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ECO-PATENT COMMONS: A DONATION APPROACH ENCOURAGING INNOVATION WITHIN THE PATENT SYSTEM

ANDREW BOYNTON*

INTRODUCTION

On September 21, 2009, President Barack Obama addressed the Hudson Valley Community College to encourage students to “shape a brighter future through hard work and innovation.”¹ The President’s clear message was that in order for the United States to overcome “economic crisis,” the country “must invest in education, infrastructure and research.”² The President outlined a strategy for economic growth that includes investing in research, infrastructure, and green technologies.³ The President’s strategy identifies the energy infrastructure and industry as two areas where innovation is needed to improve the United States’ economic future.⁴ The strategy also identifies intellectual property as an area that requires protection in order to promote innovation.⁵ This note will examine the role of the Eco-Patent Commons in promoting innovation in industry through an innovative idea about use, disclosure, and cooperation within the typically exclusive framework of patent law.

Industry and technology undoubtedly affect the environment through consumption and waste.⁶ Industry uses raw materials and energy in production, and outputs waste in the form of products and byproducts

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¹ Obama Touts Efforts to Help Economy, Colleges, MSNBC.COM, http://www.msnbc.msn.com/id/32953632/ns/politics-white_house/ (last updated Sept. 21, 2009).

² *Id.*

³ NAT’L ECON. COUNCIL & OFFICE OF SCI. AND TECH. POLICY, EXEC. OFFICE OF THE PRESIDENT, A STRATEGY FOR AMERICAN INNOVATION: DRIVING TOWARDS SUSTAINABLE GROWTH AND QUALITY JOBS i–ii (Sept. 2009).

⁴ *Id.* at 12.

⁵ *Id.* at 15.

⁶ See Michael A. Gollin, *Using Intellectual Property to Improve Environmental Protection*, 4 HARV. J.L. & TECH. 193, 193 (1991).

from their processes.⁷ Industrial users may not have an incentive to improve the efficiency of energy or material use because of high transaction costs,⁸ or the external nature of some environmental issues.⁹ As identified by the President's white paper, intellectual property rights provide an important part of the answer to the problem of incentivizing innovation in the industrial setting.¹⁰

The Constitution gives Congress the power to grant intellectual property rights through patents, in order "[t]o promote the [p]rogress of [s]cience and useful [a]rts"¹¹ A patent is a property right of exclusion for a period of 20 years.¹² The purpose of the patent system is to promote innovation and disclosure of inventions while protecting the investment in research of the individual or company.¹³ In the context of environmental innovation, patent rights may not confer enough benefit to overcome specific issues such as the high cost of obtaining and protecting patents,¹⁴ exclusivity problems such as suppression¹⁵ or patent trolls,¹⁶ and problems with the notice or disclosure function of patents.¹⁷ Industry may seek solutions to these issues through other ideas about intellectual property.

Some of those other intellectual property ideas that may solve problems with patents in promoting innovation include commons, Eco-Patent Commons, patent pools, and trade secrets. Common resources may decrease transaction costs but offer no protection to the inventor for their investment.¹⁸ Trade secrets protect the inventor by preventing disclosure,

⁷ See *id.* at 196–97.

⁸ See Benjamin K. Sovacool, *Placing a Glove on The Invisible Hand: How Intellectual Property Rights May Impede Innovation in Energy Research and Development* (R&D), 18 ALB. L.J. SCI. & TECH. 381, 397 (2008).

⁹ See Marilyn A. Brown, *Market Failures and Barriers as a Basis for Clean Energy Policies*, 29 ENERGY POL'Y 1197, 1201–02 (2001).

¹⁰ See NAT'L ECON. COUNCIL & OFFICE OF SCI. AND TECH. POLICY, EXEC. OFFICE OF THE PRESIDENT, *supra* note 3, at 15.

¹¹ U.S. CONST. art. I, § 8, cl. 8.

¹² U.S. PATENT & TRADEMARK OFFICE, *General Information Concerning Patents*, <http://www.uspto.gov/web/offices/pac/doc/general/> (last modified Sept. 9, 2008).

¹³ See Natalie M. Derzko, *Using Intellectual Property Law and Regulatory Processes to Foster the Innovation and Diffusion of Environmental Technologies*, 20 HARV. ENVTL. L. REV. 3, 9–10 (1996).

¹⁴ See Sovacool, *supra* note 8, at 405, 436.

¹⁵ See JAMES BESSEN & MICHAEL J. MEURER, PATENT FAILURE 159–60 (2008).

¹⁶ See *Patent Thickets, Bad Patents, and Costly Patent Litigation*, THE VOLOKH CONSPIRACY, (May 6, 2009, 11:56 PM), <http://volokh.com/author/guestblogger/>.

¹⁷ See BESSEN & MEURER, *supra* note 15, at 147.

¹⁸ Commons refers to the open access to intellectual property in this case. See generally Brett M. Frischmann, *An Economic Theory of Infrastructure and Commons Management*, 89 MINN. L. REV. 917 (2005).

but they do not function to incentivize innovation,¹⁹ and may be difficult to protect in the environmental context.²⁰ Patent pools also reduce transaction costs and increase the use of technology, but they are generally limited to a certain industry, where environmental problems may overlap between industries.²¹ Eco-Patent Commons is the best of the four alternatives because it works within the patent system to increase disclosure after technology has been patented and its structure will help affect more industries.²²

On January 14, 2008, IBM, Nokia, Sony, and Pitney Bowes announced the formation of the Eco-Patent Commons.²³ The Commons is “an initiative to create a collection of patents that directly or indirectly protect the environment.”²⁴ Members give the patents to the Commons and pledge not to enforce their rights against anyone who chooses to use the patents.²⁵ The objective of the Commons is to promote innovation and cooperation in the search to protect the environment.²⁶ The Eco-Patent Commons addresses problems arising between patent protection and environmental innovation by working within the patent system to promote disclosure, cooperation, and wide adoption, a significant niche that the other alternate forms of intellectual property do not provide.²⁷

This note will discuss the unique position the Eco-Patent Commons presents in promoting environmental innovation. In Part I, the note will examine the role of industry in causing and solving environmental problems and the obstacles that industry faces in increasing environmental efficiency. In Part II, the note will turn to the United States patent system

¹⁹ See Gregory N. Mandel, *Promoting Environmental Innovation with Intellectual Property Innovation: A New Basis for Patent Rewards*, 24 TEMP. J. SCI. TECH. & ENVTL. L. 51, 53–54 (2005).

²⁰ Gollin, *supra* note 6, at 203.

²¹ See Steven Seidenberg, *Patent Giveaway*, INSIDE COUNSEL, April 1, 2009, at 26, available at 2009 WLNR 21858452; see generally Bart Showalter & Trampas Kurth, *New Uses for Patent Pools*, INTELLECTUAL PROP. TODAY, Sept. 2008, at 22, available at <http://www.iptoday.com/articles/2008-9-showalter.asp>.

²² See generally WORLD BUS. COUNCIL FOR SUSTAINABLE DEV., THE ECO-PATENT COMMONS: A LEADERSHIP OPPORTUNITY FOR GLOBAL BUSINESS TO PROTECT THE PLANET 1–2 (June 2010), available at http://www.wbcd.org/web/projects/ecopatent/Eco_patent_Updated_June2010.pdf [hereinafter ECO-PATENT COMMONS: A LEADERSHIP OPPORTUNITY] (analyzing the benefits of Eco-Patent Commons).

²³ Martin LaMonica, *Eco-Patent Commons Shares Earth-Friendly Tech*, CNET NEWS, (Jan. 13, 2008), http://news.cnet.com/Eco-Patent-Commons-shares-earth-friendly-tech/2100-13844_3-6225735.html.

²⁴ ECO-PATENT COMMONS: A LEADERSHIP OPPORTUNITY, *supra* note 22, at 1.

²⁵ See *id.* at 1–2.

²⁶ *Id.* at 2.

²⁷ See *infra* Part IV.

and its purpose of promoting innovation, then examine obstacles to innovation that industry and the patent system share. In Part III, the note will delve into other ideas about intellectual property and whether those forms address the problems with promoting industrial innovation shared by industry and the patent system. The final part of the note will make the case that Eco-Patent Commons is a uniquely positioned idea about the use of intellectual property that works within the patent system to help address economic problems industry faces with adopting environmental innovation.

I. INDUSTRY'S ROLE IN A SUSTAINABLE FUTURE

Industry occupies a unique position in environmental issues because of the tension between its contribution to the harm of the environment and its role in reducing the use of resources and pollution.²⁸ For instance, General Electric, an energy producer, keeps performance metric data on various aspects of the company's contribution to environmental issues like water use, waste generation, and greenhouse gas emissions.²⁹ Implicit in keeping and reporting those statistics is GE's desire to improve its environmental impact by reducing greenhouse gas emissions and water use, and general efficiency.³⁰ Industrial users may recognize their unique place in affecting and preventing industrial harm, but with that unique position comes unique problems.

Industry may solve environmental issues, but they are also uniquely responsible for those issues.³¹ Industry impacts the environment throughout the "life-cycle" of consumer goods and services.³² This cycle begins with the production and use of raw materials.³³ The cycle continues with the use of energy in manufacturing, and "the transport of the pollutants caused by the process, or the transport of the product itself."³⁴ The final impacts

²⁸ See Gollin, *supra* note 6, at 193.

²⁹ GENERAL ELECTRIC, METRICS, <http://www.ge.com/citizenship/metrics/environment-health-safety-data.html> (last visited Jan. 26, 2011).

³⁰ See GENERAL ELECTRIC, ENVIRONMENT, <http://www.ge.com/citizenship/our-priorities/environment/> (last visited Sept. 17, 2009).

³¹ See Gollin, *supra* note 6, at 193.

³² See Carolyn Abbot & David Booton, *Using Patent Law's Teaching Function to Introduce an Environmental Ethic into the Process of Technical Innovation*, 21 GEO. INT'L ENVTL. L. REV. 219, 219 (2009).

³³ *Id.*

³⁴ Victor B. Flatt, *The Greening of the Corporation: Symposium Article: Act Locally, Affect Globally: How Changing Social Norms to Influence the Private Sector Shows a Path to Using Local Government to Control Environmental Harms*, 35 B.C. ENVTL. AFF. L. REV. 455, 458 (2008).

from production are the pollution and waste generated from industrial processes, as well as the products themselves.³⁵ Industrial innovation can have a large, harmful environmental impact throughout the production process, giving ample opportunity for improvement of those processes and improvement with more efficient material or energy use.³⁶

While it is easy to identify the sources of negative environmental impact, industry faces problems in improving environmental innovation. The first issue is the high cost of innovation.³⁷ Green innovation is associated with high cost in industrial applications because it requires large-scale capital investment.³⁸ This investment can come in the form of installing existing technology,³⁹ or developing new technology through innovation.⁴⁰ Because green technology is a public good, the investor may have little incentive to innovate if it is difficult to recover costs or the innovation is likely to lead to pirating.⁴¹ Because of the barrier of cost to innovation, “the government, society, and the economy should encourage more innovation by increasing incentives,” otherwise innovation may not take place.⁴²

The second problem that industry faces is the externality of many environmental concerns. An externality exists when the market, rather than a producer, is responsible for the cost of a problem.⁴³ Studies have indicated that factors of industrial production like greenhouse gas emissions and air, water, and land pollution are unpriced externalities that may not factor into a business’s decision to adopt environmentally efficient technology.⁴⁴ Other externalities include recycling and waste disposal.⁴⁵ The failure to include externalities into a business’s decision to adopt green

³⁵ See Gollin, *supra* note 6, at 196 (discussing that environmental technology not only minimizes “resource consumption and waste production” but also affects recycling and products’ life-cycle).

³⁶ See Gollin, *supra* note 6, at 193.

³⁷ See Daniel Gross, *The Real “Green” Innovation*, SLATE.COM (April 16, 2009, 6:57 AM), <http://www.slate.com/id/2216129/>.

³⁸ See *id.*

³⁹ See *id.*

⁴⁰ See generally U.S. DEP’T OF ENERGY INVENTIONS & INNOVATION PROGRAM, FROM INVENTION TO INNOVATION: COMMERCIALIZATION OF NEW TECHNOLOGY BY INDEPENDENT AND SMALL BUSINESS INVENTORS (1999) (discussing the necessity of sufficient capital to achieve a successful development of new product through innovation).

⁴¹ See Derzko, *supra* note 13, at 8.

⁴² *Id.*

⁴³ See Andrea Santoriello & Walter Block, *Externalities and the Environment*, 46 THE FREEMAN 755, 755 (1996).

⁴⁴ See Brown, *supra* note 9, at 1198–1200.

⁴⁵ See Santoriello & Block, *supra* note 43, at 755.

technology makes the use of resources like fossil fuels less efficient in general.⁴⁶ The external nature of benefits from environmental innovation creates problems with incentivizing environmentally responsible behavior by industry.⁴⁷ Generally, the business will not factor in the external benefit “society reaps from the innovation in the form of improved environmental conditions, but only accounts for the benefit that the firm itself receives.”⁴⁸ Because externalities are virtually free when the market or government bears the price,⁴⁹ the business has little incentive to adopt green technologies to limit externalities unless there is pressure or an incentive elsewhere for the business to account for the costs.⁵⁰

The solutions for the dual problems plaguing promotion of environmental innovation should address the cost issue as well as the issue of unpriced externality or benefits, but this will be difficult.⁵¹ One proposed method of encouraging innovation is through the use of “command-and-control” regulatory schemes like the Clean Air Act or the Clean Water Act to “utilize either technology standards or performance standards to control pollution.”⁵² The Clean Air Act and the Clean Water Act were “enacted to abate pollution by forcing industries to develop and utilize the latest pollution abatement technologies.”⁵³ This sort of command-and-control legislation has been criticized as offering little to no incentive for innovation because they fail to effectively address the external nature of environmental benefit.⁵⁴ While command-and-control may fail to address the externality problem,⁵⁵ any solution to the dual problems will likely require cooperation to address the public good aspect of the innovation problem.⁵⁶ Overcoming

⁴⁶ See Brown, *supra* note 9, at 1202.

⁴⁷ See Mandel, *supra* note 19, at 58.

⁴⁸ *Id.*

⁴⁹ See generally Bryan Caplan, Externalities, THE CONCISE ENCYCLOPEDIA OF ECONOMICS, <http://www.econlib.org/library/enc/externalities.html> (last visited Jan. 26, 2011).

⁵⁰ See Mandel, *supra* note 19, at 58; see also Derzko, *supra* note 13, at 18–19 (discussing command-and-control approaches to regulating air pollution as an externality).

⁵¹ See Mandel, *supra* note 19, at 58. Mandel calls these dual concerns “the invention market failure and the positive environmental externality market failure.” *Id.*

⁵² See Derzko, *supra* note 13, at 18.

⁵³ *Id.* at 19.

⁵⁴ *Id.* at 20 (noting the polluting firm is not encouraged to innovate because their failure to develop new technology is rewarded by keeping environmental standards low).

⁵⁵ *Id.*

⁵⁶ Because the problem of externalities is in many ways a public goods problem, whatever solutions, with respect to energy or resource use, need to apply to diverse end users, which requires collaboration. See Katherine J. Strandburg, *Evolving Innovation Paradigms and the Global Intellectual Property Regime*, 41 CONN. L. REV. 861, 878–81 (2009).

the public good problem will require the wide adoption of innovative solutions.⁵⁷ The goal of patent law is to address the cost aspect by “by bringing the private benefits of invention more in line with their social value” through the protection of monopoly pricing on useful and novel inventions.⁵⁸

II. PATENTS’ ROLE IN INDUSTRIAL INNOVATION

A. *Background and Purposes of the Patent Grant*

In order to show the role of patents in encouraging innovation in green technology, this note turns to the background and purpose of patents in the United States. The right of the federal government to grant patents is found in the Constitution.⁵⁹ The purpose of this grant is “[t]o promote the Progress of Science and useful Arts”⁶⁰ Congress can promote progress “by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries.”⁶¹ The grant of the patent is the right of exclusion from “making, using, selling, offering for sale, or importing the patented subject matter during the patent’s term.”⁶² In an analogy from real property law, the patent’s grant is a negative right to exclude and not the “full ‘bundle of sticks.’”⁶³ There is no requirement that the patentee must practice or use the patented material in exchange for the grant of the right to exclude.⁶⁴ There is also no requirement that the patentee license the invention.⁶⁵ There is no guarantee that patentees will even be able to practice their own patent.⁶⁶ The monopoly of the patent term begins when the patent issues and lasts twenty years from the date that the “application for the patent was filed.”⁶⁷ The monopoly

⁵⁷ See Deborah Behles, *The New Race: Speeding Up Climate Change Innovation*, 11 N.C. J.L. & TECH. 1, 5 (2009).

⁵⁸ See Mandel, *supra* note 19, at 57.

⁵⁹ U.S. CONST. art. I, § 8, cl. 8. “Writings” are protected under copyright law and “[d]iscoveries” under patent law. See also 17 U.S.C. § 102 (2006) (outlining the subject matter of copyright law); 35 U.S.C. § 101 (2006) (explaining what inventions are patentable).

⁶⁰ U.S. CONST. art. I, § 8, cl. 8.

⁶¹ *Id.*

⁶² Mandel, *supra* note 19, at 54 (citing 35 U.S.C. § 271(a) (2005)).

⁶³ Aleksandar Nikolic, *Securitization of Patents and Its Continued Viability in Light of the Current Economic Conditions*, 19 ALB. L.J. SCI. & TECH. 393, 395–96 (2009).

⁶⁴ See Abbot & Booton, *supra* note 32, at 229.

⁶⁵ Paul Gormley, *Compulsory Patent Licenses and Environmental Protection*, 7 TUL. ENVTL. L.J. 131, 134 (1993).

⁶⁶ *Id.* There is only the right to exclude from the patent grant.

⁶⁷ 35 U.S.C. § 154(a)(2) (2006).

is granted in order to induce inventors “to invest time, financial resources, and effort into research and development in order to innovate.”⁶⁸

The government requires that “an inventor disclose[s] to the world what their new invention is and how it works in exchange for the right to exclude others from practicing the invention for a certain period of time.”⁶⁹ In order to obtain a patent, the inventor must submit an application to the United States Patent and Trademark Office (“USPTO”) that meets certain requirements.⁷⁰ The inventor must show through the application that “the invention is new, useful, and non-obvious.”⁷¹ The types of inventions that are patentable are restricted to “any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof . . . ,”⁷² which is a “very minor hurdle to environmental innovation patenting.”⁷³ Usefulness, or utility, requires that the “invention will do what the inventor claims it does, and that what the invention does is useful.”⁷⁴ The patent must be new, or novel, which requires that “it has not been previously patented, published, known or used by others.”⁷⁵ The invention must also be non-obvious, which is determined by whether “the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains.”⁷⁶ If a patent application meets these standards, then a patent will be issued on the application.⁷⁷ The standards for receiving a patent probably do not provide much of a barrier when it comes to environmental innovations.⁷⁸ In fact, there is a statutory allowance for an expedited examination of the patent application if the invention materially “enhance[s] the quality of the environment.”⁷⁹

⁶⁸ Mandel, *supra* note 19, at 54.

⁶⁹ *See id.*

⁷⁰ Gollin, *supra* note 6, at 210. The patent application process is known as patent prosecution. *Id.*

⁷¹ Derzko, *supra* note 13, at 10.

⁷² 35 U.S.C. § 101 (2006).

⁷³ Mandel, *supra* note 19, at 55 (“A new manufacturing process that produces less pollution as well as a new remediation product both are patent-eligible.”).

⁷⁴ *Id.* (citing DONALD S. CHISUM, 1 CHISUM ON PATENTS § 4.01 (2003)).

⁷⁵ *Id.* (citing 35 U.S.C. § 102 (2006)).

⁷⁶ 35 U.S.C. § 103(a) (2006).

⁷⁷ *See* Gollin, *supra* note 6, at 210.

⁷⁸ *See* Mandel, *supra* note 19, at 56 (“An invention that lowers pollution production, improves remediation efficiency, or achieves better conservation in a new and non-obvious way can meet the patent validity requirements.”).

⁷⁹ 37 C.F.R. § 1.102(c) (2004).

In return for the patent monopoly, the government requires that the inventor disclose the invention in the patent application.⁸⁰ The disclosure requirement is very important to encouraging innovation because “[i]t ensures the diffusion of valuable information to members of the public.”⁸¹ The patent must include a specification that contains a “written description of the invention” in “such full, clear, concise, and exact terms” that will “enable a person of ordinary skill in the art to perform the claimed invention without undue experimentation.”⁸² The specification is also required to contain the “best mode” for “carrying out” the invention, so long as the inventor is aware of the “best mode” at the time of filing the application.⁸³ The disclosure requirement of patents works to encourage innovation by balancing the grant of the patent monopoly with the increase in public knowledge available from the disclosure of patents.⁸⁴

With the grant of the patent, the patentee has the right to protect that grant through exclusion.⁸⁵ In suing against infringement, patentees can obtain injunctions against the infringer⁸⁶ and recover reasonable royalties and lost profits.⁸⁷ Furthermore, damages may be tripled⁸⁸ and attorney’s fees may be possible.⁸⁹

A patentee may also profit for their patent through licenses or sales.⁹⁰ A patentee licenses the use of the invention through bargained for consideration.⁹¹ Licenses can be granted exclusively or nonexclusively,⁹²

⁸⁰ Derzko, *supra* note 13, at 9 (citing 35 U.S.C. § 111 (1998) and discussing the value of public dissemination).

⁸¹ *Id.* (“Once disseminated, these inventions will be relied upon by other inventors to create yet other inventions.”).

⁸² Abbot & Booton, *supra* note 32, at 234 (citing 35 U.S.C. § 112 (2006)).

⁸³ *Id.* at 235–36. “Best mode” is a further disclosure requirement that “demands, in the public interest, that applicants disclose information going beyond the scope of what is being claimed. Typically it requires the disclosure of information, such as ‘know-how,’ that might otherwise be kept secret.” *Id.*

⁸⁴ *See* Derzko, *supra* note 13, at 9.

⁸⁵ *See* Gollin, *supra* note 6, at 209 n.84 (“[W]hoever without authority makes, uses or sells any patented invention, within the United States during the term of the patent therefor, infringes the patent.”) (citing 35 U.S.C. § 271(a) (2006)). Patentees can sue for direct infringement, inducement to infringe, and contributory infringement. 35 U.S.C. § 271(a)–(c) (2006).

⁸⁶ 35 U.S.C. § 283 (2006).

⁸⁷ 35 U.S.C. § 284 (2006).

⁸⁸ *Id.* (noting that the court may, in some circumstances, triple the damages that the jury or the court finds or assesses).

⁸⁹ 35 U.S.C. § 285 (2006) (noting that attorney’s fees may be awarded to the prevailing party, but only in “exceptional cases”).

⁹⁰ *See* Derzko, *supra* note 13, at 9.

⁹¹ *See id.* at 43.

⁹² *See* Gollin, *supra* note 6, at 217.

and are generally governed by contract law.⁹³ Licenses for environmental processes may not offer the most cost benefit to the company,⁹⁴ so valuing a license “requires analysis of the licensor’s investment, prospective benefits from not licensing, and the licensee’s potential profit.”⁹⁵ However, sale of the invention may be preferable to a license “when the person seeking the technology needs only a machine, rather than a plant or a system.”⁹⁶ When the patentee sells the invention, “[t]he patent owner’s rights with respect to the product end with its sale.”⁹⁷ The patentee may still restrict sales of the invention by contract at the time of sale.⁹⁸

The purposes of the quid pro quo of the patent monopoly grant are to encourage invention and encourage public disclosure.⁹⁹ As the previous discussion has shown, patents encourage invention and innovation by offering a monopoly on the invention or improvement,¹⁰⁰ which allows “inventors to make profits and recoup research expenses and development costs.”¹⁰¹ In exchange for the monopoly, the applicant must make an application that clearly states the invention.¹⁰² Without the monopoly incentive, the inventor may not disclose or sell the invention for fear of loss of economic value.¹⁰³ Lack of disclosure might cause “inefficient, duplicative

⁹³ *McCoy v. Mitsubishi Cutlery, Inc.*, 67 F.3d 917, 920 (Fed. Cir. 1995) (“Whether express or implied, a license is a contract ‘governed by ordinary principles of state contract law.’” (quoting *Power Lift, Inc. v. Weatherford Nipple-Up Sys., Inc.*, 871 F.2d 1082, 1085 (Fed. Cir. 1989))).

⁹⁴ See Gollin, *supra* note 6, at 217 (noting that the methods employed by patent owners in using their licenses could be either beneficial or detrimental).

⁹⁵ See *id.* at 218–19. A patent owner, therefore, may decide that it is more beneficial to use the invention and deprive the competition of its advantages rather than licensing to the competitor and losing the advantage of lower operating costs. See also Gormley, *supra* note 65, at 135 (“[T]he long term gains of securing a greater market share, or even of driving a competitor out of business, might well be of far greater benefit to the patent holder.”).

⁹⁶ See Gormley, *supra* note 65, at 218.

⁹⁷ *Intel Corp. v. ULSI Sys. Tech.*, 995 F.2d 1566, 1568 (Fed. Cir. 1993) (“[a] purchaser of such a product may use or resell the product free of the patent.”).

⁹⁸ See *Mallinckrodt, Inc. v. Medipart, Inc.*, 976 F.2d 700, 709 (Fed. Cir. 1992) (noting that if the sale of a device was validly conditioned under a law governing sales, and the “restriction on reuse was within the scope of the patent grant or otherwise justified, then violation of the restriction may be remedied by action for patent infringement”).

⁹⁹ See David G. Scalise & Daniel Nugent, *International Intellectual Property Protections for Living Matter: Biotechnology, Multinational Conventions and the Exception for Agriculture*, 27 CASE W. RES. J. INT’L L. 83, 86–87 (1995).

¹⁰⁰ See *id.* at 89.

¹⁰¹ Lara E. Ewens, *Seed Wars: Biotechnology, Intellectual Property, and the Quest for High Yield Seeds*, 23 B.C. INT’L & COMP. L. REV. 285, 291 (2000).

¹⁰² 35 U.S.C. § 112.

¹⁰³ See Scalise & Nugent, *supra* note 99, at 87.

research and a reluctance to share ideas,” stifling innovation.¹⁰⁴ However, eighteen months after the inventor files the application, the USPTO publishes the patent.¹⁰⁵ Once a patent is issued, it can be searched on the USPTO website.¹⁰⁶ After the twenty-year patent term ends, the invention enters the public domain.¹⁰⁷ The disclosure of information in the patent process aims to encourage the dissemination of new technology and innovative use of old and new ideas.¹⁰⁸

B. The Patent Monopoly and Problems with Innovation

Measuring the actual effects of patents on inducing innovation is beyond the scope of this note. The note instead turns to comparing the purposes of the patent monopoly with the obstacles that may prevent companies from investing in environmental innovation. The monetary protection of the patent monopoly by infringement suits, licenses, and sales may not be enough incentive to induce environmental innovation. In addition to the possible monetary benefit of a monopoly on the patented invention, obtaining and defending patents entails large costs.¹⁰⁹ Filing for a patent may include “conducting a pre-application patent search, review of the product’s patentability, preparation of formal drawings, filing fees with the USPTO, and patent attorney fees.”¹¹⁰ The cost of filing a patent may range from tens of thousands of dollars to hundreds of thousands of dollars, without factoring in “costs associated with patent continuation, maintenance, and enforcement against infringement.”¹¹¹ Once the patent is obtained, patent defense presents large costs to the inventor and possible infringers.¹¹² A typical patent infringement suit may cost millions of dollars for patentee and defendant alike.¹¹³ Not only does litigation cost money

¹⁰⁴ *Id.*

¹⁰⁵ 35 U.S.C. § 122(b) (2006). Once the patent is published, it becomes prior art for subsequent patent applications, unless the subsequent application was invented before the filing of the published application. *See also* Takeda Pharm. Co. Ltd. v. Doll, 561 F.3d 1372, 1379 (Fed. Cir. 2009) (Schall, J., concurring) (quoting 35 U.S.C. § 102(e) (2006)).

¹⁰⁶ U.S. Patent and Trademark Office, Patent Full-Text and Full-Page Image Databases, <http://patft.uspto.gov/> (last visited Jan. 26, 2011). *See also* Google Patents, <http://www.google.com/patents> (last visited Jan. 26, 2011) (Google Patents allows for searching of over seven million patents from the USPTO database).

¹⁰⁷ *See* Scalise & Nugent, *supra* note 99, at 87.

¹⁰⁸ Abbot & Booton, *supra* note 32, at 232.

¹⁰⁹ *See* Sovacool, *supra* note 8, at 397, 405–06.

¹¹⁰ *Id.* at 397.

¹¹¹ *Id.* at 398.

¹¹² *See id.* at 405–06.

¹¹³ *Id.*

when there is an actual dispute,¹¹⁴ many companies are dissuaded from innovation “by the prospect of patent litigation,” and evidence suggests that this may affect smaller companies more than larger companies.¹¹⁵ This problem may be particularly pronounced with environmental innovation because of high investment costs when compared to a long window of recoupment of investment.¹¹⁶

The second obstacle patent law presents to environmental innovation comes from the grant of the patent monopoly and the ability of the patentee to exclude. Some companies patent methods or devices that they never intend on using, but instead use those patents to sue for infringement solely for monetary gain.¹¹⁷ This can take the form of patent trolls,¹¹⁸ or submarine patents, where “an inventor or firm files an application with broad or incomplete claims, and then files continuing applications to keep the patent submerged in the patent office.”¹¹⁹ When someone uses the patented idea, the applicant allows the application to issue and then asks for a license or sues for infringement.¹²⁰ Once the patents are enforced, this practice functions as a “tax on innovation,” which can multiply in a complex industry.¹²¹

Other patentees suppress their own patents.¹²² Patent suppression takes place when a firm refuses to practice their own patent in order to prevent the use of technology that “could displace established markets or reduce profit margins.”¹²³ This has a direct effect on innovation because businesses have a financial incentive to suppress “technology if it threatens to disrupt profits in a market,”¹²⁴ already one of the concerns preventing

¹¹⁴ *See id.* at 405–06 (arguing that actual infringement cases can be costly, even if the firm loses an infringement case).

¹¹⁵ *See Sovacool, supra* note 8, at 406.

¹¹⁶ *See id.* at 402 (“The vast bulk of industry will not invest in energy plants unless they are ‘broken’ or, in the best case, when an energy efficiency project will pay back the capital investment in 12 to 18 months.”).

¹¹⁷ *See id.* at 414. The practice is known as warehousing patents. *Id.*

¹¹⁸ Some qualify the suit of NTP against RIM, the maker of the Blackberry, as “patent troll” behavior, but the definition is unclear. *See Patent Thickets, Bad Patents, and Costly Patent Litigation, supra* note 16.

¹¹⁹ *See Sovacool, supra* note 8, at 414.

¹²⁰ *Id.*

¹²¹ *Id.* at 415.

¹²² *See id.* at 417.

¹²³ *Id.* (quoting Charles Allen Black, *The Cure for Deadly Patent Practices: Preventing Technology Suppression and Patent Shelving in the Life Sciences*, 14 ALB. L.J. SCI. & TECH. 397, 401 (2004)).

¹²⁴ *Id.* at 417.

environmental innovation.¹²⁵ Finally, the right to exclude itself may be a detriment to environmental innovation because many innovations may need to be implemented widely and quickly to have a legitimate effect.¹²⁶

The third problem that patent rights present to environmental innovation is that the notice function of patents is not working properly.¹²⁷ The notice function of patents, through patent disclosure, is intended to promote public knowledge, but also to delineate the property right of the patentee.¹²⁸ Increased patent litigation and a decline in patent quality indicate that the notice function of patent law has failed to properly delineate the property right of the patentee.¹²⁹ Increased litigation adds to transaction costs, already an impediment to environmental innovation.¹³⁰

The cost of obtaining and protecting patent rights is high.¹³¹ Both warehousing and patent suppression are anti-competitive practices that impede environmental innovation.¹³² When the notice function of patents fails, a further impediment to environmental innovation arises.¹³³ This note now turns to other concepts within and outside patent law that might ameliorate impediments to environmental innovation from industry and the patent law system.

III. ALTERNATIVES TO PATENT PROTECTION TO ENCOURAGE GREEN INNOVATION

Both industry and patent law have inherent problems to overcome in order to more efficiently promote green innovation.¹³⁴ These problems include high transactions costs, the externality of many environmental problems associated with exclusivity of patents, and problems with the notice function of patents.¹³⁵ This note turns to other ideas within intellectual property law that might also promote green innovation by addressing the problems with industry and patent law.

¹²⁵ See Behles, *supra* note 57, at 29 (highlighting concerns about “suppression” within the climate change arena).

¹²⁶ See *id.*

¹²⁷ See BESSEN & MEURER, *supra* note 15, at 18–19.

¹²⁸ *Id.* at 8–9.

¹²⁹ See *id.* at 18–19.

¹³⁰ See Sovacool, *supra* note 8, at 413.

¹³¹ *Id.* at 397, 405–06.

¹³² *Id.* at 414–17.

¹³³ See BESSEN & MEURER, *supra* note 15, at 18–19.

¹³⁴ See *supra* Parts I–II.

¹³⁵ See *id.*

A. Commons

The first theory that might address problems of industry and patent law in promoting green innovation is the idea of the commons. The commons can be defined as both open use and open access to resources.¹³⁶ Resources can be inherently common or made common by an inventor.¹³⁷ Adopting a wide definition of the commons encompasses both the idea of common ownership of resources and open access to resources.¹³⁸ The wide definition is important in the computer age, because many resources like computer programs are intangible and cannot be exhausted, but are still discussed under the rubric of the commons.¹³⁹ In the context of this note, although concerned with efficient use of resources, the commons refers to intangible intellectual property resources that help to spur green innovation.¹⁴⁰ Because the commons is defined as open access to that intangible intellectual property, it can be seen as a distinct dichotomy from the exclusive protection of a patent.¹⁴¹ Even though access is open, there can be a disparity in ability to exploit the common resource based on “knowledge, wealth, power, and ability,” creating distributional consequences of the common resource.¹⁴²

The first issue that a commons approach to intellectual property must address in promoting green innovation is the high cost to industry and the cost of protecting intellectual property. Granting environmentally useful intellectual property to the public domain would help to alleviate the transaction costs of filing a patent, licensing, and litigation because the commons is inherently non-exclusive.¹⁴³ Even if the intellectual property is given to the public domain and transaction costs associated with patent protection are removed, it is unlikely that the commons would spur

¹³⁶ Anupam Chander & Madhavi Sunder, *The Romance of the Public Domain*, 92 CALIF. L. REV. 1331, 1338 (2004).

¹³⁷ See Frischmann, *supra* note 18, at 936.

¹³⁸ See Chander & Sunder, *supra* note 136, at 1338.

¹³⁹ See *id.* at 1337. The greatest fear with the commons is overuse of the common resource. See *id.* at 1332. When the resource cannot be exhausted, this fear is somewhat allayed. See *id.* at 1337.

¹⁴⁰ It is interesting to note that public domain movements like Creative Commons are modeled after the environmental movement. *Id.* at 1333–34. “We must protect the public domain, they argue, because it facilitates free speech and free access while at the same time sustaining innovation.” *Id.* at 1334.

¹⁴¹ See Chander & Sunder, *supra* note 136, at 1339 (“Private property and the public domain are paired together in a perpetual dance.”).

¹⁴² See *id.* at 1341–42.

¹⁴³ See *id.* at 1338. No exclusion is needed if there is open access to the resource.

innovation in order to overcome the high costs associated with implementation of green innovation.¹⁴⁴ Furthermore, because the resources are intangible intellectual property, they may also suffer from the problem of free-riders that may dissuade companies from investing in innovation.¹⁴⁵ While the idea of the commons may easily remove the cost of protection and exclusion once an invention is made, it is unclear whether this reduction in cost will spur innovation despite the costs inherent in researching and implementing new technology.

The next issue that a commons approach needs to address is the notice and disclosure problem with patents. Whether intellectual property will be disclosed as part of the commons depends on the nature of the invention and the decision of the inventor on how to manage the resource.¹⁴⁶ Some disclosure is necessary for selling or using the invention for financial benefit.¹⁴⁷ If we presume that the industrial inventor discloses the invention to the public that is able to exploit the invention, this disclosure should promote public knowledge as well as delineate the property right the inventor is donating to the public domain.¹⁴⁸ However, if the inventor decides not to donate the invention to the public domain while not seeking protection in other areas of intellectual property law, then there is limited benefit to public knowledge based on similar notions of patent disclosure.¹⁴⁹

The last issue that a commons approach must address in order to encourage industrial innovation is the exclusivity problems inherent with patent protection.¹⁵⁰ While private property and the public domain are not necessarily a dichotomy,¹⁵¹ they are hard to reconcile because green

¹⁴⁴ See *id.* at 1334. This argument for innovation relies on open access to encourage utilization of knowledge resources, while the cost problems associated with implementation from Part I are monetary and tangible resource issues. Whether open access would encourage innovation by overcoming the cost issues of Part I is beyond the scope of this note.

¹⁴⁵ See Frischmann, *supra* note 18, at 938, 946–47 (stating that free-riders may undercut the original inventor by pricing their products lower because they do not have to include the initial costs of research and invention in their pricing schemes).

¹⁴⁶ See *id.* at 935 (“[A]ccessibility or excludability conditions are generally contingent upon human decisions about how to manage the underlying resource.”).

¹⁴⁷ See *id.* at 935, 994–95, 994 n.291. Part of the patent grant is increasing public knowledge by complete disclosure of the patented invention, though some limited disclosure is inherently necessary to use or sell the invention or the products of the invention. See *supra* Part III.B.

¹⁴⁸ See *supra* Part II.B (discussing the notice function of the patent grant).

¹⁴⁹ See *supra* note 144 and accompanying text.

¹⁵⁰ See *supra* Part II.B (discussing the exclusivity problems of the patent grant such as suppression and patent “trolls”).

¹⁵¹ See Chander & Sunder, *supra* note 136, at 1340 (“[I]nnovation captured as private property depends upon the existence of a rich public domain.”) (emphasis in original).

industry and inventors generally want to protect their intellectual property rights.¹⁵² Decisions on protection will depend on how the owners best believe their intellectual property resources can best be exploited.¹⁵³ Large companies with a large environmental footprint may want to keep and exploit their intellectual property through exclusivity, which runs counter to a commons approach.

In conclusion, the commons approach would increase access and disclosure of green inventions if the inventors of the technology decide to both dedicate and disclose their inventions to the public domain. The failure of a commons approach to address the issue of initial research and implementation costs, coupled with the desire of many companies to protect their intellectual property through exclusivity, means that the commons approach likely will not succeed in addressing the major obstacles to green innovation.

B. *Trade Secret*

The next idea that might address problems of industry and patent law in promoting green innovation is the use of trade secrets. Trade secret laws are state laws that “provide[] certain legal protection against misappropriation of business information that is not commonly known.”¹⁵⁴ Some states have codified their trade secret common law.¹⁵⁵ Trade secrets can include business processes or products, as well as confidential customer lists or business plans.¹⁵⁶ Trade secrets might be required to confer a competitive advantage and the companies may be required to attempt to maintain the secrecy of the information.¹⁵⁷ As noted in the last part, this note is concerned with the technical intellectual property aspect of trade secret law.

The note again turns to the different problems with encouraging green innovation in industry and how those problems relate to intellectual

¹⁵² See Gene Quinn, *Green Tech Companies Protest Patent Reform Legislation*, IPWATCHDOG, (March 9, 2009, 9:41 PM), <http://www.ipwatchdog.com/2009/03/09/green-tech-companies-protest-patent-reform-legislation/id=2163/> (“This approach to tie the future of green technology to a strong patent system that does not reward the infringer and instead rewards innovation could well be a turning point in the debate.”).

¹⁵³ See *supra* note 146 and accompanying text.

¹⁵⁴ Mandel, *supra* note 19, at 53.

¹⁵⁵ Gollin, *supra* note 6, at 199–200.

¹⁵⁶ See *id.* at 199 (citing RESTATEMENT (FIRST) OF TORTS § 757 cmt. b (1939)).

¹⁵⁷ See *id.* at 199–200 (“Without this requirement [for secrecy], a potential user of the technology might have great difficulty in ascertaining what information may be subject to a proper claim of trade secrecy.”).

property and patent law. Trade secrets can reduce transaction costs, but companies may still need to protect investment through litigation.¹⁵⁸ In looking at the cost incentives of trade secrets, it is important to distinguish between environmental polluters and “firms whose primary business is developing products or processes to reduce environmental degradation. . . .”¹⁵⁹ Trade secrets may not improve operation costs for environmental degraders because innovation generally increases those costs, and the companies may want competitors to also implement the innovations “to level the operations-cost playing field.”¹⁶⁰ Environmental innovators will not use trade secrets because their object is to sell those innovations.¹⁶¹ Consequently, trade secrets are not likely to increase the incentives for environmental innovation.

The next issue that trade secrets must address with environmental innovation are the problems with disclosure and exclusivity. Trade secrets must not be commonly known,¹⁶² so companies must limit access to information on the technology or process through internal confidentiality, as well as with third-party “vendors, customers, and service providers.”¹⁶³ Trade secrets inherently run counter to mass implementation of efficient raw material use, energy saving, and waste reduction across competitors and industries because there can be no disclosure while still maintaining the trade secret.¹⁶⁴ Further, the broad disclosure requirements by some environmental regulations may prevent the use of trade secrets.¹⁶⁵ Those environmental regulations may not require disclosure of the trade secrets themselves, but the disclosure must be “relate[d] to processes, equipment, and formulas at the heart of a company’s competitive position.”¹⁶⁶ Trade secrets are hard to keep when the secret relates to toxic or hazardous substances, which may present a perverse incentive for use of at least non-hazardous substances, if not more green technology.¹⁶⁷ Even if the company

¹⁵⁸ See *id.* at 200–01. In order to protect a trade secret, there can be criminal or civil actions. *Id.* at 200 (“There has been debate over whether trade secrets are protected primarily under a theory of misappropriation or as property.”).

¹⁵⁹ Mandel, *supra* note 19, at 53.

¹⁶⁰ *Id.* at 53–54.

¹⁶¹ *Id.* at 53.

¹⁶² *Id.*

¹⁶³ See Gollin, *supra* note 6, at 202.

¹⁶⁴ See *supra* notes 154–57 and accompanying text.

¹⁶⁵ Gollin, *supra* note 6, at 203.

¹⁶⁶ *Id.* (“To alleviate the legitimate concern of industry that such disclosure may damage competitive advantage, and encourage full disclosure, most environmental statutes couple the duty to disclose with provisions protecting trade secrets.”).

¹⁶⁷ *Id.* at 204.

can manage to protect its trade secrets from disclosure with regard to environmental regulations, “[t]he risk of trade secret disclosure is highest in a civil or criminal enforcement proceeding.”¹⁶⁸ For all of these reasons trade secrets are unlikely to be used to promote disclosure or overcome issues with the exclusivity of patents.

In conclusion, the lack of disclosure and the inherent exclusivity of trade secrets harms the necessity for mass implementation of green technology to encourage innovation. Trade secrets may not influence the cost analysis from either a patent or research and implementation approach. Trade secrets may be desirable for the individual company, but they will not encourage green innovation where patent protection fails.

C. *Patent Pools*

The next intellectual property idea that might help to address the issues with patent law promoting green industrial innovation is patent pools. A patent pool is created when a group of companies that hold complementary patents pool those patents together under a single license and then determine how to divide the proceeds between the members of the group.¹⁶⁹ Licensees that pay the fee are then able to practice the group of patents without the threat of infringement.¹⁷⁰ Patent pools are not a new intellectual property idea.¹⁷¹ In 1856, instead of suing over patents, a group of manufacturers “formed the Sewing Machine Combination to mass produce sewing machines.”¹⁷² More recently, the International Organization for Standardization (“ISO”) formed the MPEG-2 patent pool with twenty seven patents necessary for compliance with the MPEG-2 standard for audio and video.¹⁷³ Patent pools can be particularly useful when dealing with complicated technical issues because patents often overlap, thus preventing one patent from being practiced because it would infringe on another patent.¹⁷⁴ For this reason patent pools work well with technologies

¹⁶⁸ *Id.* at 208.

¹⁶⁹ *See* Sovacool, *supra* note 8, at 433.

¹⁷⁰ *See* Showalter & Kurth, *supra* note 21, at 22 (“A single entity provides the licenses, in most instances, and those previously caught in the sticky wicket of patents may now enter the market, for a fee.”).

¹⁷¹ *Id.*

¹⁷² *Id.*

¹⁷³ *Id.* (“The owners of these patents combined their patents into a portfolio and selected a licensing administrator to grant licenses under the portfolio, collect royalties, and distribute them to the patent holders. Other patent holders have created similar types of pools to license other standardized technologies, such as DVD-Video and DVD-ROM.”).

¹⁷⁴ *See id.* A patent pool may even be necessary here to prevent patent blocking. *See id.*

that require interoperability, which “can lead to more widely implemented standards and more efficient licensing markets.”¹⁷⁵ Patent pools work most efficiently when only the necessary patents to implement the technology or service are included in the pool.¹⁷⁶ Companies should donate “the necessary patented technology to the patent pool for innovation to occur, not just the technology that has been a commercial dead end.”¹⁷⁷ If patents that are unnecessary to innovation are included in the pool, the patentees may be able to have an undue influence and adversely affect the cost of those licenses.¹⁷⁸

The first issue that patent pools must address about problems of encouraging green innovation through patent law is the issue of cost. Patent pools can reduce transaction cost by spreading risk between companies and reducing duplicative research costs.¹⁷⁹ Even if patent pools do reduce transaction cost through cooperation, there can be cost problems like coordination costs and anti-trust issues.¹⁸⁰ Members can decide to “drop out, leave, change corporate strategy, or become acquired by a firm that no longer wants to continue collaboration.”¹⁸¹ Although patent pools may reduce duplicative costs, the duplicative research may also be considered a necessary safety net against joint projects that are not successful.¹⁸² Anti-trust issues arise when competitors cooperate to set licensing fees.¹⁸³ “[P]atent pools are particularly susceptible to anti-competitive violations such as price fixing, output restrictions among competitors to drive up product prices, and collusion.”¹⁸⁴ Patent pools are still associated with licensing costs and royalties, so they may decrease licensing costs by “providing one-stop access.”¹⁸⁵ However, they could also increase licensing costs due to anti-trust price fixing or by the inclusion of bad patents in the pool.¹⁸⁶

¹⁷⁵ Showalter & Kurth, *supra* note 21, at 22.

¹⁷⁶ See Vanessa Lancaster & Jason Kasting, *Patent Pool Particulars: Encouraging Innovation by Reducing Patent Barriers*, IPHANDBOOK BLOG (Apr. 2, 2009, 3:47PM), <http://blog.iphandbook.org/?p=248> (“The negotiation of patent pools often fail because the patent holders do not have aligned interests or because advances in the technology occur at a fast pace and no clear platform, or standards, have emerged.”).

¹⁷⁷ *Id.*

¹⁷⁸ *See id.*

¹⁷⁹ *See* Sovacool, *supra* note 8, at 431.

¹⁸⁰ *Id.*

¹⁸¹ *Id.*

¹⁸² *See id.*

¹⁸³ *Id.*

¹⁸⁴ Lancaster & Kasting, *supra* note 176.

¹⁸⁵ *See* Showalter & Kurth, *supra* note 21.

¹⁸⁶ *See id.*

Additionally, pools may help to prevent royalty stacking, “which occurs when a product is subject to a number of separate royalty obligations.”¹⁸⁷ Ultimately, the organizational structure and the implementation of the pool will largely influence the effect it has on the transaction costs associated with licensing and enforcing green patents.¹⁸⁸

Patent pools also need to address the issue of exclusivity and disclosure that hampers green innovation through patent law. Pools can help address patent blocking,¹⁸⁹ which helps consumers get innovative products.¹⁹⁰ Effective patent pools establish collaboration, which can affect the “rapid development” of innovative technology.¹⁹¹ The cooperation required for patent pools runs counter to the desire for exclusivity,¹⁹² but may be necessary for implementation because of issues like patent blocking.¹⁹³ Disclosure and use of innovative patents is increased through patent pools, but effective patent pools are limited in scope and industry, which may limit the use and effect of those innovations.¹⁹⁴

To summarize, patent pools are a useful step in the right direction to reduce transaction costs and further implement green innovation if they are structured properly. Collaboration is good for solving large scale environmental issues by reducing the transaction costs of exclusivity in complicated technical areas. Patent pools work within the protection of the patent system, so innovators will retain some protection of their inventions. Patent pools do not fully address the issues with green innovation and patent law because they do not necessarily reduce licensing costs or increase mass use of green technology except within participants in the pool. This note will now turn to an alternative group pooling theory called Eco-Patent Commons.

¹⁸⁷ *Id.*

¹⁸⁸ *See id.*

¹⁸⁹ Sovacool, *supra* note 8, at 433.

¹⁹⁰ *See* Narinder Banait & Robert Yamasaki, PATENT POOLS IN LIFE SCIENCES, FENWICK & WEST LLP 1, 1–2 (2010), http://www.fenwick.com/docstore/Publications/IP/Patent_Pools.pdf. Success of the pool will depend on the cooperation of the holders of the overlapping patents. *See generally* Showalter & Kurth, *supra* note 21.

¹⁹¹ *See* Lancaster & Kasting, *supra* note 176.

¹⁹² *See* Sovacool, *supra* note 8, at 439 (“Small and large energy firms alike may be less willing to participate in collaborative agreements or patent pools since such acts could be viewed as undermining the financial gains to be made from exclusivity.”).

¹⁹³ *See id.* at 433.

¹⁹⁴ *See* Seidenberg, *supra* note 21, at 26 (“In a more discrete area, like pharmaceuticals or biotechnology, patent pools and patent licensing can be pretty effective, but where so many different areas are involved, there may not be the same kind of knowledge or familiarity with different fields . . .”).

D. *Eco-Patent Commons*

The final intellectual property idea that this note will examine is a patent group called the Eco-Patent Commons (“EPC”). The Eco-Patent Commons was formed in January 2008, by IBM, Nokia, Pitney Bowes and Sony.¹⁹⁵ The EPC is similar to the Creative Commons, which is a copyright project aimed at offering licenses that disclaim some copyright protection while reserving some of those protections.¹⁹⁶ Instead of copyright material, the EPC offers environmentally useful patents without royalties to anyone who wishes to use them.¹⁹⁷ The EPC is an extension of the patent pool idea, except there is no licensing fee.¹⁹⁸ A company only needs to pledge one patent in order to become a member of the EPC.¹⁹⁹ The patentee company determines whether patents are eligible for the EPC by comparing the patent to a list of International Patent Classifications.²⁰⁰ If the patent falls under one of the categories, the patentee then submits a written nomination that details the “environmental benefits of the claimed invention.”²⁰¹ The patents are available online, classified by subject, and searchable, hosted by the World Business Council for Sustainable Development (“WBCSD”).²⁰² Since the inception of the EPC, other companies like Bosch, Dow, DuPont, Fuji-Xerox, Ricoh, Taisei and Xerox have joined the group, bringing the total number of companies pledging patents to eleven.²⁰³

¹⁹⁵ *Eco-Patent Commons*, WORLD BUS. COUNCIL FOR SUSTAINABLE DEV., <http://www.wbcds.org/web/epc/> (last visited Jan. 26, 2011); see also Press Release, IBM, Corporations Go Public With Eco-Friendly Patents (Jan. 14, 2008) available at <http://www-03.ibm.com/press/us/en/pressrelease/23280.wss>.

¹⁹⁶ See Adrienne K. Goss, *Codifying a Commons: Copyright, Copyleft, and the Creative Commons Project*, 82 CHI.-KENT L. REV. 963, 964 (2007) (“Essentially, users of these types of licenses are reframing their ‘property right’ protected by federal law into a contract right ordered by the terms of the agreement.”). This is different than a patent commons. Arnaud Le Hors, *The Eco-Patent Commons Has Momentum*, ARNAUD’S OPEN BLOG (Mar. 23, 2009), <http://lehors.wordpress.com/2009/03/23/the-eco-patent-commons-has-momentum/>.

¹⁹⁷ ECO-PATENT COMMONS: A LEADERSHIP OPPORTUNITY, *supra* note 22, at 1, 2, 5.

¹⁹⁸ See *supra* note 8 and accompanying text.

¹⁹⁹ ECO-PATENT COMMONS: A LEADERSHIP OPPORTUNITY, *supra* note 22, at 2.

²⁰⁰ *Id.* at 5. The list can be found at Eco-Patent Commons *Classification List March 2009*, WORLD BUS. COUNCIL FOR SUSTAINABLE DEV., <http://www.wbcds.org/web/projects/ecopatent/IPC-codes-March2009.pdf> (click “Eco-patent classification list” link) (last updated Mar. 11, 2009).

²⁰¹ *Eco-Patent Commons: Joining or Submitting Additional Patents to the Commons*, WORLD BUS. COUNCIL FOR SUSTAINABLE DEV., 3 (Sept. 17, 2010). <http://www.wbcds.org/web/projects/ecopatent/EcoPatentGroundRules.pdf> (click “How to join the Eco-patent Commons” link).

²⁰² See ECO-PATENT COMMONS: A LEADERSHIP OPPORTUNITY, *supra* note 22, at 2.

²⁰³ See WORLD BUS. COUNCIL FOR SUSTAINABLE DEV., *supra* note 195.

The stated purpose of the EPC is “to help enable the world community to reduce waste, pollution, global warming and energy demands” by making patents available without royalties or licensing costs.²⁰⁴ The EPC gives examples of environmental benefits of patents such as “energy conservation or efficiency, pollution prevention (source reduction, waste reduction), use of environmentally preferable materials or substances, materials reduction [and] increased recyclability.”²⁰⁵ One example of an environmentally beneficial patent is a packing patent donated by IBM.²⁰⁶ IBM developed a method of protecting semiconductor components without using Styrofoam peanuts, but did not “want to exploit the patent itself because the company was not in the packaging business.”²⁰⁷ IBM weighed the cost and benefit of the patent and instead decided “it would be more profitable to donate the patent than to license it.”²⁰⁸ Included in this analysis was the fact that a packaging company would normally have to license the patent, which would increase the cost to IBM as a consumer of the licensed packaging.²⁰⁹ IBM weighed the same factors discussed earlier in the note, and also factored in the effect of the patent to the environment to conclude that it should be donated to the EPC.²¹⁰

EPC works similarly to the aforementioned Creative Commons because donator patentees sign a covenant not to assert patents against users of that patent, but only for their environmentally beneficial uses.²¹¹ The covenant is subject to a defensive termination provision, which allows a member of the Commons to terminate the non-assert agreement against another member if the party asserts an unpledged, classified, and environmentally beneficial patent against the member, or against a non-member if the non-member asserts any infringement claim against the member.²¹² There is no requirement that a company pledge anything specific, they may keep any patent they desire, and there is no requirement that the

²⁰⁴ See ECO-PATENT COMMONS: A LEADERSHIP OPPORTUNITY, *supra* note 22, at 2.

²⁰⁵ *Id.* at 3.

²⁰⁶ See Seidenberg, *supra* note 21, at 26.

²⁰⁷ *See id.*

²⁰⁸ *See id.*

²⁰⁹ *See id.*

²¹⁰ *See id.*

²¹¹ See ECO-PATENT COMMONS: A LEADERSHIP OPPORTUNITY, *supra* note 22, at 2; *see also* Seidenberg, *supra* note 21, at 26 (“Some inventions that have been donated have mainline uses, not just ecological uses. A donor can continue to have exclusive use of the patent for non-ecological purposes and still get the benefit of donating it. It’s one of those rare times when you can have your cake and eat it too.”).

²¹² See *Eco-Patent Commons: Joining or Submitting Additional Patents to the Commons*, *supra* note 201, at 4–5.

company support the donated patents, except to maintain the patent fees required by the USPTO.²¹³ Although companies might just place their patented technology in the public domain, they may also want to maintain rights like those associated with the “defensive termination clause” of the EPC.²¹⁴ If the donor does let the patent lapse or the patent becomes unenforceable, if for instance it is held invalid, then the holder must notify the EPC.²¹⁵ Thus, the EPC allows a company to evaluate their patent portfolio to best suit their own needs while keeping in mind the benefit that intellectual property has for the environment.

There are issues with the EPC. The first issue is that because it is new, it is difficult to measure its effect.²¹⁶ While the use of donated patents is free and the website is searchable, there is no method to track actual use of the donated patents.²¹⁷ Even if the patent is free to use, there is no guarantee that other patents will not block the use of that technology.²¹⁸

There is also a question about the scope and effect of the EPC. Currently, the involvement by industry has been limited mostly to technology companies,²¹⁹ and the absence of a big energy company, which would be analogous to IBM as a big technology company, worries some commentators.²²⁰ The lack of support from the energy sector, coupled with the concern for a lack of mass implementation, leads to questions about the scope and the effect of the EPC.²²¹ Some companies may be reluctant to join the EPC.²²² There is also a question of the value of the granted technology

²¹³ See ECO-PATENT COMMONS: A LEADERSHIP OPPORTUNITY, *supra* note 22, at 2, 5, 6.

²¹⁴ See *id.* at 6.

²¹⁵ See *id.*

²¹⁶ See Jo Bowman, *The Eco-Patent Commons: Caring Through Sharing*, WIPO MAG., June 2009, at 11–12, available at http://www.wipo.int/wipo_magazine/en/2009/03/article_0004.html. The Energy Manager of the WBCSD “cautions observers to expect long-term results from the program rather than a sudden manufacturing revolution.” *Id.* at 12.

²¹⁷ See *id.* Because there is no requirement of a user to register with the EPC, there is no way to track use of the actual technology. See *id.*

²¹⁸ See Steven Seidenberg, *Use With Care*, INSIDE COUNSEL, April 2009, at 26. This is similar to the problem with needing all of the necessary patents to practice a technology in a patent pool.

²¹⁹ See Bowman, *supra* note 216, at 12.

²²⁰ See Krishna Ravi Srinivas, *Sink or Swim: Eco-Patent Commons and the Transfer of Environmentally Sustainable Technologies*, 2 BRIDGES TRADE BIORES TRADE & ENV'T REV. 16, 16 (2008), available at <http://ictsd.net/i/news/bioresreview/12098/> (“But in [sic] case of Eco-Patent Commons the absence of an ‘IBM’ in the energy, environment or transport sector is a major drawback.”).

²²¹ See *id.* (“However, unless the patent is applied in many countries it is difficult to assess its total environmental impact.”).

²²² See Le Hors, *supra* note 196. Although eleven companies have donated patents and the

because of the delays associated with obtaining a patent.²²³ The concerns about the effect of the EPC are related to the novelty of the idea, so this note will turn to conceptual arguments for the EPC with regard to problems of incentivizing green innovation by industry through the patent system.

IV. THE ARGUMENT FOR THE ECO-PATENT COMMONS

The EPC is a useful new idea in intellectual property that will help to address some of the issues with incentivizing green innovation through the patent system. This note now turns to the argument for the Eco-Patent Commons addressing many of the issues associated with incentivizing green innovation.

The first issue that the EPC helps to address is the cost issue inherent in the patent system. The EPC does not need to address the cost of the first researcher and implementer recovering their investment because the EPC is a donation of already obtained patents.²²⁴ The EPC will be more advantageous to licensee-users than patent pools because the use is free, so use will help to decrease the costs of research, implementation, or licensing the green technology.²²⁵ The EPC will help with addressing the cost of already obtained patents when the donating companies recognize the nature of the sunk cost of patents with no known use, or when they determine that the patents have more utility when donated to the EPC.²²⁶ A patentee may not even be able to use or efficiently utilize the protection of their own patent, which is another factor in the calculation of keeping

blog author finds this encouraging, it indicates that the majority of companies are reluctant to donate to the EPC. *See id.*

²²³ See Nancy Cronin, *Growing the Eco-Patent Commons to Truly Promote Green Innovation*, NANCY EDWARD CRONIN'S BLOG (Apr. 15, 2008), <http://www.greenbiz.com/blog/2008/04/15/growing-eco-patent-commons-truly-promote-green-innovation> ("The sluggish nature of the patent system means that even the best intentions of a company that donates environmentally beneficial patents to the Eco-Patent Commons cannot compensate for the age of the invention, which likely has become less relevant with time.").

²²⁴ See Gross, *supra* note 37; ECO-PATENT COMMONS: A LEADERSHIP OPPORTUNITY, *supra* note 22, at 2. Because the EPC focuses on inventions that are already patented, the incentives of patent law have already induced the invention of the intellectual property, even if the patentee decides that it is not in their best interest to exploit the patent. *See* Seidenberg, *supra* note 21.

²²⁵ See Showalter & Kurth, *supra* note 21, at 22; ECO-PATENT COMMONS: A LEADERSHIP OPPORTUNITY, *supra* note 22, at 2.

²²⁶ See Sovacool, *supra* note 8, at 401, 417–18; Seidenberg, *supra* note 21, at 26. Companies may "have limited resources for absorbing transaction costs," but if they weight the issue as IBM did with their packing patents, they may decide that the cost is sunk and the patent is best used by others rather than suppressed. *See* Sovacool, *supra* note 8, at 401.

or donating a patent to the EPC.²²⁷ The EPC is a tool for industrial companies to use in deciding the best way to utilize a patent when they have already spent time and money to obtain that patent. The EPC can help to influence the problem of cost externalities, because it indicates a shift in the idea of responsibility for those externalities that may affect that problem indirectly.²²⁸

The EPC also works within the current system of patent disclosure and exclusion to promote cooperation and mutual benefit rather than simply benefit to the inventor.²²⁹ The donator-holder of the patent maintains some contractual rights in the EPC through the defensive termination clause.²³⁰ The EPC helps to avoid the free rider problem associated with normal commons by ensuring that the patents are only used for the mutual benefit of the environment and not for other non-environmental uses.²³¹ The EPC encourages companies to avoid suppression of patents when the patent holder has no use for their patent because of the environmentally beneficial nature of the patent.²³² The EPC also avoids the lack of protection and encouragement of secrecy or non-disclosure from commons and trade secrets respectively.²³³ Working within the patent system rather than outside the system has benefits to the inventor with patents of little or unknown utility.

The last and most important way that the EPC works to promote environmental innovation through the patent system is by sharing knowledge to anyone interested and fostering cooperation within and across

²²⁷ See Gollin, *supra* note 6, at 219–20 (giving reasons a company might seek licensing of patents). These same reasons might be applied to the EPC.

²²⁸ Companies that decide to donate to the EPC might signal a change in the calculation of externalities in the corporate world. See ECO-PATENT COMMONS: A LEADERSHIP OPPORTUNITY, *supra* note 22, at 3 (“The Eco-Patent Commons provides global recognition for the businesses whose leadership is contributing to the acceleration of sustainable development.”). The public relations aspect is a benefit to the company and perhaps also a signal of a change in attitude towards the external benefit “society reaps from the innovation . . .” See Mandel, *supra* note 19, at 58.

²²⁹ See Behles, *supra* note 57, at 29–30.

²³⁰ See ECO-PATENT COMMONS: A LEADERSHIP OPPORTUNITY, *supra* note 22, at 2–3. It is important to patentees to retain their rights, even if they donate those patents. See Quinn, *supra* note 152 and accompanying text.

²³¹ See ECO-PATENT COMMONS: A LEADERSHIP OPPORTUNITY, *supra* note 22, at 2–3; see also Srivinas, *supra* note 220, at 16.

²³² See Sovacool, *supra* note 8, at 417; Seidenberg, *supra* note 21, at 26–27. Even if the EPC encourages patentees that suppress because they have no known use for the patent, it probably will not change the behavior of those that suppress for financial benefit. See Sovacool, *supra* note 8, at 417–18.

²³³ See Chander & Sunder, *supra* note 136, at 1338; Mandel, *supra* note 19, at 53.

industries. Some of the stated goals of the EPC are promoting disclosure to accelerate green innovation as well as “promot[ing] and encourag[ing] cooperation and collaboration between businesses that pledge patents and potential users to foster further joint innovations and the advancement and development of solutions that benefit the environment.”²³⁴ In exchange for donating towards this goal, the online presence of the EPC allows businesses to gain recognition for their effort towards “sustainable development.”²³⁵ The EPC also encourages cooperation beyond industry boundaries, a limitation of patent pooling.²³⁶ Cooperation and collaboration are needed to have a wide range effect on the environment through green innovation.²³⁷ The EPC also encourages disclosure beyond the normal patent filing system through the detail of disclosure on their website.²³⁸ The patents are located in a searchable database,²³⁹ the WBCSD promotes the EPC on the web and elsewhere,²⁴⁰ and the EPC requests a summary of the environmental benefits of the patent from the patentee.²⁴¹ This combination of disclosure with non-enforcement helps to address the issue of unclear patent disclosure.²⁴² The non-enforcement and free use of the patent, coupled with possible collaboration between the user and the donor would help alleviate the problem of unclear property rights of the inventor.²⁴³

It is worth noting some of the shortcomings of the EPC. Without some other mechanism of self-reporting or publicity it will be difficult to measure the effect of the EPC because of the lack of a reporting system

²³⁴ See ECO-PATENT COMMONS: A LEADERSHIP OPPORTUNITY, *supra* note 22, at 2.

²³⁵ See *id.* at 3.

²³⁶ See Seidenberg, *supra* note 21, at 26. For an innovative technology to have a wide effect, it needs to be implemented beyond industry boundaries. See *id.* Patent pools generally work within industries and thus have limited effect. See *id.*

²³⁷ See Srinivas, *supra* note 220, at 17; Behles, *supra* note 57, at 29. See generally Strandburg, *supra* note 56.

²³⁸ See Eco-Patents Database, WBCSD.ORG, <http://www.wbcd.org/plugins/GENERICDB/result.asp?DBID=8&type=p&MenuId=MTU2MQ&doOpen=1&ClickMenu=LeftMenu&DBEntityTitle=&DBEntityText=&char70=&cbo68=&cbo69=&char71=> (last visited Jan. 26, 2011).

²³⁹ ECO-PATENT COMMONS: A LEADERSHIP OPPORTUNITY, *supra* note 22, at 2–3.

²⁴⁰ See *id.* at 5. (“Some of the promotional activities and opportunities have included the WBCSD’s regional network, presentations at environmental and IP conferences and events, and publication of papers and articles about the Commons.”).

²⁴¹ *Id.*

²⁴² See BESSEN & MEURER, *supra* note 15, at 8. Because the patentee no longer intends to exclude and the licensee-user of the EPC has decided the patent is useful, the issue of unclear disclosure either leaves or can be addressed by communication between the inventor and the user. See *id.*

²⁴³ See *id.* at 9.

as a requirement of use.²⁴⁴ The EPC may be limited in effect because companies may be reluctant to donate patents that represent significant monetary value,²⁴⁵ or because there is no big energy representative currently involved in the EPC.²⁴⁶ The EPC will not address the implementation costs to original inventors.²⁴⁷ The last significant complaint about the EPC is that the donated technology may not have much use because of the significant delays inherent in obtaining a patent.²⁴⁸ Most of the complaints about the EPC relate to its relative novelty and only time will dictate whether there is a pronounced effect on green innovation because of the Eco-Patent Commons.

CONCLUSION

Industry faces many challenges in fostering green innovation because of its unique position as a cause and solution to environmental problems. Patent law is aimed at fostering innovation through the bargain of monopoly for disclosure, but it is plagued with similar issues of transaction costs, problems with the exclusivity of the patent monopoly, and problems with the disclosure function of patents. The Eco-Patent Commons is the best idea of the alternative forms of intellectual property examined in this note for addressing these issues. The EPC works to promote environmental innovation through disclosure and collaboration after the cost of researching an invention and obtaining the patent has taken place. While the novelty of the EPC results in some concerns, the EPC helps to address problems with patent disclosure, to influence industrial attitudes about the external nature of environmental concerns, and to encourage patentees to donate rather than suppress patents with no known use. The EPC promotes innovation through disclosure and collaboration, all within the patent system. The Eco-Patent Commons is a useful tool in the intellectual property portfolio of any industrial entity that seeks to promote environmental innovation through donation, disclosure, collaboration, and wide breadth of use.

²⁴⁴ See Bowman, *supra* note 216, at 12.

²⁴⁵ See Seidenberg, *supra* note 21, at 26.

²⁴⁶ See Srinivas, *supra* note 220, at 16.

²⁴⁷ See *supra* note 224 and accompanying text.

²⁴⁸ See Cronin, *supra* note 223.