discussions, a possible solution has three main strands:

- enabling patents to be obtained more quickly and clearly to assist businesses and investment which continue to be based in IP;

- encouraging greater exploration, though government agencies, international bodies and other organisations, of forms of encouraging and disseminating innovation which are not based in IP, and providing umbrella means of supporting them; and

- a greater willingness to share essential or important IP when it is sought. This could be explored under the auspices of Corporate Social Responsibility and also form part of a wide collaborative programme.

Some also have suggested seeking a declaration in a range of international fora that if there is an essential technology that this should be shared to all who wish it through FRAND, through a state or group of states buying technology and then making it available free of charge, or indeed, that it should be made available to all free of charge. Others, however, caution that such a declaration or declarations would be counter-productive, leading to yet more political debate between politically irreconcilable ideologies and diverting resources from more pragmatic solutions.

Each of these points remains at a preliminary stage. We hope to develop these throughout the rest of the project and provide a wide, yet workable, suggestion(s) for ensuring greater access to and development of technologies, of all kinds, within their wider regulatory, market and funding frameworks, which can assist in responding to climate change. All of the proposals are ambitious—yet a strong message is that action is required; and the existing parallel approaches can and should be improved.