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).

between "an offset system's low transaction costs and highly-reliable emissions-reductions" is a growing challenge for the carbon offsets market.[136]

In addition to its aforementioned factual relevance to green technology, the *Bilski* decision provides practical lessons for innovative business methods needed for tackling climate change. The Federal Circuit upheld that "a claimed process is patent-eligible under Section 101 [of the U.S. Patent Act][137] if: (1) it is tied to a particular *machine* or apparatus, or (2) it *transforms* a particular article into a different state or thing. See Benson, 409 U.S. at 70 (emphasis added)."[138] Regarding this Machine-or-Transformation (MOT) test, the Federal Circuit elaborated that (i) it must not pre-empt substantially all uses of a fundamental principle (*i.e.*, abstract idea or natural phenomenon); and (ii) it must impose meaningful limits on the claim's scope and the transformation must be central to the purpose of the claimed process.[139]

On appeal, the Supreme Court found that the MOT is not the sole test for determining patent eligibility of a process under Section 101 and unanimously rejected the *Bilski* invention as it was "an abstract idea" lacking patent eligibility.[140] More generally, the majority held that at least in certain circumstances business methods are eligible for patenting, but the Court remained silent on the requirements for such patent eligibility.[141] Following the Supreme Court decision, the USPTO has released the Interim *Bilski* Guidelines for patent subject matter issues in process claims.[142] These Guidelines note that, although the MOT test remains "a useful investigative tool" amongst the non-exclusive factors to consider, "it would be improper to make a conclusion based on one factor while ignoring other factors."[143]

This development may have implications for patents in the area of carbon trading. The Chicago Climate Change (with the largest number of patents in carbon trading)[144] holds a patent, for example, on a computer-implemented method of "facilitating trade of emission allowances and offsets among participants, which includes establishing an emission reduction schedule for certain participants based on emission information provided by those participants and determining debits or credits for each certain participant in order to achieve the reduction schedule."[145] Under the current case law, it is not certain that a computer-implemented method like this

136 *Id.* at 103.
137 35 U.S.C. § 101.
138 *Supra* note 133.
139 *Id.*
140 Bilski v. Kappos, 130 S.Ct. 3218 (2010) at 3230-3231.
141 *Id.*
142 Interim Guidance for Determining Subject Matter Eligibility for Process Claims in View of *Bilski v. Kappos*, 75 Fed. Reg. 43922, 43925 (July 27, 2010).
143 *Id.*
144 Bill Eggertson, *Can Renewables Take the Credit?*, 9 Renewable Energy Focus 24, 24-25 (Nov. 2008).
145 U.S. Patent No. 7,343,341 (issued Mar. 11, 2008).

would be eligible for obtaining a patent.[146] On the other hand, new systems for trading emission reductions would appear to be more than an abstract idea, and it would be necessary to carefully weigh various factors under Section 101. Duffy concludes that the debate will turn from "the question *whether* business methods are patentable to the question *how* broad the scope of patentable subject matter should be for business methods (emphasis in the original)"[147] and that decision-makers should observe "the newly emerging science and engineering of business,"[148] such as carbon trading.

3. Novelty and 'Green' Indication of a Known Substance

In connection with certain renewable energy sectors, it has been observed that the basic or traditional solutions[149] for specific technological problems have long been "off-patent" and typically patented are specific improvements or features.[150] As green technology becomes a new focus of research, existing technologies may find new applications relevant to environmental benefits, raising the question to what extent such new use is patentable.[151]

An invention is deemed novel if it does not form part of the prior art (absolute novelty). For novelty of the new 'green' use of an existing technology, the legal developments on "second medical indication" under European patent law may perhaps provide some insight. According to Article 54(4) of the EPC, claims to the first medical indication normally confer product protection for the use of the respective substance or compound in all therapeutic or medical applications. EPC Article 54(5) further states that a substance or composition for any "specific" use in therapeutic or medical applications can be patented if such use is not found in the prior art.[152] Unlike a claim to the first medical indication, claims to subsequent medical indications are "purpose-limited" to the specific therapeutic or medical treatment disclosed and claimed in the patent.[153]

Might these principles also be relevant to green innovation? The *Science* journal published a study on an enzyme found in soybeans (which normally produces ammonia from nitrogen gas) which can turn carbon monoxide into ethane or propane

146 *Supra* note 135.
147 John F. Duffy, *Why Business Method Patents?* at 1 (forthcoming, on file with author).
148 *Id.*
149 *E.g.*, the first known windmill in history is described by Hero of Alexandria in his work *Pneumatics*, dating back to the 1st century B.C. or the 1st century A.D. *See* James Manwell, Jon McGowan and Anthony Rogers, Wind Energy Explained: Theory, Design and Application (John Wiley & Sons, Ltd. 2009).
150 *Supra* note 19.
151 *Supra* note 9.
152 *Id.*
153 *Id.*