

IV. Role of the Patent System

Many theories exist on the proper justification for the patent system. Patents have been recognized as an inventor's natural right, a reward for innovation to recoup the investment, an incentive to create, an exchange for a secret.¹¹¹ Patents can also be valued as the prospect or potential for future commercialization.¹¹² From the property rights theory perspective, the system of exclusive and assignable IP rights encourages owners to maximize innovation, efficiency and profits, in a way that is "also best for the society."¹¹³ Thus, policymakers should "create and allocate entitlements to resources in the fashion that best enables people to fulfill [fundamental human] needs."¹¹⁴ This chapter explores the role of the patent system in the context of climate change by looking at three components of the patent system: patent law, patent policy and, independent from patent policy, patent information.

A. Role of Patent Law

1. TRIPS Article 27(2) and Ordre Public

Whether or not patent law is 'neutral' in public purpose is a subject of ongoing debate.¹¹⁵ Some argue that TRIPS Article 27(1) upholds the neutrality of patent law by providing that, "subject to the provisions of paragraphs 2 and 3, patents shall be available for any inventions, whether products or processes, in all fields of technology."¹¹⁶ Others argue that patent law is not so neutral because the underlying justification for such exclusive rights is the utilitarian belief that technological

111 From the comparative viewpoint, Machlup explains that compulsory licensing is usually granted to remedy "abuse" in England whereas it is granted to safeguard "public interest" in Germany. See FRITZ MACHLUP, *AN ECONOMIC REVIEW OF THE PATENT SYSTEM* (U.S. Govt. Print. Off. 1958).

112 Edmund W. Kitch, *The Nature and Function of the Patent System*, 20(2) JOURNAL OF LAW AND ECONOMICS 265, 265-290 (Oct. 1977).

113 See generally, Michael Lehmann, *Property and Intellectual Property – Property Rights as Restrictions on Competition in Furtherance of Competition*, IIC (1989).

114 William Fisher, *Theories of Intellectual Property*, in NEW ESSAYS IN THE LEGAL AND POLITICAL THEORY OF PROPERTY (Stephen Munzer ed., Cambridge University Press 2001), available at <http://www.tfisher.org>.

115 E.g., NUNO PIRES DE CARVALHO, *THE TRIPS REGIME OF PATENT RIGHTS* (Wolters Kluwer, 3rd ed. 2010) (commenting that "the reality is that the same patent system that promotes green technologies also promotes polluting technologies"); see also WIPO, *The Green Debate: IP Perspectives: What Color Is IP?*, WIPO MAGAZINE (June 2010).

116 TRIPS Agreement, *supra* note 8, at art. 27(1).

progress benefits society.¹¹⁷ According to the latter view, patent law can and must help to protect the environment, by the following mechanisms: negative (excluding polluting inventions from being patented), positive (giving preferential treatment to green inventions) and hybrid (combining both elements).¹¹⁸

In relation to the ‘negative’ approach, TRIPS Article 27(2) allows WTO Members to exclude from obtaining patents, “inventions, the prevention ... of the commercial exploitation of which is necessary to protect *ordre public* or morality ... or to avoid serious prejudice to the environment”¹¹⁹ Similarly, Article 53(a) of the European Patent Convention (EPC)¹²⁰ states that European patents shall not be granted in respect of inventions the commercial exploitation of which would be contrary to *ordre public* or morality. The European Patent Office (EPO) Boards of Appeal confirmed that, under EPC Article 53(a), inventions the exploitation of which is likely to seriously prejudice the environment are to be excluded from patentability as being contrary to *ordre public*.¹²¹

In practice, as patent examiners are not trained to evaluate aspects of ethics or risk,¹²² this provision can be applied “only in rare and extreme cases”¹²³ and on an individual basis. Also, assessment of the Article 53(a) objection takes account not only of potential risks to the environment but also of the invention’s potential benefits to society.¹²⁴ For instance, in the *Onco-Mouse* case,¹²⁵ the Board held that a “careful weighing up” of animal suffering and substantial medical benefit would be necessary.¹²⁶

Some argue that patent law also contains a ‘positive’ mechanism favoring certain technical fields.¹²⁷ For instance, drugs have to obtain marketing approval with extensive clinical data. Since a lot of testing is executed after the patent issuance, the effective duration of patent protection for many drugs can be relatively short. As a result, a patent restoration mechanism supplementing the period lost due to the

117 Estelle Derclaye, *Patent Law’s Role in the Protection of the Environment – Re-Assessing Patent Law and Its Justification in the 21st Century*, IIC 249-273 (2009).

118 *Id.*

119 TRIPS Agreement, *supra* note 8, at art. 27(2); *see also supra* note 85 at 2.237-2.240.

120 Convention on the Grant of European Patents, signed Oct. 5, 1973 (entered into force Oct. 7, 1977), 1160 U.N.T.S. 231, 134 I.L.M. 270 (Oct. 5, 1973) [hereinafter EPC or European Patent Convention].

121 *Plant Genetic Systems N.V., et al. v. Greenpeace Ltd.*, T 0356/93 – 3.3.4, EPO Boards of Appeal (Feb. 21, 1995).

122 Rainer Moufang, *The Concept of “Ordre Public” and Morality in Patent Law*, in *PATENT LAW, ETHICS AND BIOTECHNOLOGY* (Geertrui Van Overwalle ed., Katholieke Universiteit Brussel 1998).

123 EPO, *Guidelines for Examination in the European Patent Office* Part C – Chapter IV 8 (2010).

124 Joseph Straus, *Biotechnology and Patents*, 54 CHIMIA No. 5, 293, 293-298 (2000).

125 *Harvard/Onco-Mouse*, T 0019/90 – 3.3.2 EPO Boards of Appeal (Oct. 3, 1990).

126 EPO, *CASE LAW OF THE BOARDS OF APPEAL OF THE EUROPEAN PATENT OFFICE* 39 (5th ed. 2006).

127 *Supra* note 117.

market approval proceedings has been adopted¹²⁸ to allow patent holders to recoup their investment and to promote further innovation.

However, such mechanisms would function more as a bridge between patent law and other regulatory regimes, than as a sub-component of patent law. Indeed, although applying for SPCs or patent term restoration under the Hatch-Waxman Act requires the existence of a basic patent, other types of market exclusivities available under the same law can be granted even in the absence of a patent. Coming back to the area of green technology, would green patents need a special term of protection? At this point, the answer is probably no. For one thing, as discussed earlier, green inventions by nature are not on an equal footing with pharmaceutical inventions. Generally, regulatory approval for environmental soundness is not (yet) as rigorous as marketing approval for drugs, making any reduction of the patent term as a result of regulatory proceedings less considerable.

A progressive example of the hybrid mechanism is the following: “it could be said that, *in order to be patented*, every process or product that emits GHG should emit 8% less than the product’s emissions in 1990 (the target the EU agreed to respect in the context of the ratification of the Kyoto Protocol). If the invention emits even less than this target, it would *qualify to receive preferential treatment* (emphasis added).”¹²⁹ The idea is to integrate the concept of environmental soundness, or more precisely, greenhouse gas emission, into the body of patent law.

Although this model could serve as a strong motivation for going green, it would be controversial for patent law to embrace the concept of ‘greenness’ as an actual part of the patentability requirements. While patent law has gradually accommodated new technical developments in relation to patent eligibility for example of computer software, biotechnological inventions or business methods, the basic patentability requirements – novelty, inventive step, and industrial application (or novelty, non-obviousness, utility in case of the US) – have applied since as early as the 19th century.¹³⁰ Even allowing for the fundamental nature of environmental issues, it would be a challenge to justify why ‘greenness’ alone has to be considered as part of the patentability requirements, amongst other important issues the world is facing. In practical terms, without a standardized method of calculating carbon footprints or greenhouse gas emission, it does not seem plausible yet to apply such criteria universally to all technical fields.

128 Examples are the supplementary protection certifications (SPCs) in Europe and the patent term restoration under the so-called Hatch-Waxman Act in the US.

129 *Supra* note 117 at 273.

130 *Supra* note 111 at 12-14.

2. Business Method Patents: Bilski and Carbon Trading Inventions

Before taking a closer look at the mentioned core patenting criteria, this section addresses the patentable subject matter issue concerning business method patents in the context of green technology. From its experience in carbon financing, the World Bank has observed that although it is crucial to develop methodologies for determining project eligibility, measuring the baseline and emission, or overseeing emission reductions resulting from a project, there are no patents or other types of compensation to incentivize methodology developers.¹³¹ One reason could be the legal uncertainty associated with business method patents, hotly debated in the *Bilski* case both at the US Court of Appeals for the Federal Circuit (the Federal Circuit) and the US Supreme Court.

The *Bilski* invention is a method for hedging risk-associated costs in a series of energy transactions involving energy producers and consumers. Risk-associated costs include costs such as price and demand fluctuations due to weather change,¹³² for example:

“[C]oal power plants (*i.e.*, the ‘consumers’) purchase coal to produce electricity and are averse to the risk of a spike in demand for coal since such a spike would increase the price and their costs. Conversely, coal-mining companies (*i.e.*, ‘market participants’) are averse to the risk of a sudden drop in demand for coal since such a drop would reduce their sales and depress prices. The claimed method envisions an intermediary, the ‘commodity provider,’ that sells coal to the power plants at a fixed price, thus isolating the power plants from the possibility of a spike in demand increasing the price of coal above the fixed price. The same provider buys coal from mining companies at a second fixed price, thereby isolating the mining companies from the possibility that a drop in demand would lower prices below that fixed price. And the provider has thus hedged risk; if demand and prices skyrocket, it has sold coal at a disadvantageous price but has bought coal at an advantageous price, and vice versa if demand and prices fall.”¹³³

Since the above invention is not limited to transactions involving actual commodities,¹³⁴ it could cover risk management in the carbon offsets market, in which market participants can buy and sell extra allowances to comply with greenhouse gas emission regulations under the CDM.¹³⁵ Without appropriate monitoring, some carbon offsets projects may not effectively reduce carbon emissions. On the other hand, if the regulatory monitoring and verification process becomes too strict, this may unduly increase transaction costs for compliance. Thus, finding a compromise

131 WORLD BANK, 10 YEARS OF EXPERIENCE IN CARBON FINANCE: INSIGHTS FROM WORKING WITH THE KYOTO MECHANISMS (2010), available at <http://www.carbonfinance.org>.

132 U.S. Patent Application No. 08/833,892 (rejected).

133 *In re Bilski*, 545 F.3d 943 (Fed. Cir. 2008) at 949-950.

134 *Id.*

135 Ronald M. Daignault, *Carbon Offsets and Patent Protection for Business Methods After In Re Bilski*, 1.1 CLEAN TECH LAW & BUSINESS 101, 108 (2009).