

# INTELLECTUAL PROPERTY RIGHTS AND GLOBAL WARMING

*Estelle Derclaye\**

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## Introduction

The issue of global warming is everywhere. Not only does the topic fill the pages and screens of all media, e.g. newspapers and reviews<sup>1</sup> or films<sup>2</sup>, it also regularly and increasingly occupies private companies<sup>3</sup>, economists<sup>4</sup>, lawyers<sup>5</sup>, scientists<sup>6</sup> and politicians<sup>7</sup> alike. It even interests the museums.<sup>8</sup> Global warming, which is mainly caused by the increase of carbon dioxide (CO<sub>2</sub>) in the atmosphere<sup>9</sup>, or most of global warming at least, is, it seems, the result of human activity. But human activity is far from new. What is new is a certain type of human activity. Human activity linked to industrial development, and therefore progress. The question then arises: could intellectual property rights (IPR) be the cause of global warming? After all, the industrial revolution has brought with it intellectual property rights, among the most relevant ones, rights to protect inventions. And the primary aim of patent law is to give an incentive to inventors to invent new products, processes and machines. Copyright law's rationale is similar. Some of the greatest inventions of the two last centuries include the car, the train, the plane, the fridge, the computer and with them the use of energy, generally, oil and coal, to make them work. They are some of the causes that contribute the most to the increase of levels of CO<sub>2</sub> in the planet's atmosphere. For instance, a third of carbon dioxide emissions in the European Union (EU) is generated by transport.<sup>10</sup> The intellectual property academic community has so far paid very little attention, if any, to this increasingly important issue.<sup>11</sup> It is time

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\* PhD (London), Lecturer, School of Law, University of Nottingham. A previous version of this paper was presented at the Intellectual Property Scholars Conference 2007 in Chicago. The author would like to thank the participants to the conference for their comments. Of course, the author remains entirely responsible for any error. She can be reached at [estelle.derclaye@nottingham.ac.uk](mailto:estelle.derclaye@nottingham.ac.uk) and [ederclaye@hotmail.com](mailto:ederclaye@hotmail.com)

<sup>1</sup> To cite but a few e.g. The Economist, 27 January 2007, "The greening of America", p. 9; The International Herald Tribune, 19 June 2007 (<<http://www.iht.com>>); The Independent, 19 June 2007, p. 1-2 discussing a peer-reviewed article ("Climate change and trace gases") authored by six leading scientists who conclude that the earth is in imminent danger because of global warming. See <[http://environment.independent.co.uk/climate\\_change/article2675747.ece](http://environment.independent.co.uk/climate_change/article2675747.ece)> (last visited 28 August 2007); Newsweek, 13 August 2007 Issue, "Global warming is a hoax\*".

<sup>2</sup> See e.g. Al Gore's film, An Inconvenient Truth.

<sup>3</sup> To cite only a few completely random company advertisements I encountered: Vattenfall, "Energy for activists, empty words just add carbon dioxide", The Economist, 27 January 2007, p. 2; Eurostar "Environmentally co2nscious", The Economist, 10 February 2007, p. 56.

<sup>4</sup> See the carbon trading market.

<sup>5</sup> In the European Union, see e.g. Directive 2004/101 amending Directive 2003/87 establishing a scheme for greenhouse gas emission allowance trading within the Community, in respect of Kyoto Protocol's project mechanisms (2004) OJ L 338, p. 1.

<sup>6</sup> For examples, see the references cited in this article.

<sup>7</sup> See for instance, this year's G8 summit: <<http://www.g8-de/Webs/G8/ENG/homepage/home.html>>

<sup>8</sup> London's Tate Modern Gallery had an exhibit on CO<sub>2</sub> emissions during the summer 2007.

<sup>9</sup> It is also caused by other so called greenhouse gases (GHG).

<sup>10</sup> Charlotte Streck & David Freestone, "Chapter 5, The EU and climate change", in R. Macrory, *Reflections on 30 years of EU environmental law, A high level of protection?*, European Law Publishing, The Avosetta Series 7, Groningen, 2006, p. 102.

<sup>11</sup> In the United States, see Gregory Mandel, "Promoting Environmental Innovation with Intellectual Property Innovation: A New Basis for Patent Rewards" (5 July 2005). Available at SSRN: <<http://ssrn.com/abstract=756844>>; F. Scott Kieff "Patents for Environmentalists" [2002] 9 Wash. U. J.L. & Pol'y 307. Available at SSRN: <<http://ssrn.com/abstract=380840>> or DOI: [10.2139/ssrn.380840](https://doi.org/10.2139/ssrn.380840) (both discussing only generally the interface between patents and the protection of the environment). Carlos Correa, *Trade related aspects of intellectual property rights, A Commentary to the TRIPs Agreement*, Oxford: Oxford University Press, 2007, discussing the TRIPs provisions referring to the

however that the national and international intellectual property systems and treaties be reassessed in view of this problem that touches every human being, if one accepts that human activity is the main cause of global warming, as the vast majority of the scientific community indicates.<sup>12</sup>

This paper concentrates on how the existing international intellectual property instruments and EU law already provide safeguards to limit the levels of CO<sub>2</sub> in the atmosphere.<sup>13</sup> Some reference will also be made to UK law to take the law of one country as a concrete example of implementation of international instruments and EU law when international or EU laws are silent or not specific on the question. Reference will also sometimes be made to U.S. law for comparison purposes. More generally, the solutions developed in this paper can apply not only in Europe, but can also inspire other countries, including the United States, as they are based on the international instruments and universal arguments that can apply in any country. For reasons of space, and because they are perhaps the most important rights as far as generating CO<sub>2</sub> is concerned, the paper focuses only on patents and copyrights. The paper has two parts. Part I examines how the current patent and copyright laws may already help reduce levels of carbon dioxide. Thereafter, Part II envisages how intellectual property laws could be improved to further reduce the levels of carbon dioxide, if this is something governments and/or the international community decide to do.

## **I. The current intellectual property system and its impact on global warming**

This part is divided in six sections. Before looking at the actual provisions of current patent and copyright laws, their underlying rationales are examined to enlighten whether they have an impact on carbon emissions (section 1). The second section looks at general provisions of the international agreements to determine whether they deal with the interface between IPR and the environment and more specifically levels of CO<sub>2</sub>. From this first general overview, it will be seen that there are different rules within intellectual property laws which directly or indirectly safeguard the environment and favour the reduction of carbon dioxide. There are three ways in which intellectual property laws already permit the reduction of CO<sub>2</sub>: the first is the morality and 'ordre public' provisions (section 3), the second is compulsory licences

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protection of the environment; Jeremy Philips, "People in greenhouses", Editorial, May 2007, *JIPLP*, Vol. 2, n. 5, p. 269.

<sup>12</sup> See e.g. Peter Davies "Trading in greenhouse gas emissions: The European Community's endorsement of emissions trading" [2006] *International Energy Law & Taxation Review* 105, citing several sources including the European Environment Agency and the intergovernmental panel on climate change available at <<http://www.ipcc.ch/>> (last visited 28 August 2007). More recently, see the Scientific Expert Group Report on Climate Change and Sustainable Development, February 2007, available at <<http://www.unfoundation.org/SEG/>> (last visited 28 August 2007); The Independent, 19 June 2007 and Newsweek, 13 August 2007 Issue, "Global warming is a hoax\*", above fn. 1. I therefore make the assumption that humans are responsible for the best part of the *increase* of CO<sub>2</sub> emissions and therefore follow the opinion of the majority of the scientific community.

<sup>13</sup> I will limit the discussion to carbon dioxide although they are many other GHG. More research would need to be undertaken to see if the arguments made could be extrapolated to GHG in general and even more generally the protection of the environment as a whole. Nevertheless, sometimes reference will be made to the relationship between IPR and the environment more generally when the laws do not specifically refer to CO<sub>2</sub>.

(section 4) and the third is the exhaustion principle (section 5). Section six concludes the part.

## **1. Rationales for intellectual property protection**

At first sight, intellectual property rights (IPR) can be seen as neutral, as their aim is simply to give an incentive to invent new technologies or create original works. For instance, Article 1, section 8, clause 8 of the U.S. Constitution (the U.S. Copyright and Patent clause) simply gives Congress the power “to promote the Progress of Science and useful Arts by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries”. This is one of the main justifications for having both patent and copyright laws: the incentive theory or utilitarian argument. Under this justification, if individuals know they may obtain an exclusive right (the reward which allows them to exploit their intellectual property in exclusivity and therefore reap the monetary benefits from it) if they produce a new product or an original creation, they will be encouraged to create or innovate. Under this justification, general well-being or social welfare is achieved as the world is better off with better products (e.g. better medicines, better machines) and more cultural diversity. This argument is based on the principle of utility and the writings of late 18<sup>th</sup> and 19<sup>th</sup> centuries’ philosophers and economists Jeremy Bentham and John Stuart Mill. The other main justification for having patents and copyrights is that they are natural rights. It is natural that an inventor or a creator obtains an (intellectual) property right on the fruits of his or her labour. This was first developed by Locke in the 17<sup>th</sup> century. Although he only thought of physical labour<sup>14</sup>, this theory has been extrapolated to include intellectual labour. These are the two main, classical, justifications for both rights.<sup>15</sup> One more recent and important justification for intellectual property rights is that they are human rights based on the fact that they are property, albeit intellectual.<sup>16</sup> As human rights have all the same rank, they must therefore be balanced with each other and cannot be absolute.<sup>17</sup>

What consequences do these justifications have in the context of this article? Under the natural rights theory, it seems that any inventor or creator should have a property

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<sup>14</sup> John Locke, *Second Treatise on Civil Government* of 1690, published e.g. by Peter Laslett ed., *Two Treatises of Government* ch. V, Cambridge: Cambridge University Press, 1988.

<sup>15</sup> For detailed discussions on these justifications, see in the U.S., see e.g. Arthur Miller and Michael Davis, *Intellectual property, patents, trade marks and copyright in a Nutshell*, West Publishing: St Paul Minn. 1990, p. 15. For copyright in particular, see e.g. Adrian Sterling, *World Copyright Law*, Sweet & Maxwell: London, 1998, p. 306; Alain Strowel, *Droit d’auteur et copyright - divergences et convergences*, Bruylant/LGDJ: Bruxelles/Paris, 1993, p. 144 ff.; Wilhem Grosheide, *Auteursrecht op Maat*, Diss. Utrecht, Deventer Kluwer: Amsterdam, 1986, p. 11, p. 128-145; Lucie Guibault, *Copyright limitations and contracts: An analysis of the contractual overridability of limitations on copyright*, Kluwer Law International: The Hague, 2002, p. 7 ff.; Christophe Geiger, *Droit d’auteur et droit du public à l’information, Approche de droit comparé*, Litec: Paris, 2004, p. 23 ff. Other, less developed, justifications exist and are therefore not discussed here. For copyright in particular, see e.g. Adrian Sterling, fn. 10 above, p. 306.

<sup>16</sup> See e.g. Paul Torremans “Copyright as human right” in Paul Torremans (ed.), *Copyright and Human Rights: Freedom of Expression - Intellectual Property – Privacy*, Kluwer Law International: The Hague, 2004, p. 1; Christophe Geiger 2004, above fn 15.

<sup>17</sup> Geiger, above fn. 15, p. 167; Christophe Caron “Liberté d’expression et liberté de la presse contre droit de propriété intellectuelle” [2002] 2 CCE, p. 25; Torremans 2004, above fn. 16, p. 17; Thomas Dreier “Contracting out of copyright in the information society: the impact on freedom of expression” in Jonathan Griffiths & Uma Suthersanen (eds.), *Copyright and free speech, comparative and international analyses*, Oxford University Press: Oxford, 2005, p. 395.

right on his intellectual labour whatever the consequence it has on global warming. Nonetheless, one could argue that according to an extrapolation of the principles advocated by Locke, the inventor or creator should consider the impact of its invention or work on the environment. Indeed, for Locke, the right to private ownership requires that the owner leaves in the commons enough and as good for the others and may not remove more out of the commons that she or he can use (the “non-waste” condition).<sup>18</sup> Under the utilitarian justification or incentive theory, the idea is to grant exclusive rights to creators and inventors in the public interest, in other words, so that it promotes social welfare. Therefore, this should mean that intellectual property rights should not damage the environment and more specifically increase levels of CO<sub>2</sub> as this is arguably not generating social welfare. More specifically, under the U.S. Copyright and Patent clause, which seems to support this incentive theory, the idea is that these two intellectual property rights must promote progress.<sup>19</sup> What is progress is a philosophical question, which would be too long to debate here. But under a certain view, it may include the improvement of human life, which should include its general well-being.<sup>20</sup> Therefore, again, it should mean that patents and copyrights should not be given to inventions and creations which increase the levels of carbon dioxide in the atmosphere if this leads to global warming. Or at least, a balance should be made between the benefits of the invention/creation and its carbon impact.<sup>21</sup> It should be noted that the most recent multi-regime international instrument on intellectual property rights (the 1994 Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPs)) mentions in its article 7 that the protection and enforcement of intellectual property rights should contribute to social and economic welfare, thereby also endorsing, albeit not expressly, a reduction in carbon emissions if this is conducing to social and economic welfare. Article 7 of TRIPs will be discussed in more detail in the next section. Finally, there is yet no human right to a healthy environment<sup>22</sup> but human rights to life and privacy for instance may come in conflict with IPR or otherwise be said to have the same goal as IPR under the human rights approach, which is human well-being. In conclusion, possibly under the naturalist justification and at least under the incentive theory and human rights approach (which can be seen as having the same end aim), IPR’s goal can be said to be congruent with the reduction of CO<sub>2</sub>.

## 2. General provisions

When one asks oneself how intellectual property laws cater for the protection of the environment and especially for the reduction of CO<sub>2</sub> in the atmosphere, the first thing

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<sup>18</sup> John Locke, *Second Treatise on Civil Government* (1690), in Peter Laslett ed., *Two Treatises of Government, Chapter V: Of Property*, Cambridge: Cambridge University Press, 1988, s. 27 and 31.

<sup>19</sup> To date, neither courts nor academics have so far paid attention to the definition of what promotes progress. See Dotan Oliar, “Making Sense of the Intellectual Property Clause: Promotion of Progress as a Limitation on Congress’s Intellectual Property Power” [2006] 94 *Georgetown Law Journal* 1837. Mandel, above fn. 11, p. 5 however notes that patent law’s purpose to promote progress is “a promising premise for the goal of incentivizing environmental protection”.

<sup>20</sup> Some views may also include the well-being of any living beings including animals and perhaps plants.

<sup>21</sup> As far as the meaning of promoting progress is concerned, some have suggested interpreting the patent and copyright clause as follows: “An intellectual property enactment does not “promote the progress of science and useful arts” and is therefore unconstitutional if its marginal benefits, in terms of creativity and knowledge, are extremely outweighed by its marginal costs in terms of creativity and knowledge”. See Oliar, above fn. 19, p. 1840.

<sup>22</sup> See below part II, section 3.

that comes to mind is to look into the intellectual property international treaties and conventions. What do these instruments say about the relationship between intellectual property rights and the protection of the environment? First of all, it is mostly patents that are concerned as they protect inventions, which may have a negative impact on the environment such as new cars, planes, trains and more generally products, machines or processes generating CO<sub>2</sub>. Copyright works protect creations which are generally harmless to the environment (e.g. drawings, sculptures, films...) but may sometimes generate CO<sub>2</sub>. This section looks at the two multi-regime treaties on IPR and examines whether they contain general provisions on the interface between IPR and the environment and more specifically levels of carbon dioxide in the atmosphere.

As the protection of the environment and particularly the problem of global warming is a new issue, it is logical that the old conventions do not address this problem specifically (see below the Berne Convention, section 3.2). However, the Paris Convention for the protection of industrial property of 1883, the main oldest convention dealing with patents, already provided a general provision preventing patent owners from promoting progress. Article 5A(2)-(4) of the Paris Convention provides that countries can impose compulsory licences if there is an abuse of the exclusive right e.g. failure to work the patented invention. This provision is not specific to the protection of the environment but to progress. In any case, it can be used to force a patent holder to work its environmentally-friendly invention.

As it is more recent, TRIPs directly and indirectly addresses environmental concerns. Several articles are relevant: articles 7 and 8 generally and article 27.2 as regards patents. This section focuses on articles 7 and 8 which can apply to all IPR. Section 3 will address article 27.2 as it relates exclusively to patents. Articles 7 and 8 may be read as general safeguards which may ensure that IPR do not encourage global warming.

Article 7, named “Objectives”, provides that “the protection and enforcement of intellectual property rights should contribute to the promotion of technological innovation and to the transfer and dissemination of technology, to the mutual advantage of producers and users of technological knowledge and in a *manner conducive to social and economic welfare, and to the balance of rights and obligations*” (emphasis added). On the other hand, article 8.2 (part of article 8 named “Principles”) provides in sum that measures may be needed to prevent abuses by intellectual property holders of their rights.

Articles 7 and 8 are important articles which provide interpretation of the TRIPs agreement as a whole.<sup>23</sup> According to article 7, IPR should work “in a manner conducive to social and economic welfare” and requires a balance between rights and obligations of intellectual property right holders. However, the agreement does not give any standard to make this balance.<sup>24</sup> On the other hand, the first part of article 7 means that “the recognition and enforcement of intellectual property rights are subject to higher social values”.<sup>25</sup> One of these values of course is the respect of human rights. Whilst international intellectual property instruments have not or not much at

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<sup>23</sup> Correa, above fn. 11, p. 99.

<sup>24</sup> Ibid., p. 101.

<sup>25</sup> Ibid., p. 99.

all recognised the tension between intellectual property and human rights<sup>26</sup>, TRIPs recognises values underlying human rights in the exceptions to the exclusive rights e.g. the protection of the environment (article 27.2).<sup>27</sup> But the main question is whether the WTO panels and the Appellate Body should consider human rights when interpreting TRIPs. Many have suggested that the WTO must respect human rights.<sup>28</sup>

As to article 8, some have argued that it is “essentially a policy statement that explains the rationale for measures taken under articles 30, 31 and 40.”<sup>29</sup>

In any case, a number of developing countries, the Ministerial Conference in the Declaration on the TRIPs Agreement and Public Health<sup>30</sup> and paragraph 19 of the Doha declaration<sup>31</sup> all confirmed the importance of articles 7 and 8 in interpreting TRIPs. These two articles should be important in construing the exceptions to exclusive rights e.g. fair use in copyright law and research and access to pharmaceuticals in the context of patent rights.<sup>32</sup> One might add to this that articles 7 and 8 are also crucial in interpreting the exceptions which favour the reduction of CO<sub>2</sub>, mainly article 27.2 and 31. These will be examined in the next two sections. The respect of human rights will be discussed in part II, section 3.

### **3. Morality and ‘ordre public’ provisions**

As the combined general provisions of the Paris Convention and TRIPs point at, IPR cannot be abused and must be balanced against higher values. Within intellectual property international instruments, some specific provisions already exist to take these values into account. These provisions are reflected in European law. The first provisions are the morality and public order, public policy or “ordre public” provisions (these latter three expressions will be used interchangeably). Section 3.1 examines the provisions relating to patents and section 3.2, those relating to copyright.

#### **3.1. Patents**

It is in article 27 of TRIPs where provisions for the respect of the environment and therefore implicitly the more specific problem of global warming can be found. Paragraph 1 of article 27 simply obliges Members to ensure that patents may be granted in all fields of technology. On the other hand, paragraph 2 *allows* Members to prohibit the patentability of inventions in order to protect *ordre public* or morality including to “avoid serious prejudice to the environment provided that such exclusion is not made merely because the exploitation is prohibited by their law”. It has long

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<sup>26</sup> Ibid.

<sup>27</sup> See High Commissioner Report to the Fifty-Second Session of the Commission on human rights, Sub-commission on the promotion and protection of human rights, “The impact of the agreement on trade related aspects of IPR on human rights”, E/CN.4/sub.2/2001/13, June 2001 cited by Correa, above fn. 11, p. 100.

<sup>28</sup> Correa, above fn. 11, p. 100; Richard Ford “The morality of biotech patents: differing legal obligations in Europe” [1997] EIPR 315, at 317 ff.

<sup>29</sup> Daniel Gervais, *The TRIPs Agreement, Drafting History and Analysis*, 2<sup>nd</sup> ed., Thomson, Sweet & Maxwell: London, 2003, p. 121.

<sup>30</sup> WT/MIN(01)/DEC/W/2, 14 November 2001.

<sup>31</sup> WT/MIN(01)/DEC/1, 20 November 2001.

<sup>32</sup> Correa, above fn. 11, p. 102-103.

been accepted that no IPR can be granted to immoral inventions or creations.<sup>33</sup> For patents, this is reflected in article 27.2 of TRIPs. In addition, TRIPs goes further as it includes the prejudice to the environment as contrary to *ordre public* or morality. However, as with compulsory licences (see section 4.1 below), article 27.2 is not mandatory. Members are free to prohibit immoral inventions or not.

First of all, it can be said that that part of article 27.2 does not provide a clear standard to assess when there is a serious prejudice to the environment.<sup>34</sup> It is true that the text requires the prejudice to be serious, thereby both narrowing the provision and rendering it clearer. But on the other hand, this seriousness standard is still imprecise. The provision seems also narrow because it refers to “avoiding” prejudice to the environment, “which would seem to exclude cases in which the aim of the refusal would be to mitigate or control such prejudice”.<sup>35</sup> Nevertheless, this is a useful yardstick as the seriousness may be actual or potential since article 27.2 does not distinguish between the two<sup>36</sup> (which is a positive aspect of the article). In any case, this provision has the merit to exist; it is a step in the right direction<sup>37</sup> and should prompt national legislatures to adopt specific measures to reduce levels of CO<sub>2</sub> in the atmosphere. Patent offices of Members which have incorporated article 27.2 in their laws should therefore examine whether the invention for which a patent is applied actually or potentially seriously damages the environment. As far as global warming is concerned, depending on whether they take a broad or restrictive view, patent offices could either not grant patents for any invention which emits CO<sub>2</sub> or make a cost/benefit analysis in terms of the value of the invention for society and the levels of CO<sub>2</sub> emitted.<sup>38</sup> This might be the preferred option as the standard is a serious prejudice to the environment. Thus, requiring that every invention does not emit any carbon dioxide at all might be construing the exception too broadly.

How do patent laws in Europe deal with the issue of the reduction of carbon dioxide? Patent law is very similar throughout Europe because most European countries are parties to the European Patent Convention (EPC), which provides common rules, among others, on patentable subject-matter.<sup>39</sup> Similarly to article 27.2 of TRIPs, article 53(a) of the EPC provides that “European patents shall not be granted in respect of inventions the publication or exploitation of which would be contrary to *ordre public* or morality, provided that the exploitation shall not be deemed to be so contrary merely because it is prohibited by law or regulation in some or all of the contracting states”.<sup>40</sup> The difference with article 27.2 of TRIPs is that there is no specific reference to the protection of the environment, certainly because at the time it was adopted, in 1973, this concern had not yet emerged. Nevertheless, as European

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<sup>33</sup> This is however not the case in U.S. patent law anymore. See Margo Bagley “Patent First, Ask Questions Later: Morality and Biotechnology in Patent Law” 45 William & Mary Law Review 469.

<sup>34</sup> M. Bruce Harper “TRIPs Article 27.2: An Argument for Caution” [1997] 21 William & Mary Environmental Law & Policy Review 381, at 384.

<sup>35</sup> Correa, above fn. 11, p. 290.

<sup>36</sup> Ibid.

<sup>37</sup> See also Richard Ford, above fn. 28, at 316.

<sup>38</sup> See introduction by extrapolating Oliar’s (above fn. 19, p. 1840) test based on the Copyright and Patent Clause.

<sup>39</sup> Convention on the grant of European Patents of 5 October 1973.

<sup>40</sup> According to the interpretation of this article, it is only the exploitation of the patent which must give offence. See Margarete Singer & Dieter Stauder, *The EPO, A Commentary*, 3<sup>rd</sup> ed., Vol. 1, Sweet & Maxwell: London, 2003, p. 87.



countries are bound by TRIPs, the European Patent Office (EPO) and national patent or intellectual property offices must respect article 27.2 of TRIPs. In any case, inventions the exploitation of which would be contrary to *ordre public* can nowadays include serious prejudice to the environment as has been held by the EPO Board of Appeal in *Plant Genetic Systems*, its most recent relevant decision on this topic.<sup>41</sup> There has been no case so far dealing with an invention which might increase the levels of CO<sub>2</sub> in the atmosphere. However, the various branches of the EPO have had to deal with cases based on article 53(a) that dealt with genetically modified animals or plants, which could seriously prejudice the environment.

The EPO's current view is that it will assess whether an invention seriously prejudices the environment in the sense that it is for the European institutions to decide what morality and public order mean.<sup>42</sup> On the other hand, exceptions to patentability must be narrowly construed.<sup>43</sup> Therefore, inventions the exploitation of which is likely to seriously prejudice the environment are not patentable under article 53(a) EPC. On the other hand, there is no set test to do so. As the EPO Board of Appeals in *Plant Genetic Systems* put it: "a balancing exercise is only one way of assessing patentability, perhaps useful in situations in which an actual damage and/or disadvantage (e.g. suffering of animals [...]) exists."<sup>44</sup> This balancing exercise or utilitarian (cost benefit) approach was adopted by the Board of Appeal in its earlier *Harvard/Onco Mouse* decision.<sup>45</sup> In that case, which involved the patenting of a genetically modified mouse in order to cure cancer, it held that the application of article 53(a) "would seem to depend mainly on a careful weighing up of the suffering of animals and possible risks to the environment on the one hand, and the invention's usefulness to mankind on the other". The case went back to the Examining Division which held the invention patentable. Finding a cure for cancer was desirable and the mouse would help achieve this aim; the harm caused by the invention to the mouse weighed less in the scale. This approach was later followed in a case involving a patent by Upjohn for a mouse genetically modified to lose hair. By contrast with the *Harvard/Onco Mouse* case, because the harm suffered by the mouse was greater than the benefit from the invention, the EPO refused the patent application.<sup>46</sup> As stated in *Plant Genetic Systems*, this test is not discarded but other tests could be used. As far as the protection of the environment is concerned, a threat to it must be sufficiently substantiated at the time the EPO makes its decision to revoke the patent.<sup>47</sup> In the case, Greenpeace, which tried to revoke *Plant Genetic Systems*' patent (plants and seeds resisting to certain herbicides), only attracted evidence that there was a *possibility* of some undesired events happening because of the invention (e.g.

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<sup>41</sup> Decision of 21 February 1995, case T 0356/93 [1995] OJEP 545; paragraph 5 of the reasons. See also Singer & Stauder, above fn. 40, p. 88; Lionel Bently & Brad Sherman, *Intellectual Property Law*, 2<sup>nd</sup> ed., Oxford: Oxford University Press, 2004, p. 438.

<sup>42</sup> *Plant Genetic Systems*, above fn. 41, paragraphs 4 and 5 of the reasons. Previously, the Opposition Division held that the EPO was not the place to make ethical decisions. See *Plant Genetic Systems* [1993] 24 IIC 618 and *Howard Florey/Relaxin*, case T 74/91 [1995] EPOR 541. Bently & Sherman, above fn. 41, p. 437.

<sup>43</sup> *Plant Genetic Systems*, above fn. 41, paragraphs 4 and 5 of the reasons.

<sup>44</sup> *Ibid.* paragraph 18.8 of the reasons.

<sup>45</sup> [1990] EPOR 4; [1989] OJEP 451 (Exam); case T 19/90 [1990] EPOR 501 [1990] OJEP 490 (TBA); [1991] EPOR 525 (Exam). For a description, see Bently & Sherman, above fn. 41, p. 436-437.

<sup>46</sup> Case dating from 1991 reported in *The Independent*, 2 February 1992, cited by Bently & Sherman, above fn. 41, p. 436.

<sup>47</sup> *Plant Genetic Systems*, fn. 41 above, paragraph 18.5 of the reasons.

transformation of crops into weeds, damage to the ecosystem). This evidence was not sufficient to substantiate the threat to the environment.<sup>48</sup> As some have noted, “it may well be that today a stronger case could be made out on just these lines.”<sup>49</sup>

Applying these principles to global warming, it could mean that the cost benefit analysis test could only be used if there is evidence that a specific invention caused actual damage or disadvantage to the environment. In that case, if the risk that the invention increases CO<sub>2</sub> outweighs its benefit(s) to society, then it should not be patentable under article 53(a) EPC. On the other hand, the rule stated in *Plant Genetic Systems* may not allow the patent offices to revoke single inventions that emit each a little amount of CO<sub>2</sub> because there will generally be lack of evidence that a single invention can cause actual damage to the environment. However, in order to respect article 27.2 of TRIPs, the EPO and more generally European countries Members of the EPC, may have to be more flexible as to non-patentability in the case of serious damage to the environment as seemingly this includes potential as well as actual damage.<sup>50</sup> In any case, currently, as it is difficult to invent alternative sources of energy that emit no carbon dioxide, it would perhaps be too harsh to impose a zero carbon emission on every invention at first. In addition, it is only the increase of CO<sub>2</sub> beyond a certain level which contributes to global warming. How patents offices should reach a decision as to the patentability of inventions emitting CO<sub>2</sub> will be discussed in part II, section 4.

### 3.2. Copyright and related rights

Article 17 of the Berne Convention, although not in express terms, allows Members to deny copyright protection to works on reason of public policy or morality.<sup>51</sup> It states that “the provisions of this Convention cannot in any way affect the right of the Government of each country of the Union to permit, to control or to prohibit, by legislation or regulation, the circulation, presentation, or exhibition of any work or production in regard to which the competent authority may find it necessary to exercise that right.” This provision has been used by states to censor works in order to protect public order, public morals or state security but not only, as states have interpreted this article broadly.<sup>52</sup> Article 17’s interpretation is that it refers mainly to censorship. This means that compulsory licences cannot be introduced under it.<sup>53</sup> There is no specific provision in the Convention that denies copyright protection if the work damages the environment or more specifically increases levels of CO<sub>2</sub> in the atmosphere. It may be logical that such specific provisions are absent from the text of the Berne Convention, in view of its rather old status (1886, last revised in 1979), but states can in any case use article 17 to deny copyright protection to works which increase levels of CO<sub>2</sub> if they so wish in view of the wide interpretation that they can give it. The other more recent copyright international instruments, namely TRIPs and the 1996 WIPO treaties, could have clarified that works increasing emissions of

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<sup>48</sup> Ibid. paragraph 18.6 of the reasons.

<sup>49</sup> William Cornish & David Llewelyn, *Intellectual property: patents, copyright, trade marks and allied rights*, 5<sup>th</sup> ed., London: Sweet & Maxwell, n. 20-11, p. 834.

<sup>50</sup> See fn. 36 above.

<sup>51</sup> Bently & Sherman, fn. 41 above, p. 259 who cite Sam Ricketson, *The Berne Convention for the Protection of Literary and Artistic Works*, London: Kluwer & QMW, 1987, paragraph 9.72; Sam Ricketson & Jane Ginsburg, *International Copyright and Neighbouring Rights, The Berne Convention and Beyond*, Volume 1, p. 841, n. 13.88.

<sup>52</sup> Ricketson & Ginsburg, above fn. 51, p. 841, n. 13.88.

<sup>53</sup> Ibid., p. 843, paragraph 13.90.

carbon dioxide could not receive copyright protection. Perhaps they did not because drafters were not concerned with these issues at the time (as indeed those treaties were adopted to address arising specific issues affecting copyright mainly digitisation and the internet) or did not think copyright works could damage the environment.

European Directives in the field of copyright do not address this problem. What about UK law? In the United Kingdom, courts have developed the notion that works which are “obscene, sexually immoral, defamatory, blasphemous, irreligious or seriously deceptive of the public”<sup>54</sup> should be refused copyright protection.<sup>55</sup> The current law is that courts will deny copyright protection if the content’s work is immoral but also if the circumstances in which it was created were immoral.<sup>56</sup> However, two aspects of exclusion of subject-matter on the grounds of “public policy” are unclear. First, it is unclear whether there is no copyright at all in such works or whether the copyright subsists but will not be enforced. As the end-result is similar, this is not such an issue in this context. Second, the boundaries of immorality or rather of the public policy “exception” are not clear. Could it include works which could damage the environment or more specifically increase levels of carbon dioxide in the earth’s atmosphere? If courts apply article 17 of the Berne Convention liberally or article 27.2 of TRIPs by analogy or even its articles 7 and 8, they could very well include serious prejudice to the environment into the public policy exception.

However, as Bently and Sherman note, the public policy exception leads to a paradox: since the works are non-copyrightable, it puts them in the public domain, thereby favouring their broad dissemination.<sup>57</sup> This is true for works which are by definition intangible such as literary, dramatic, musical works, films and broadcasts. This is less true of some artistic works which must be replicated with certain tangible materials (e.g. sculptures, works of architecture or artistic craftsmanship), except of course if they are reproduced by photographic process. Thus for those “tangible works”, the morality provision is useful if interpreted to avoid that such works seriously damaging the environment be protected by copyright. As far as architectural works are concerned, the morality exclusion could therefore prevent the copyrightability of architectural plans for buildings emitting CO<sub>2</sub>. This will give an incentive to architects to design carbon neutral buildings. Surely, architects will be less enticed to draw plans for non eco-friendly buildings if those architectural plans are not protected. In addition, the morality or *ordre public* condition of patent law will provide an incentive to inventors of features used in buildings to innovate more “greenly”. As to other tangible artistic works (e.g. engravings, sculptures, works of artistic craftsmanship), similarly, the morality provision could possibly be used to force artists to create those works with materials that emit very little CO<sub>2</sub> or were produced with little emissions or no emissions. However, this may be pushing the morality clause a bit far and may restrict artists’ freedom as to the choice of materials too much.

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<sup>54</sup> Cornish & Llewelyn, above fn. 49, p. 448.

<sup>55</sup> See e.g. *Glyn v. Weston Feature Film Co.* [1916] 1 Ch 261 (Ch D) (book and film based on book were denied protection as they were advocating a “sensual adulterous intrigue”). More recently, in *Attorney General v. Guardian No. 2* [1990] 1 AC 109, the House of Lords approved the *Glyn* ruling.

<sup>56</sup> *Attorney General v. Guardian No. 2* [1990] 1 AC 109.

<sup>57</sup> Bently & Sherman, fn. 41 above, p. 112.

A related issue is whether “intangible” copyright works should, under the morality or public policy provision, be required to be recorded on eco-friendly media. This would arguably be pushing the public policy provision quite far and it could be said that this has nothing to do with copyright law, but e.g. with environmental law. If the public policy rule is not applied, in any case, it is clear that copyright law does not prevent recycling of the medium on which the copyright work is embodied. This is explored in section 5 below. But the case could be made that the morality provision in copyright law mandates that copyright works may have to be embodied in “green media”. For literary and dramatic works and some artistic works (graphic, photographic), this may include recycled paper. One could even argue that they should be available only in electronic form.<sup>58</sup> However, several reasons go against this view. First, it may not always be feasible (e.g. graphic works like hand drawings, paintings). Second, it may not always be convenient that all intangible works be in digital format only (think of newspapers and books). Third, it may, for policy reasons, be anyway unadvisable for two reasons. The first one is that it may unduly restrict the creative freedom of artists as to their choice of materials, as for tangible copyright works. The second reason is that whilst paper may mean the destruction of trees, digital storage also requires energy (electricity which may still be generated by non-green sources). Finally, and perhaps most importantly, having all works exclusively in digital format may lock both copyright and public domain works if software or hardware becomes out of date or there is a technical problem which does not allow access anymore. With paper, no such problem occurs. Arguably paper can also be destroyed. Possibly, the most radical way to reduce CO2 emissions which would also accommodate the freedom to enjoy works in traditional media such as paper would be to require copyright holders to deposit one copy or possibly two copies in two different locations (for safety purposes in case of flooding or fire) (in the U.S., e.g. the Library of Congress; in Europe, perhaps at one of the Directorate General of the European Commission). Some countries’ laws, other than copyright law, already require this to a certain extent. For instance, in France, articles L 131-1 ff. of the Patrimonial Code<sup>59</sup> requires the deposit of all documents made available to the public (and therefore *a fortiori* copyright works), for collection and conservation purposes at the Bibliothèque Nationale de France (BnF), le Centre National de la Cinématographie, l’Institut National de l’Audiovisuel et le service chargé du dépôt légal du Ministère de l’Intérieur (art. L 132-3).<sup>60</sup> This is subject to a fine. Similarly, U.S. law requires deposit at the Copyright Office of all works published in the U.S. and this is also subject to a fine (s. 407 of the U.S. Copyright Act).

Finally, it may be easier to argue that the other remaining classes of works such as sound recordings and films have to be recorded on green formats (e.g. digital format generated by green energy). But as for all works discussed above, not only for ecologic but also for safety purposes, for the conservation of the public domain and in order not to lock works in one single technology, at least one if not two “hard” copies should perhaps be deposited.

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<sup>58</sup> This may make sense for software for instance and digital databases although the object code, flow charts and other preparatory materials of computer programs as well as databases can be printed and/or recorded on paper.

<sup>59</sup> (Code du Patrimoine) Law n. 2006-961 of 1 August 2006, French Official Gazette 3 August 2006.

<sup>60</sup> These mean the National Library of France, The National Centre of Cinematography, the National Audiovisual Institute and the service in charge with the legal deposit at the Home Secretary. This requirement to deposit must respect of intellectual property laws.

## 4. Compulsory licences

### 4.1. Patents

Inside intellectual property laws, other general provisions, which are not specifically targeted at protecting the environment, can implicitly have a positive impact on it. This is the case of compulsory licences expressly provided for within intellectual property laws. As was shown above, the Paris Convention already stated that each Member *could* provide for compulsory licences if there is abuse of a patent right e.g. failure to work the invention (art. 5A(2)-(4)).<sup>61</sup> The choice for Members to grant compulsory licences has been restated in article 31 of TRIPs which also sets out conditions that Members must adhere to if they exercise this choice. Article 31 of TRIPs does not affect article 5A(2)-(4) of the Paris Convention.<sup>62</sup>

As with the public policy provisions, the downside of these two international provisions is that they do not force Members to adopt these provisions. Therefore, it must be checked against each national intellectual property law, whether, if an invention (and in our specific case an environmentally-friendly one) is not put to practice or if an invention improves another previously patented invention, anyone may ask for a licence (at those conditions) and exploit it. Let us first look at article 31 of TRIPs and then examine UK law.

Article 31 of TRIPs, as it does not oblige countries to provide for compulsory licences internally (in their intellectual property laws) does not do much for the protection of the environment and in particular the reduction of CO<sub>2</sub> emissions. But if a country decides to provide for compulsory licences then it has to abide by article 31, which lays down the conditions under which members must comply if they decide to provide compulsory licenses in their laws. As the latter's provisions are not exhaustive and do not refer to the environment, they give room for Members to adopt provisions which force patentees to grant licences when an invention helps to prevent global warming (e.g. on the basis of article 8).<sup>63</sup> Most relevant to the reduction of CO<sub>2</sub> are paragraphs (b) and (l) of article 31. Paragraph (b) allows Members to require patentees to grant a licence if they have not worked it (similar to article 5A of the Paris Convention). The person who wishes to exploit it must have asked a licence on reasonable conditions and not have obtained it within a reasonable period of time. This requirement may be

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<sup>61</sup> Article 5A of the Paris Convention states: "(2) Each country of the Union shall have the right to take legislative measures providing for the grant of compulsory licenses to prevent the abuses which might result from the exercise of the exclusive rights conferred by the patent, for example, failure to work.

(3) Forfeiture of the patent shall not be provided for except in cases where the grant of compulsory licenses would not have been sufficient to prevent the said abuses. No proceedings for the forfeiture or revocation of a patent may be instituted before the expiration of two years from the grant of the first compulsory license.

(4) A compulsory license may not be applied for on the ground of failure to work or insufficient working before the expiration of a period of four years from the date of filing of the patent application or three years from the date of the grant of the patent, whichever period expires last; it shall be refused if the patentee justifies his inaction by legitimate reasons. Such a compulsory license shall be non-exclusive and shall not be transferable, even in the form of the grant of a sub-license, except with that part of the enterprise or goodwill which exploits such license."

<sup>62</sup> Correa, above fn. 11, p. 313.

<sup>63</sup> Ibid., p. 318.

waived in case of national emergency, other circumstances of extreme urgency and in case of public non-commercial use. Paragraph (l) allows Members to provide that the holder of a first patent grants a licence to the holder of the second patent if (i) the second invention “involve[s] an important technical advance of considerable economic significance in relation to the invention claimed in the first patent; (ii) the owner of the first patent shall be entitled to a cross-licence on reasonable terms to use the invention claimed in the second patent; and (iii) the use authorized in respect of the first patent shall be non-assignable except with the assignment of the second patent.” (dependent patents).

On those bases, a country could force the patentee of an eco-friendly invention to allow its use by the state (paragraph (b)). For instance, if a country’s government could not wait 20 (or of course less) years before it wished to use the invention to reduce carbon emissions, article 31(b) could be used. The meaning of “important technical advance of considerable economic importance” will have to be interpreted by national legislatures<sup>64</sup>, and certainly also the courts especially if national statutes do not further explain these terms. Similarly, if the patentee of a first eco-friendly invention refuses to grant a licence to a second patentee of an improvement (the dependent patent) of this first invention, article 31(l) could be used to force him to do so.<sup>65</sup>

The EPC does not hold provisions on compulsory licences. How have European countries dealt with compulsory licences in their national intellectual property laws? At the time the TRIPs agreement was negotiated, most countries in the world had some form of compulsory licence in their intellectual property laws, but they were not much used.<sup>66</sup> In the United Kingdom, applications for compulsory licences are rare. There is a simple reason for this. In reality, few inventors will take the trouble to get a patent and then not work it.<sup>67</sup> Or if they really find it difficult to work it, then it will be equally difficult for the applicant to make a clear case that he or she can solve the problems that the patentee could not.<sup>68</sup> Nonetheless, the fact that compulsory licences are rarely used does not mean they have no effect at all. On the contrary, the simple fact that they are in the law may give the incentive to the patentee to work the invention or voluntarily licence it.<sup>69</sup> However, it has been noted that, in many cases, the threat of a compulsory licence being imposed is not strong because the licensee

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<sup>64</sup> Correa, above fn. 11, p. 318. By the way, the provision is a little redundant as the term “important” is used twice.

<sup>65</sup> There are more detailed provisions that Members must follow to respect TRIPs when they grant compulsory licences. For the details, see e.g. Correa, above fn. 11, p. 320-323.

<sup>66</sup> Correa, above fn. 11, p. 313, 317.

<sup>67</sup> Cornish & Llewelyn, above fn. 49, n. 7-44, p. 291.

<sup>68</sup> Paul Torremans, *Holyoak & Torremans Intellectual Property Law*, 4<sup>th</sup> ed., 2005, Oxford: Oxford University Press, p. 100.

<sup>69</sup> Bently & Sherman, above fn. 41, p. 561-562 noting at fn.83 that it may also be possible to ask the European Commission to impose a licence if the patent or copyright holder has a dominant position; see also *Intel Technologies v. Via Technologies* [2003] FSR 33 (CA); Cornish & Llewelyn, above fn. 49, n. 7-48, p. 293-294; Mandel, above fn. 11, p. 13 taking the example of a provision of the U.S. Clean Air Act requiring the owner of a patent on an invention that is necessary to comply with air emission standards to licence its patent. This provision of the Clean Air Act was enacted in 1970 but apparently has never been used, therefore supporting the idea that owners of environmental patents will generally licence the latter without the necessity of a compulsory licence. *Contra*: Torremans, above fn. 68, p. 101 who thinks that it is clear that compulsory licences are not such a huge threat as it might first appear for patent holders. “They are rarely sought, more rarely granted”.

may need know-how from the licensor and under the Patent Act above mentioned rules, the licensor is not obliged to provide it to the licensee.<sup>70</sup>

UK patent law was modified following the adoption of TRIPs mainly to make a difference between WTO or non-WTO patent owners.<sup>71</sup> As most countries in the world are now part of the WTO, few compulsory licences are granted and UK law has to comply with TRIPs, UK law will only be briefly reviewed and only the provisions applying to WTO patent-owners. First, a compulsory licence can only be asked after the expiry of a period of three years from the grant of the patent and not before.<sup>72</sup> Second, seemingly the only relevant compulsory licence that could be used to reduce carbon dioxide emissions is when a subsequent invention improves on an existing patent (s. 48A(1)(b)(i) comparable to article 31(1) of TRIPs). Similar wording as in article 31(1) TRIPs is used as the United Kingdom must comply with the conditions set out in article 31 since it chose to have such compulsory licence.<sup>73</sup>

## 4.2. Copyright and related rights

The TRIPs agreement does not contain compulsory licensing provisions other than those already existing in the Berne Convention, that it incorporates (art. 9 TRIPs). The Berne Convention provides the possibility for Members to grant compulsory licences (art. 11bis (2) and 13). These relate to limits on the right to authorise broadcasting and related rights and on the right to authorise the recording of musical works and any words pertaining thereto. The Rome Convention also allows Members to provide for compulsory licences in limited cases (see art. 12 and 15(2) which relate to the broadcasting or communication to the public of sound recordings). By way of example, these provisions are no longer used in the United Kingdom.<sup>74</sup> There are no compulsory licences in the EU Directives which would favour the reduction of carbon dioxide in the air. Therefore, currently copyright and related rights do not permit the reduction of CO<sub>2</sub> by way of compulsory licences. In the United Kingdom however, compulsory licences can nonetheless be imposed by the Competition Commission in certain cases, mainly when the copyright owner refuses to grant a licence on reasonable terms and when the licence restricts the use of the work by the licensee or the right of the owner to grant other licences (s. 144 of the UK Copyright Act).<sup>75</sup> These powers are exercisable in consequence of a report of the Competition Commission. So again, as with the morality provision, not surprisingly, these provisions do not specifically relate to the safeguard of the environment let alone the reduction in carbon dioxide. But they could nevertheless be used to this effect if the work or use of the work reduces levels of CO<sub>2</sub>. It is difficult to conceive of such a case but the following examples might not be so far from reality: a copyrightable object (such as “green” hardware), a protectable work such as software whose aim is to reduce CO<sub>2</sub> or a database containing information on how to reduce levels of carbon dioxide.

Whether the use of compulsory licences is the best way to encourage inventions reducing carbon emissions will be discussed in part II, section 2.

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<sup>70</sup> Cornish & Llewelyn, above fn. 49, n. 7-48, p. 294.

<sup>71</sup> Cornish & Llewelyn, above fn. 49, p. 291, n. 7-45; Bently & Sherman, above fn. 41, p. 562.

<sup>72</sup> S. 48(1) and 48B(2) of the Patent Act; Bently & Sherman, above fn. 41, p. 562.

<sup>73</sup> See e.g. Cornish & Llewelyn, above fn. 49, p. 292, n. 7-45.

<sup>74</sup> Bently & Sherman, above fn. 41, p. 259.

<sup>75</sup> See also Torremans, above fn. 68, p. 285.

## 5. The principle of exhaustion

Do IPR prevent the recycling of products so that more carbon emissions are produced by forcing consumers to buy more products whose production has emitted CO<sub>2</sub>? If we accept that recycling products protected by a patent or a copyright only involves a re-use or transfer of the original IPR-protected product as is or a complete destruction of it, in other words, it does not involve a change (a change would fall under repair rather than recycle), then IPR do not block the recycling of products because the principle of exhaustion (or first sale doctrine as it is called in the United States) applies. Indeed the transfer or re-use of IPR-protected products does not involve any of the exclusive rights in copyright and patent (nor for that matter design and trade mark) laws. As a reminder, this principle, which applies to all IPR, provides that the right of distribution of the IPR holder is exhausted once he or she first puts his or her product on the market or it is put on the market with his or her consent.<sup>76</sup>

IPR holders may be tempted to override the principle of exhaustion by way of contracts or technological protection measures (TPMs) but this is arguably against EU law (art. 28-30 of the European Community Treaty (ECT) on the free movement of goods) and in some countries, inalienability clauses have been held void because they are against the very definition of property, and the Civil Code which favours the free circulation of goods.<sup>77</sup> Thus contracts and TPMs which prevent recycling of copyright or patented products should be void.<sup>78</sup> Even if they were not, they may be in conflict with some EU environmental laws which require recycling at least in certain technological sectors (e.g. vehicles, packaging, electronic equipment). These issues are beyond the scope of this article as they concern contracts and TPMs and not IPR as such and are discussed elsewhere to which the reader is referred.<sup>79</sup>

## 6. Conclusion

The first part of this article has shown that part of the current intellectual property laws already directly or indirectly favours inventions and creations which reduce the level of carbon dioxide in the planet's atmosphere. Thanks to the provisions on public order and on compulsory licences that exist in European patent and copyright laws,

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<sup>76</sup> Article 4 of the Copyright Directive (Directive 2001/29 of 22 May 2001 on the harmonisation of certain aspects of copyright and related rights in the information society, OJ L 167, 22.06.2001, 10-19); art. L. 613-6 (patents) of the French Intellectual Property Code. The UK Patent Act does not provide for the principle but *Centrafarm v. Sterling Drug*, case 15/74 [1974] ECR 1147 established the principle of exhaustion in the European Union. See also article 7 of the Trade Mark Directive (Directive 89/104/EEC on 21 December 1988 to approximate the laws of the Member States relating to trade marks) and article 15 of the Designs Directive (Directive 98/71/EC of the European parliament and the Council for 13 October 1998 on the legal protection of designs).

<sup>77</sup> In Belgium and arguably also in France. See Jacques Hansenne, *Les biens – Précis*, Collection Scientifique de la Faculté de Droit de Liège: Liège, p. 584, n. 631, cited by Séverine Dusollier, *Droit d'auteur et protection des oeuvres dans l'univers numérique, Droits et exceptions à la lumière des dispositifs de verrouillage des oeuvres*, Larcier: Bruxelles, 2005, p. 405, n. 517.

<sup>78</sup> On this, see Estelle Derclaye, "Blocking Repair and Recycle Through End User Licence Agreements and Technological Protection Measures", 7<sup>th</sup> Intellectual Property Seminar organized by the Macao Institute of European Studies (IEEM): "Intellectual Property Law: Repairs, Interconnections and Consumer Welfare" Macao, 26 & 27 June 2006, *forthcoming*, Hart Publishing, 2008, section A.II.

<sup>79</sup> *Ibid.*, section C.I.



such IPR should normally only be granted to inventions and creations that do not increase carbon emissions. In addition, IPR holders may not prevent recycling. Because provisions are broad, legislatures and courts can, if they so wish, interpret them to reduce or even eliminate carbon emissions. However, it may be possible to make intellectual property laws even greener if that is how governments wish to tackle global warming.<sup>80</sup> This may be one of the ways to do so, as many industrialised countries (around 140 of them) already committed, in the 1997 Kyoto Protocol to cut 5.2 percent in greenhouse gases emissions by 2012.<sup>81</sup> The Protocol came into force in February 2005.<sup>82</sup> And as we know, many products and sources of energy emitting CO<sub>2</sub> are the result of inventions and creations, for which private companies, governments and even individuals, the little or not yet known authors and inventors, desperately seek a patent or copyright protection.

## II. How to make intellectual property laws greener

The current intellectual property laws could be improved by modifying the morality and public order provisions and the compulsory licensing rules. Yet another way is, as IPR are human rights, to balance IPR with other human rights which may directly or indirectly protect the environment. Why should it be so? First, because the aim of intellectual property laws is human well-being and the latter depends on that of our common planet. Therefore, in view of this ultimate international goal and the transnational effect of global warming, all countries intellectual property laws should be modified to allow the reduction of CO<sub>2</sub>. Second, there is an increasing trend that says that human rights must be respected including by intellectual property laws.

### 1. *Modifying the morality and 'ordre public' provisions*

This section does not need long developments. As argued in part I, section 3, courts can already use the morality and public order provisions in patent and copyright laws to regulate protection of non-eco-friendly products. Nonetheless, more could be done, ideally at international level and if not at regional or national level by modifying the relevant legal instruments. First and foremost, international conventions could be changed to force Members to prohibit inventions and creations which generate over a certain amount of carbon dioxide in the atmosphere, as for the moment, Members are free to choose to do so or not. This would increase legal certainty, harmonisation and effectiveness, as now, this issue is left to the courts of states which have adopted such rules, with the correlative disadvantages (mainly divergent decisions). For patents, a more stringent rule than that stated in *Plant Genetic Systems* may in future be necessary so that patent offices can revoke single inventions that emit each above a certain threshold of CO<sub>2</sub> even though there is no concrete evidence that that single invention causes actual damage to the environment. As to copyright, as noted above, a zero-carbon emission rule can work but may not in all cases be advisable. On the one hand, for tangible works, it may restrict artists' freedom as to the choice of materials

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<sup>80</sup> Note that in the United States, 37 C.F.R. § 1.102(C) (2005) already allows patent applicants to ask that the patent examination be accelerated if the invention "will materially enhance the quality of the environment or materially contribute to the development or conservation of energy resources". According to Mandel (above fn. 11), since this provision is rarely used, it does not increase the incentive to innovate greenly.

<sup>81</sup> <<http://news.bbc.co.uk/2/hi/science/nature/4267245.stm>> (last accessed on 28 August 2007).

<sup>82</sup> Ibid.

too much and for intangible ones, it may lock works into digital format and may not always be convenient.

## **2. Modifying the compulsory licensing rules**

### **2.1. Patents**

It is clear, as has been seen above, that generally compulsory licences could help improve the environment.<sup>83</sup> Of course, more detail as to how they could improve the reduction of CO<sub>2</sub> is needed. As to patents, one can take two views. One view is to maintain the *status quo*, in other words, not to change the TRIPs compulsory licensing rules in the sense that countries remain free not to impose any in their intellectual property laws. Another is to change the rules - ideally at international level so that all TRIPs Members have to comply, otherwise at national level, so one or more countries set the example – and force countries to provide for compulsory licences when an inventor or creator comes up with a product emitting very little or no CO<sub>2</sub>.

Within this latter view, two cases can be distinguished. First, in the case a second inventor improves on the already green invention, at least in the United Kingdom, a compulsory licensing scheme already exists and should be maintained. It may nevertheless be argued that the general rule that three years must lapse before the second inventor may ask the licence be scrapped in order to protect the environment better. In this case, since a cross-licence has to be given to the first patentee, it should not reduce too much the incentive of the first patentee. But this is a tough choice to make. Perhaps the current compulsory licensing provisions in the United Kingdom are already providing the necessary and correct incentive. Scrapping or reducing the length of three years may be counter-productive as first inventors may be deterred from inventing greener products and processes in the first place, knowing they will not reap the full benefits of their inventions at least for three years. Some indeed believe that compulsory licences in general would deter environmental innovation.<sup>84</sup> Others argue that compulsory licences have a positive impact because they allow follow-on innovations.<sup>85</sup> At least one study examining some companies shows that compulsory licences do not diminish incentives of patentees.<sup>86</sup> Further economic studies may have to be undertaken to show whether this is indeed generally the case. Certainly, in the case it is a simple copier who asks for the licence, the rule should arguably not apply as this would reduce considerably the incentive to invent the green product in the first place. Consequently, products emitting little or no carbon dioxide would not be invented in the first place.

Second, as far as inventions not put to practice are concerned, probably the Paris Convention or TRIPs should be modified to force countries to adopt this rule; otherwise, states could of course separately take the initiative. Indeed, even if it is rare that inventions are not put to practice, the case could happen that the state, or companies with a vested interest, buy an eco-friendly invention from the inventor simply in order to stop their exploitation. If the specific country has not taken the

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<sup>83</sup> Correa, above fn. 11, p. 319.

<sup>84</sup> Mandel, above fn. 11, p. 12.

<sup>85</sup> Correa, above fn. 11, p. 313.

<sup>86</sup> Correa, above fn. 11, p. 314 citing Frederic Scherer, "Comments", in Robert Anderson & Nancy Gallini (eds.), *Competition Policy and Intellectual Property Rights in the Knowledge-Based Economy*, Alberta: University of Calgary Press, 1998, p. 107-108.

option left in the Paris Convention to force the owner to work the invention, only competition law can be used, and this requires a dominant position and the other disadvantages described in the next paragraph.

The other view, as stated above, is to maintain the *status quo*. This may be the way to go as anyway, competition laws may already provide a means to prevent abuses of dominant position by IPR holders.<sup>87</sup>

What is the best approach? None of these two views as proposed is in itself satisfactory. Forcing countries to adopt compulsory licensing rules for every IPR without distinction, such as those provided for in TRIPs and the more detailed ones existing in the United Kingdom, may in fact be counter-productive. This is because they apply despite the establishment of a dominant position by the IPR holder. Now, if there is competition in the market, the market will function properly and no legal remedies should be imposed on inventors and creators if they do not possess a dominant position. However, in our view, it is better for legal certainty, to reduce costs<sup>88</sup> and because the case law is not yet very clear (at least in Europe<sup>89</sup>), that the statutory law provides fairly detailed rules rather than leave this to the competition authorities.<sup>90</sup> The best compromise or solution would therefore be to include this requirement of dominant position inside the patent laws' compulsory licensing provisions.

## 2.2. Copyright and related rights

Introducing compulsory licences in copyright law has disadvantages, like with patents.<sup>91</sup> First, it requires putting in place an administrative procedure and this is costly and time-consuming. Second, the price of a licence can only be correctly evaluated by negotiations in the market place. In that connection, a compulsory licence obviously takes away the exclusive right of the IPR holder, which allows him or her to bargain the price.<sup>92</sup> This is why like for patents above, it makes sense to introduce compulsory licences in copyright law only when the copyright or related right holder has a dominant position. Indeed, in this case, the market cannot work

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<sup>87</sup> In Europe, see article 82 of the ECT and in the United States, section 2 of the Sherman Act and the case law in both countries.

<sup>88</sup> If there is an abuse, either it will trigger litigation and this will involve costs including for the state (since it is the competition authorities' task to detect and sue potential abusers) and at the end of the day the taxpayers, or if litigation is not engaged, the cost will rest with the users who will be charged an excessive price or be denied access to information. In addition, competition authorities may become flooded with litigation and delays may occur with handling cases.

<sup>89</sup> It took almost 10 years to have a case before the European Court of Justice (ECJ) to clarify the relationship between intellectual property and article 82 ECT. The only two intellectual property cases preceding the current latest ruling on the issue (*IMS Health GmbH & Co OHG v. NDC Health GmbH & Co KG* (case C-418/01) [2004] ECDR 239) are *Radio Telefis Eireann (RTE) & Independent Television Publications Ltd (ITP) v. Commission* ("Magill") (cases C-241/91 P & C-242/91) [1995] ECR I-743 and *Tiercé Ladbroke SA v. Commission of the European Communities* (Case T-504/93) [1997] ECR II-923; [1997] 5 CMLR 309. Both decisions gave confusing messages on the conditions under which a refusal to licence information is abusive. The next intellectual property case on point (appeal of Commission decision of 24 March 2004, C (2004)900 final, relating to a proceeding under article 82 ECT (case COMP/C 3/37.792, *Microsoft*)) should be decided by the CFI in September 2007.

<sup>90</sup> See also François Levêque & Yves Ménière, *The economics of patent and copyright*, Berkeley Electronic Press, 2004, available at <<http://ssrn.com/abstract=642622>>

<sup>91</sup> Bently & Sherman, above fn. 41, p. 259.

<sup>92</sup> Ibid.

efficiently as users face a single source of power. Article 144 of the UK Copyright Act already provides for some sort of internal compulsory licence<sup>93</sup> but there needs to be a report of the Competition Commission for it to apply. What there would need to be is a compulsory licence scheme that applies to protected subject-matter owned by copyright or related rights holders in a dominant position, in similar cases as those which already exist under patent law compulsory licences. In both cases, action could be taken by anyone (be it users, the general public or the competition authorities themselves). However, in the case of copyright works, such compulsory licences should respect the freedom to create explained in part I, section 3.2.

Another important aspect of copyright conventions (see article 2(4) of the Berne Convention), regional and national laws that would need to change is to ensure that official documents containing original expression relating to the reduction of carbon dioxide are not protected by copyright. Indeed, as such copyright protected subject-matter is made by the state (parliament, government or judiciary), no copyright should subsist because users of the materials have already paid for it through their taxes. The morality provision could also apply to this situation but it is less legally certain than the one advocated here. This proposed change could apply to judgments and laws in the United Kingdom for instance – at least those which contain such original expression relating to the reduction of CO<sub>2</sub> in the atmosphere -, which are still protected by copyright. Similarly, publicly funded databases should remain unprotected by the European database *sui generis* right.<sup>94</sup> The data should be available to anyone for free or at the cost of sending it (which may be zero if available and sent electronically). Admittedly, such provisions would not be compulsory licences but simply an exclusion from copyrightable or subject-matter protected by related rights.

### **3. Resorting to human rights**

One way to reduce levels of carbon dioxide is to argue that IPR must respect other human rights which relate to the protection of the environment. IPR are arguably human rights, either as such or within the right to the respect of one's property. Even if internationally, no binding instrument recognises intellectual property rights as human rights, many and the main international non-binding instruments do recognise them as such.<sup>95</sup> In Europe, it is admitted that IPR are human rights as falling into article 1 of the Additional Protocol to the European Convention of Human Rights (ECHR) which protects the right to the respect of one's property.<sup>96</sup> Increasingly, IPR

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<sup>93</sup> UK law also provides for a compulsory licensing system for *sui generis* right-protected databases close to that provided in section 144 of the Copyright Act, see Schedule 2 of the Copyright and Rights in Databases Regulations of 18 December 1997, S.I. 1997 n. 3032, HSI – Issue 302, p. 10145, in force 1 January 1998. The European *sui generis* right protects the substantial investment that went in the collection, presentation and/or verification of the data rather than in the originality of the database's structure/organisation (which copyright law already protects). See Directive 96/9/EC of the European Parliament and of the Council of 11 March 1996 on the legal protection of databases, OJ L 077, 27/03/1996, p. 20-28.

<sup>94</sup> Initially, the draft Database Directive provided for a compulsory licence for sole source databases but it was scrapped as a result of lobbying. See COM (92) 24 final, article 8.1.

<sup>95</sup> Article 27 of the Universal Declaration of Human Rights of 1948; article 15 of the International Covenant on Economic, Social and Cultural Rights of 1966; article 17 of the Charter on Fundamental Rights of the European Union of 2000 which states that intellectual property is protected.

<sup>96</sup> Article 1 of the First Additional Protocol provides that "every natural or legal person is entitled to the peaceful enjoyment of his possessions. No one shall be deprived of his possessions except in the public interest (...)"

are also recognised as human rights by the literature.<sup>97</sup> On the other hand, the ECHR does not contain a right to a clean and/or healthy environment.<sup>98</sup> Nor does international law yet recognise such a right.<sup>99</sup> Therefore, at present, there is no such international enforceable right.<sup>100</sup> Thornton & Beckwith note that courts and commentators have been reluctant to recognise a human right to the environment for three main reasons.<sup>101</sup> First, as human rights protect individuals, in order for the right to be breached, there must be a direct and substantial impact on a particular individual. Second, human rights and the protection of the environment may sometimes clash. For instance, the right of Amazonian Indians not to be hungry and therefore to cut trees to create farmland goes against long-term reduction of CO<sub>2</sub>. Third, human rights only protect the current generation. They cannot be used to promote sustainable development, i.e. the preservation of the environment for future generations.<sup>102</sup> These reasons may very well undermine the use of human rights to reduce carbon dioxide emissions. Thornton and Beckwith also note that it looks currently unlikely that such a right to a decent environment will ever be developed at international level because of this third reason.<sup>103</sup> The international community seems instead to have shifted to the notion of sustainable development.<sup>104</sup>

Nonetheless, in Europe, several human rights have been used by parties to try to benefit from a healthy environment. Therefore, there may be some potential to use current human rights to reduce carbon dioxide emissions. A helpful rule is that under the ECHR, all human rights are on equal footing so IPR must be balanced with other

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<sup>97</sup> See e.g. Christophe Geiger, *Droit d'auteur et droit du public à l'information, Approche de droit comparé*, Litec: Paris, 2004; ALAI Congress on copyright and freedom of speech, Barcelona 2006 (<<http://www.alai.org/index-a.php>> last visited 28 August 2007); CIER Utrecht, Conference on intellectual property rights and human rights, 3-4 July 2006.

<sup>98</sup> Stuart Bell & Donald McGillivray, *Environmental Law*, 6<sup>th</sup> ed., Oxford: Oxford University Press, 2006, p. 79; Ann Sherlock & Françoise Jarvis "The European Convention on Human Rights and the Environment" [1999] ELR 15. "Damage to the environment is not in itself a breach of the convention." See also *Lough v. First Secretary of State* [2004] EWCA Civ 905; [2004] 1 W.L.R. 2557 (CA (Civ Div)) in which a British court said that "[t]here is no explicit right in the Convention to a clean and quiet environment".

<sup>99</sup> See e.g. Justine Thornton & Silas Beckwith, *Environmental Law*, London: Sweet & Maxwell, 2<sup>nd</sup> ed., 2004, p. 386 (the three main international human rights instruments (the International Covenant on Civil and Political rights, the International Covenant on Economic, Social and Cultural Rights and the Universal Declaration of Human Rights) barely mention the relationship between the environment and human rights); Sherlock & Jarvis, above fn. 98, p. 28 (the International Covenant on Economic, Social and Cultural Rights of 1966 refer to "the improvement of all aspects of environmental and industrial hygiene"); Karrie Wolfe "Greening the International Human Rights Sphere? An Examination of Environmental Rights and the Draft Declaration of Principles on Human Rights and the Environment" [2003] 13 Journal of Environmental Law and Practice 109; Barry Hill, Steve Wolfson & Nicholas Targ "Human Rights and the Environment: A Synopsis and Some Predictions" [2004] 16 Georgetown International Environmental Law Review 359, at 376. In 1994, the United Nations issued a Draft Declaration of Principles on Human Rights and the Environment. Then followed the 2002 World Summit on Sustainable Development, which shows a trend favouring a human right to a clean and healthy environment. See Hill et al., above this fn., p. 376 ff.

<sup>100</sup> Hill et al., above fn. 99, p. 361, 399.

<sup>101</sup> Thornton & Silas Beckwith, above fn. 99, p. 386.

<sup>102</sup> Sustainable development is a new and still uncertain concept. The most used definition, which originates from the Brundtland Commission's 1987 Report, *Our Common Future*, is "development that meets the needs of the present without compromising the ability of future generations to meet their own needs". Bell & McGillivray, above fn. 98, p. 62.

<sup>103</sup> Thornton & Silas Beckwith, above fn. 99, p. 388.

<sup>104</sup> *Ibid.*, p. 388. *Contra*: Hill et al., above fn. 99, p. 376 ff.

human rights.<sup>105</sup> How have claimants argued that the(ir) environment was damaged on the basis of other human rights? Claimants used article 2 (right to life), article 3 (right to physical integrity), article 8 (right to privacy), 10 (right to freedom of expression) and article 1 of the First Additional Protocol to the ECHR (right to the respect of one's property) with mixed results. What comes out of the case law is the following.

The possibility to claim that there is an, albeit, indirect right to a clean and/or healthy environment, under the current state of the ECHR, is slim but not unreal. The major hurdle is that an individual must be specifically affected.<sup>106</sup> This means that an environmental pressure group would have to introduce an action based on the right of a particular individual, "focusing on the individual's rights rather than on the more general concerns for the environment."<sup>107</sup> Under article 8 for instance, there must be a substantial, direct and serious interference with an individual's home.<sup>108</sup> On the other hand, as early as 1991, in *Fredin v. Sweden*<sup>109</sup>, the European Court of Human Rights (ECtHR) recognised, that "that environmental protection is a valid public interest that can be employed by states in interfering with individual rights".<sup>110</sup> Most importantly, states parties to the ECHR have positive duties. In *Guerra v. Italy*<sup>111</sup>, Judge Jambrek thought that "if information was withheld by a government about circumstances which foreseeably presented a real risk of danger to health and physical integrity, then such a situation might be protected by Article 2".<sup>112</sup> In the same vein, under article 8's case law<sup>113</sup>, the state has the positive duty to take action even if the pollution is caused by a third party and not the state, for instance private companies.<sup>114</sup> Finally, article 1 of the First Additional Protocol to the ECHR can be "invoked against a State when external environmental nuisances affect a person's enjoyment of possessions, or it can be invoked from the opposite direction: when a State's actions to protect the environment interfere with enjoyment of property."<sup>115</sup> The *Fredin* case also shows that article 1 of the First Additional Protocol does not prevent states from taking measures to protect the environment although they limit the right to the respect of one's property.<sup>116</sup>

The consequences of these precedents seem to imply that at least in Europe, environmental protection, including the reduction of carbon emissions, can limit IPR.

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<sup>105</sup> Audrey Chapman "The Human Rights Implications of Intellectual Property Protection" [2002] 5 Journal of International Economic Law 861 and authors cited at fn. 13.

<sup>106</sup> See e.g. *Sherlock & Jarvis*, above fn. 98, p. 15; *Thornton & Beckwith*, above fn. 99, p. 386.

<sup>107</sup> *Sherlock & Jarvis*, above fn. 98, p. 15.

<sup>108</sup> *Hatton v. UK* [2003] 37 EHRR 28 (noise caused by night flights disturbed claimants' sleep in neighbourhoods near Heathrow airport). See Karen Morrow "The Rights Question: The Initial Impact of the Human Rights Act on Domestic Law Relating to the Environment" [2005] Journal of Planning & Environment Law 1010, at 1012.

<sup>109</sup> [1991] 192 Eur.Ct.H.R. (ser. A) (Mr Fredin's right to exploit a gravel pit on his property was not breached by a change in the law which withdrew his exploitation permit in order to protect the environment).

<sup>110</sup> Morrow, above fn. 108, p. 1020.

<sup>111</sup> [1998] 26 EHRR 357 (*Guerra* lived one kilometre away from a chemical factory and was not informed of its risks on his health).

<sup>112</sup> *Sherlock & Jarvis*, above fn. 98, p. 17.

<sup>113</sup> See *Lopez Ostra v. Spain* (41/1993/436/515); *Powell and Rayner v. UK* [1990] 172 Eur. Court. H.R. Series A; *Guerra v. Italy* [1998] 26 EHRR 357; *Hatton v. UK* [2003] 37 EHRR 28.

<sup>114</sup> *Sherlock & Jarvis*, above fn. 98, p. 19; *Thornton & Beckwith*, above fn. 99, p. 392.

<sup>115</sup> *Sherlock & Jarvis*, above fn. 98, p. 22.

<sup>116</sup> *Ibid.*, p. 23.

In other words, if all the branches of the state (in our case this would include intellectual property offices) know that an invention or creation may have negative effects on the environment, e.g. increasing levels of CO<sub>2</sub>, the responsibility lies with the state to prevent harm to life, privacy, property and arguably freedom of expression.<sup>117</sup> This may mean that whilst the state should ideally modify intellectual property laws to attain such results, in the meantime, individuals can try and use several different human rights before courts to force the state to take action to eliminate or at least reduce carbon emissions.<sup>118</sup> Nonetheless, as has been seen above, the two major hurdles are that the ECHR does not recognise a specific right to a healthy environment and even if it did, in order to have a claim, an individual must be directly concerned. In addition, the case law reveals that states have a wide margin of appreciation as generally human rights are limited by rights of others (see e.g. article 8(2)).<sup>119</sup> So it may be very difficult for an individual to claim that an invention or work by itself affects its personal environment because it emits CO<sub>2</sub>. These discrepancies may prompt the international community and/or states to develop a specific human right (nationally, regionally and internationally) to a clean and healthy environment<sup>120</sup>, the notion including the right not to live in a greenhouse or alternatively to produce similar effects by further developing the notion of sustainable development, as it may be more appropriate.<sup>121</sup>

#### **4. Implementation practicalities**

Two problems may arise from the proposed changes in the intellectual property laws. First, what should be the maximum amount of carbon dioxide that an invention or creation should emit? Arguably, every living thing and activity inevitably produces some CO<sub>2</sub>. It is only its *excessive increase* by man which produces global warming. One yardstick could be the Kyoto targets or the national targets if higher. For instance, if the target is to decrease the levels of CO<sub>2</sub> by 5.2 percent less than the levels at a certain previous date, this should be the standard for the Patent Offices to follow. Second, and related to this point, who should bear the burden of proof that the invention does not emit more than the yardstick? If this burden is borne by inventors and creators, it might discourage them to innovate or create in the first place. If it is borne by the state, every taxpayer will contribute to the cost. Perhaps this solution

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<sup>117</sup> In *Guerra*, it was held however that the state has no positive duty to collect and disseminate information.

<sup>118</sup> According to *Sherlock & Jarvis*, p. 24, in view of the decided cases, article 8 ECHR seems to be the best legal ground for claimants to win if they think their environment is degraded.

<sup>119</sup> See e.g. *Buckley v. UK* [1997] 23 EHRR 101; *Hatton v. UK* [2003] 37 EHRR 28 (article 8 was not breached).

<sup>120</sup> *Morrow*, above fn. 108, p. 1021.

<sup>121</sup> Internationally the concept, on whose meaning there is no international consensus, is still only found in soft law documents. But it has been recognised by the International Court of Justice as being the need to balance economic development and environmental protection. See *Bell & McGillivray*, above fn. 98, p. 63-64. In Europe, article 2 ECT includes the obligation for the EU to promote a “harmonious, balanced and sustainable development of economic activities”. It applies across all areas. This article has not been interpreted by the ECJ yet but there are two documents so far at EC level which set priorities including climate change but they and their objectives are not legally binding. *Ibid.*, p. 64-65. Note that articles 6 and 174(1) ECT favour integrating environmental protection into other policy sectors rather than favouring a rights-based approach. *Ibid.*, p. 79. Finally, in the United Kingdom, several acts require a contribution to the achievement of sustainable development. However, as the notion is not defined and the wording of the relevant sections is “too wide to create a legally enforceable duty”, much is still to be done in the United Kingdom. *Ibid.*, p. 66.

may be more acceptable. Otherwise, a shared cost between the creators or inventors and society can also be envisaged.

## Conclusion

Current intellectual property laws already provide a good working framework to reduce levels of carbon dioxide in the planet's atmosphere. If a particular state has chosen to implement the public order and compulsory licensing provisions found in international treaties, courts, if they wish, can use these provisions to already prevent the protection of inventions and works emitting (too much) CO<sub>2</sub>. The principle of exhaustion already preserves the recycling of media in which IPR are embodied. Human rights law may also perhaps contribute to the reduction of CO<sub>2</sub>. But international, regional and national intellectual property laws could be honed further if governments wish to decrease levels of carbon dioxide even more. A specific public policy and morality provision prohibiting the patenting or copyrightability of inventions and works generating above a certain level of carbon dioxide should be enacted, preferably internationally. Similarly, states should be forced to enact compulsory licences but the latter should only be used when the patent or copyright owners have a dominant position. It would be better to set this clearly in legislative instruments than leaving it to competition authorities. Public databases and copyright works (i.e. those made by the state) should remain unprotected.

In the meantime, competition law can of course be used as an external safeguard to prevent abuses of IPR such as refusals to work an environmentally friendly invention. Competition rules (at least in the EU) can also promote innovation of greener technologies (e.g. the reduction of CO<sub>2</sub>) even though they are the result of agreements or concerted practices (e.g. cartels) between undertakings (which are normally prohibited by competition law).<sup>122</sup> Finally, in any case, inventions and copyright works may also have to comply with international, national and regional environmental rules. This second external safeguard is already somewhat effective, at least in Europe.<sup>123</sup> Several Directives already prescribe energy efficiency or energy labelling for fridges, freezers and boilers.<sup>124</sup> As far as IPR are concerned, this would mean that

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<sup>122</sup> Article 81(3) ECT derogates to the general prohibition of article 81(1) and allows agreements between undertakings if they promote progress. It reads: "The provisions of paragraph 1 may, however, be declared inapplicable in the case of: any agreement or category of agreements between undertakings; any decision or category of decisions by associations of undertakings; any concerted practice or category of concerted practices; which contributes to improving the production or distribution of goods or to promoting technical or economic progress, while allowing consumers a fair share of the resulting benefit, which does not: (a) impose on the undertaking concerned restrictions which are not indispensable to the attainment of these objectives; (b) afford such undertaking the possibility of eliminating competition in respect of a substantial part of the products in question". EU competition law also regulate anti-competitive aspects of intellectual property licences which includes know-how. See Technology Transfer Block Exemption Regulation", Commission Regulation (EC) N. 772/2004 of 27 April 2004 on the application of article 81(3) of the Treaty to categories of technology transfer agreements, OJ L 123, 27.04.2004, p. 11-17.

<sup>123</sup> Mandel, above fn. 11, p. 2, notes that US environmental laws, such as the Clean Air Act and the Clean Water Act, have not succeeded much in promoting environmental innovation. In Europe, Cornish & Llewellyn, above fn. 49, p. 224, at 5-83 note that there are regulatory bodies in the EC and the UK which determine whether some practices should be prohibited among others, to ensure the protection of the environment.

<sup>124</sup> Streck & Freestone, above fn. 10, p. 101. See Directive 96/57 on energy efficiency requirements for household electric refrigerators, freezers and combinations thereof (1996) OJ L 236, p. 36;



if such appliances are patented, they must respect the prescriptions of these Directives. Another very recent binding measure is the emissions trading scheme (ETS) provided by Directive 2003/87.<sup>125</sup> This Directive obliges a number of industries (including oil refineries, coke ovens, the metal, mineral and the broad paper industry) to have a permit which states the amount of greenhouse gases they can emit. Again, this means that copyright works or patented inventions made by these processes have to respect this Directive. The EU will surely adopt more similar environmental measures in the future. In this connection, conflicts with artists' creativity as to choice of materials may already be an issue and a balance may have to be struck between copyright law and environmental law. Building greener patented inventions may on the other hand be more feasible as choice of materials is generally not dictated by considerations of aesthetics (unless a patented product is also protected by design right or copyright). A full discussion of the relationship between IPR and environmental law is worth exploring but is beyond the scope of this article.

In conclusion, whilst normally, progress (the goal of intellectual property laws) aims to improve human life, as the industrial revolution has shown, this has not been without hick-ups, the main hick-up being pollution and more specifically global warming. But as history has a thousand times shown, humans are capable of the worst and the best. To save themselves, there is hope that thanks to the existing mechanisms already in place in intellectual property laws and the above mentioned remedies to their so far imperfections, carbon emissions will decrease in the not too distant future. In addition, intellectual property laws, human rights, competition law and environmental rules can certainly work hand in hand to fight global warming.

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Commission Directive 95/12 implementing Directive 92/75 with regard to energy labelling of household washing machines (1995) OJ L 136, p. 1; Commission Directive 96/60 implementing Directive 92/75 with regard to energy labelling of household combined washer-driers (1996) OJ L 266, p. 1.

<sup>125</sup> Directive 2003/87/EC of the European Parliament and of the Council (2003) OJ L 275, p. 32. See e.g. Thornton & Beckwith, above fn. 99, p. 70 ff. It was amended by Directive 2004/101 amending Directive 2003/87 establishing a scheme for greenhouse gas emission allowance trading within the Community, in respect of Kyoto Protocol's project mechanisms (2004) OJ L 338, p. 1, so that the EU ETS takes into account the Kyoto Protocol's targets. For details, see Streck & Freestone, above fn. 10, p. 104; Peter Davies, above fn. 12.