

Environmental Initiative and the Role of the USPTO'S Green Technology Pilot Program

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Environmental Initiative and the Role of the USPTO'S Green Technology Pilot Program

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Each of us has a part to play in a new future that will benefit all of us. As we recover from this recession, the transition to clean energy has the potential to grow our economy and create millions of jobs – but only if we accelerate that transition. Only if we seize the moment. And only if we rally together and act as one nation – workers and entrepreneurs; scientists and citizens; the public and private sectors.¹

President Barack Obama

I. INTRODUCTION

The United States (U.S.) has entered a heightened state of environmental awareness. America's history of industrialization and consumerism in the early 1900s resulted in the realization that an increasing rate of industrial growth wrought a devastating effect on the environment. This growing environmental awareness has peaked in the contemporary era. In the 1990s and the early 2000s, environmental issues were pushed to the forefront of American consciousness.² Political leaders have become advocates for the environment,³ and their work prompted more Americans to recognize the environment as a top priority on the country's political agenda.⁴ The American sentiment is

1. Barack Obama, U.S. President, Remarks by the President to the Nation on the BP Oil Spill (June 15, 2010) (transcript available on the White House website, <http://www.whitehouse.gov/the-press-office/remarks-president-nation-bp-oil-spill>).

2. In 2010, catastrophic events, such as the BP Oil Spill and the Upper Big Branch Mine Explosion in West Virginia, were only reminders of the devastation that the United States' reliance on nonrenewable energy can cause. Other problems such as air pollution and global warming, which have been worsening slowly and steadily, are starting to receive the acknowledgment and awareness of the general public as well. *See generally* U.S. ENVIRONMENTAL PROTECTION AGENCY, <http://www.epa.gov/> (last visited Sept. 25, 2011).

3. For example, former U.S. Vice-President Al Gore emerged as a "green" spokesman and won the 2007 Nobel Peace Prize with the Intergovernmental Panel on Climate Change for raising awareness and promoting research related to climate change. He also won an Academy Award for his 2006 documentary, "An Inconvenient Truth," which documented global warming through a comprehensive slide show. *See, e.g.*, Katie Paul, *The Century's Environmental Leaders*, NEWSWEEK, Apr. 3, 2008, <http://www.newsweek.com/photo/2008/04/03/environmental-leaders.html>. Also, leaders among the 112th Congress include majority leader Senator Harry Reid who "has shown particular interest in trying to forge deals on natural gas-powered vehicles, renewable energy key to his sun-drenched state and granting the federal government greater authority in siting a new green electric transmission network." *See also* Darren Goode, *10 to watch: Senators on energy*, POLITICO (Dec. 30, 2010), <http://www.politico.com/news/stories/1210/46756.html>.

4. *Energy Update*, RASMUSSEN REPORTS (Jan. 11, 2011), http://www.rasmussenreports.com/public_content/politics/current_events/environment_energy/energy_update ("The number of voters who say investing in renewable energy resources is

evident in President Obama's goals for the new decade: creating a clean energy economy and reducing pollution levels.⁵

This Comment will address the environmental problems that confront the U.S. and the steps that the government has taken to solve them. Specifically, research funding and patent protection have provided the green industry an incentive to increase research and development of green technology. For example, one of the recent programs to help improve the patent protection of green technology, the Green Technology Pilot Program ("Program"), accelerates the status of green technology through the United States Patent and Trademark Office (USPTO) patenting process. This Comment will suggest that the Program become a permanent feature within the USPTO and that it be expanded to allow maximum access. Finally, this Comment will recommend that the USPTO receive more funding (and keep the funding that it generates) to help alleviate delays, and the U.S. should be more receptive to green technology licensing in developing countries.

II. THE "GREEN" PROBLEM

The American people's reliance on foreign oil, coal, and other nonrenewable sources has irreversibly affected not only the country's environment but also the country's economy and national security. In the 1960s, environmentalism began to gain popularity,⁶ and the 1970s energy crisis opened the door for environmental legislation in the U.S.⁷ The energy crisis demonstrated American dependence on fossil fuels and raised many questions about the country's energy policy and the

the best investment for America has reached its highest level since the beginning of 2010.").

5. See Obama, *supra* note 1.

6. President Richard Nixon founded the U.S. Environmental Protection Agency (EPA) in 1970 in response to rising concerns about environmental protection and conservation. This event followed the first moon landing, the creation of Earth Day, and the popularity of Rachel Carson's 1962 classic "Silent Spring." This launched the idea of environmentalism: a political movement that called for the government to protect the earth and punish those who polluted it. The environment soon became a part of future Presidents' political agendas. *The Guardian: Origins of the EPA*, U.S. ENVIRONMENTAL PROTECTION AGENCY (Aug. 24, 2004), <http://nepis.epa.gov/Exe/ZyPURL.cgi?Dockey=1000496L.txt>.

7. During the 1970s, the U.S. faced shortages of petroleum due to the Arab Oil Embargo of the Organization of Petroleum Exporting Countries (OPEC) and the 1979 Energy crisis during the Iranian Revolution. The U.S. economy suffered greatly and adjustments had to be made in petroleum usage. See *OPEC Oil Embargo, 1973-1974*, U.S. DEP'T. OF STATE, OFFICE OF THE HISTORIAN, <http://history.state.gov/milestones/1969-1976/OPEC> (last visited Sept. 25, 2011).

security of its energy supply.⁸ This realization led to many changes as environmentalism became more mainstream and the country started to develop alternative sources of energy and fuel efficiency.

Since the 1970s, the environment has remained a concern. The Argo Merchant (1976), Exxon Valdez (1989), and “BP” Deepwater Horizon (2010) oil spills all serve as unwelcome reminders of the devastation wrought by human intervention on the Earth and of the fragility of nature.⁹ President Obama referred to the “BP” Deepwater Horizon oil spill as “the worst environmental disaster America has ever faced,”¹⁰ and this oil spill serves as just one example of how our consumption has negatively affected the environmental landscape. Global warming has also evidenced the effects that people’s use of nonrenewable energy has had on the environment.¹¹ Environmental scientists have been aware of and concerned about the change to the climate for the last thirty to forty years; however, only recently has climate change been acknowledged and recognized by the general public.¹² Scientists warn that in the future, global warming may cause coastlines to erode, ecosystems to disappear, and weather patterns to shift and change the way people

8. President Jimmy Carter created the Department of Energy and other government agencies to use government policies to shape the future of environmental initiatives. See Jimmy Carter, U.S. President, Proposed Energy Policy (Apr. 18, 1977) (transcript available on the PBS website, <http://www.pbs.org/wgbh/americanexperience/features/primary-resources/carter-energy/>).

9. On April 20, 2010, the Deepwater Horizon drilling rig located in the Gulf of Mexico exploded, killing 11 workers and injuring 17 others. The explosion resulted in a damaged wellhead that leaked at an estimated rate of 162,000 barrels per day. It has been estimated that a total of 4.9 million barrels or 185 million gallons of crude oil were released over the course of almost four months. The oil spill had a devastating effect on fish and wildlife, environment, and the health and safety on the coast. Also, the economy of the Gulf coast suffered tremendously. RESTORETHEGULF.GOV, <http://www.restorethegulf.gov/> (last visited Sept. 25, 2011).

10. Obama, *supra* note 1.

11. The Industrial Revolution transformed the world in the 19th century when coal became the life force behind economic and political growth. This use of coal has since led to the world’s increasing climate change. See Vikki Valentine, *Climate Connections: A Global Journey*, NAT’L PUB. RADIO, <http://www.npr.org/templates/story/story.php?storyId=112073582> (last visited Sept. 25, 2011) (follow “Carbon Power” hyperlink).

12. Getting global warming on the political agenda has been fraught with political debate about whether global warming is a valid and actual problem. It has often turned conversations on environmental legislature into left-right battles about the validity of global warming. However, there is virtually unanimous agreement among the international scientific community in support of human-caused global warming. See *Global Warming*, N.Y. TIMES, <http://topics.nytimes.com/top/news/science/topics/globalwarming/index.html> (last updated Jan. 13, 2011).

live.¹³ The U.S. remains the second highest producer of carbon emissions (only behind China), which is largely attributed to coal consumption, the most carbon-intensive energy source.¹⁴ To curb these emissions, new sources of energy need to be developed.

All of these phenomena placed the environment at the forefront of U.S. governmental policy. Political methodology aside, improvements in green technology, green conservation, and reduction of greenhouse gases are progress measures for which to strive.

III. ADDRESSING THE “GREEN” PROBLEM

Where market forces have failed to introduce green technological solutions, the government has stepped in to stimulate innovation. However, government intervention has been met with opposition, on the one hand, from the commercial sector for regulations that restrict businesses and, on the other hand, from the international community for patent protection that inhibits dissemination of green technology to developing countries.

A. Government Intervention

Regulatory reform by the government may be necessary when normal market forces and corporate efforts are insufficient to spur green technology development. Government regulations can take the form of direct funding for research and development and of patent incentives for green technology.¹⁵ Additionally, other government regulations may include antitrust law, technological standards, tax credits, government procurement policies, industry-government cooperative programs, consumer information disclosure programs, technology-based regulations, and market approaches (e.g. cap-and-trade programs, carbon taxes).¹⁶ Although these regulations are important, the scope of this Comment will be limited to funding and patent protection for green technology.

There is a general consensus that new eco-efficient, clean, and

13. See Valentine, *supra* note 11 (follow “Warming Seas” & “Climate Futures” hyperlinks).

14. Alyson Hurt & Kathleen Masterson, *Climate Change Trends: Carbon Emission Giants*, NAT’L PUB. RADIO, <http://www.npr.org/templates/story/story.php?storyId=121240453> (last visited Sept. 25, 2011).

15. WENDY H. SCHACHT, CONG. RESEARCH SERV., RL 33528, INDUSTRIAL COMPETITIVENESS AND TECHNOLOGICAL ADVANCEMENT: DEBATE OVER GOVERNMENT POLICY (2010), available at www.fas.org/sgp/crs/misc/RL33528.pdf.

16. *Id.*

economically competitive technology is needed to solve the “green” problem. The path to new technological inventions starts with an increase in overall green technology research.¹⁷ The next step is to develop these inventions for commercialization. An incentive to bring these “sustainable” and “greener” inventions to the general public resides in patent protection.

B. Domestic Considerations

Government regulatory reforms have experienced their share of opposition within the U.S. Arguably, the greatest opponents to the green movement are industries that see environmental reform as negatively affecting U.S. business and economy.¹⁸ Besides businesses suffering burdens, consumers may not respond positively to new “environmentally friendly” products or changes to their lifestyle.¹⁹ Especially during a recession, Americans may not be willing to make the “environmentally friendly” changes at the expense of economic growth. Engineering and scientific uncertainties arise with any new technology, as do the unanticipated impacts on the economy.²⁰

C. International Considerations

International cooperation is essential to solving the global problem of climate change. Regulatory reforms by the U.S. government involve challenges that lie outside the scope of domestic policy. One such

17. Research funding for more “sustainable” technology will help lead to a reduction in the reliance of fossil fuels and instead allow solar, wind, and thermal power to become viable options. Research funding for “greener” technology will help to improve already existing technology in an effort to make them more efficient, e.g. more efficient automobiles. See Antonia V. Herzog, et al., *Renewable Energy: A Viable Choice*, 43 ENV'T, no. 10, at 8 (Dec. 2001), available at http://www.windri.org/survey/references/ea_seminar_sept_20_2.pdf.

18. Several industries depend on the success of “environmentally unfriendly” industries, such as big oil and coal companies. In 2010, no new coal-fired power plants were constructed. Several factors, such as the economy, lower natural gas prices, and environmentalist opposition, have effectively halted the growth of the coal industry. David Gabel, *U.S. Coal Industry Suffering from Low Natural Gas Prices and Environmental Opposition*, OILPRICE.COM (Jan. 8, 2011), <http://oilprice.com/Energy/Coal/U.S.-Coal-Industry-Suffering-from-Low-Natural-Gas-Prices-and-Environmental-Opposition.html>. Opponents argue that “going green” costs jobs and hurts the economy. See David Fenton, *Green Energy Opponents Are the Real Job Killers*, ALTERNET (Jan. 20, 2011), http://www.alternet.org/environment/149606/green_energy_opponents_are_the_real_job_killers.

19. See Michael Hasper, Note, *Green Technology In Developing Countries: Creating Accessibility Through A Global Exchange Forum*, 2009 DUKE L. & TECH. REV. 001 (2009), <http://www.law.duke.edu/journals/dltr/articles/2009dltr001.html>.

20. *Id.*

difficulty is the diverging interests of “rich” and “poor” countries.²¹ Because the environment is often intricately tied to the economy and to national security, developing countries may not have the same incentives and priorities as do industrialized countries. Developing countries argue that industrialized countries went formerly environmentally unmonitored, which allowed them to flourish economically and politically.²² Industrialized countries explain that developing countries could skip the heavy-polluting phase and implement green technology immediately.²³ Yet, developing countries generally do not have the financial resources to implement green technology and to overcome barriers to entry for new technology.²⁴

In 1992, the international treaty known as the United Nations Framework Convention on Climate Change (UNFCCC) was created at the United Nations Conference on Environment and Development²⁵ to address the intergovernmental effort on climate change.²⁶ Since then, UNFCCC signatories have met annually to assess UNFCCC member countries’ progress on climate change and to establish legally binding obligations for developed countries to combat climate change.²⁷ In May 2009, despite developing countries’ concerns that patents limited their access to green technology, the U.S. House of Representatives passed a bill that continued strong patent protection for green technology.²⁸ Additionally, the U.S. has not ratified the Kyoto Protocol in which “Annex I countries,” or industrialized countries and countries in

21. Lisa Larrimore Ouellette, Comment, *Addressing the Green Patent Global Deadlock Through Bayh-Dole Reform*, 119 YALE L.J. 1727, 1728 (2010).

22. Roger Highfield, *Environment damage of rich countries on poor*, THE TELEGRAPH (Jan. 21, 2008), <http://www.telegraph.co.uk/science/science-news/3322505/Environment-damage-of-rich-countries-on-poor.html>; see also John Vidal, *China leads accusation that rich nations are trying to sabotage climate treaty*, THE GUARDIAN (Oct. 5, 2009), <http://www.guardian.co.uk/environment/2009/oct/05/climate-change-kyoto>.

23. Robert Fair, Note, *Does Climate Change Justify Compulsory Licensing of Green Technology?*, 6 B.Y.U. INT’L L. & MGMT. REV. 21, 22 (2009).

24. Several reasons are listed as barriers to entry: intellectual property rights concerns, financing issues, technical know-how of the putative recipients, complementary inputs and institutions to cultivate technologies, small producers catering to local markets, and trade barriers. Hasper, *supra* note 19, at ¶ 14.

25. This event was informally known as the “Earth Summit,” which was held in Rio de Janeiro, Brazil. *UN Conference on Environment and Development (1992)*, EARTH SUMMIT, <http://www.un.org/geninfo/bp/enviro.html> (last visited Sept. 25, 2011).

26. *Essential Background*, UNFCCC, http://unfccc.int/essential_background/items/2877.php (last visited Sept. 25, 2011).

27. *Id.*

28. Foreign Relations Authorization Act, Fiscal Years 2010 and 2011, H.R. 2410, 111th Cong. § 1120A (2009).

transition, committed themselves to reducing the emissions of four greenhouse gases and two groups of gases.²⁹ This U.S. response has made it clear to the international community that the U.S. economic goals take precedent over the concerns of the global community.

IV. RESEARCH FUNDING AND PATENT PROTECTION

One significant way in which the U.S. promotes the progress of science is research funding through the Department of Energy and through the National Science Foundation.³⁰ Moreover, the passage of the Bayh-Dole Act in 1980 allowed the recipients of federal government-funded research to control the intellectual property of their inventions. The most important intellectual property for science technology is patent protection, whose stated purpose is to promote innovation but which may actually hinder dissemination in the process.

A. Research Funding

The U.S. federal government has been an important source of direct research funding. In 1950, President Truman created the National Science Foundation to fund basic research by U.S. colleges and universities.³¹ In 1977, President Carter created the Department of Energy, which sponsors more basic and applied scientific research than any other U.S. federal agency.³² In 2009, President Obama's stimulus package (American Recovery and Reinvestment Act of 2009) provided \$1.6 billion to the Department of Energy and \$2.5 billion to the National Science Foundation for basic science research.³³ Green technology research is funded primarily by the government, followed by universities and other nonprofits, and lastly by industry.³⁴ Therefore, government

29. *Kyoto Protocol and the United States*, THE ENCYCLOPEDIA OF EARTH (Dec. 25, 2006), http://www.eoearth.org/article/Kyoto_Protocol_and_the_United_States (last updated June 6, 2011).

30. Proponents of government funding often cite to the U.S. Constitution, which states that the government is to have the power "[t]o promote the Progress of Science." U.S. CONST. art. 1, § 8, cl. 8.

31. The National Science Foundation Act of 1950 stated its mission is "to promote the progress of science; to advance the national health, prosperity, and welfare; and to secure the national defense." National Science Foundation Authorization Act of 1950; 42 U.S.C. § 1861, note (2006); *NIH Mission*, NAT'L INST. OF HEALTH, <http://www.nih.gov/about/mission.htm> (last visited Sept. 25, 2011).

32. U.S. Dep't of Energy, *Science and Technology*, ENERGY.GOV, <http://energy.gov/science-innovation/science-technology> (last visited Sept. 25, 2011).

33. American Recovery and Reinvestment Act of 2009, Pub. L. no. 111-5, 123 Stat. 115 (2009).

34. Ouellerre, *supra* note 21, at 1729.

funding plays a crucial role in advancing green technology research.

B. The Bayh-Dole Act

Under the Bayh-Dole Act of 1980, recipients of federal research grants are allowed to patent their invented technology.³⁵ Opponents of the Act argue that taxpayers who paid for the federal funding, not the private inventor, should benefit from the invention.³⁶ However, the Act found justification under the commercialization theory, which rationalizes that while patents may not be needed to motivate university researchers to innovate, patents do provide an incentive for commercialization.³⁷ Without the motivation to commercialize inventions, the innovation would never reach the general public.³⁸ Corporations often need exclusive rights to attract the capital required to turn university inventions into commercial products.³⁹ While proponents of the Act have stated that it has led to economic growth, especially in biotechnology,⁴⁰ detractors contest that it has negatively affected the practice and norms of science, has created “anticommons” problems, has contributed to patent hold-ups, and has led to unnecessary increases in consumer prices.⁴¹

35. Bayh-Dole Act, 35 U.S.C. § 200 (2006).

36. *The Bayh-Dole Act at 25*, BAYHDOLE25, INC. 20 (Apr. 17, 2006), available at bayhdolecentral.com/BayhDole25_WhitePaper.pdf.

37. *Id.*

38. *Id.*

39. *Id.* at 6.

40. David Kappos, Under Sec’y, U.S. Pat. & Trademark Office, Remarks as Prepared: 20th Anniversary of the Bayh-Dole Act (Dec. 9, 2010) (transcript available at the USPTO website), http://www.uspto.gov/news/speeches/2010/Kappos_Bayh_Dole_Act_Remarks.jsp (last visited Sept. 25, 2011); Press Release, U.S. Pat. & Trademark Office, USPTO Marks 30th Anniversary of Bayh-Dole Act (Dec. 9, 2010), http://www.uspto.gov/news/pr/2010/10_64.jsp.

41. See Jeffrey A. Baumel, *The Bayh-Dole Act: The Technology Revolution Shows its Age*, 22 VENTURE CAP. REV. 17, 21 (2009), available at http://www.snrdenon.com/news_insights/publications/idoc.ashx?docid=f0302cbd-a213-4b03-bdf1-36bc92a277b8&version=-1; Sara Boettiger & Alan B. Bennett, *Bayh-Dole: if we knew then what we know now*, 24 NATURE BIOTECHNOLOGY 320, 322 (2006), available at <http://www.nature.com/nbt/journal/v24/n3/full/nbt0306-320.html> (“The ‘anticommons’ is a term coined by Heller and Eisenberg to describe how technologies owned by multiple parties may impose daunting transaction costs and delays in accessing research inputs, which ultimately may lead to an underutilization of proprietary technologies. Bayh-Dole contributed to the creation of an anticommons by establishing incentives for universities to develop independent technology transfer programs and to manage IP in a highly individualized and even competitive framework, with respect to other universities. As a result, it is often difficult to aggregate a range of IP rights required to develop a product.”); see also James Surowiecki, *The Permission Problem*, THE NEW YORKER, Aug. 11, 2008,

C. Patent Protection

As evident from the Bayh-Dole Act, government research funding of green technology is intricately tied with patent protection of green technology. Patent protection holds many benefits for patent holders. Patent holders have the right to exclude others from making, using, or selling the invention claimed in the patent for the duration of the patent life. Thus, patent holders are privy to supernormal profits to compensate for research and development investments. A greater lead-time for commercialization can serve as an incentive to invest in innovations.⁴² This incentive is especially true for pharmaceutical and biotechnology industries.⁴³ Also, patent protection allows the patent holders to use defensive patent filing strategies and patent portfolios if they choose not to commercialize.⁴⁴ Overall, while patent protection is meant to encourage innovation to disseminate the technology in society, some defensive techniques used by patent holders do not necessarily further these purposes.

While the purpose of patent protection is to advance science for society, patents may actually cause more harm than good. One of the ways patents do harm is by impeding technological dissemination through the lengthy patent process. Furthermore, patent protection incentives may hold less strength in engineering fields, which is especially true if inventors are primarily motivated by personal interests, not by economic interests. In certain cases, patent protection does little to encourage innovation and actually slows dissemination through the lengthy patent process.

D. Patent Proposals

Many solutions to the problems related to patent dissemination have been proposed. One proposal calls for forcing technological diffusion and removal of patent rights for green technology. Today, protectable

http://www.newyorker.com/talk/financial/2008/08/11/080811ta_talk_surowiecki.

42. See WIPO, *Competition and Patents*, WIPO IP SERVICES, <http://www.wipo.int/patent-law/en/developments/competition.html> (last visited Sept. 25, 2011); see also *To Promote Innovation: The Proper Balance of Competition and Patent Law and Policy*, 2003 FTC, at 1–2, available at <http://www.ftc.gov/os/2003/10/innovationrpt.pdf>.

43. These industries require longer lead-time because of the high cost of gaining FDA approval and low cost of imitation.

44. Defensive patent filing strategies primarily consist of blocking the market from competing products and filing patents with no intention of commercializing. Patent portfolios are patents held with the intention of gaining revenue through licensing.

subject matter is “anything under the sun that is made by man.”⁴⁵ Thus, forced technological diffusion would exclude certain subject matter from patentability, e.g. green technology. This method would require the government to revoke or transfer existing rights of patent holders and would amount to a huge burden on the USPTO and a potential backlash by patent holders.⁴⁶ Therefore, it is unlikely that the U.S. would be willing to change the scope of patent protection at the risk of weakening the U.S. economically and politically.

A more realistic proposal is compulsory licensing or policies for responsible licensing by patent holders.⁴⁷ Under the 2001 Doha Declaration on Trade-Related Aspects of Intellectual Property Rights (TRIPS), each member country of the World Trade Organization (WTO) has the right to grant compulsory licenses and the freedom to determine the grounds upon which they are granted.⁴⁸ The TRIPS agreement permits governments to order compulsory licensing in emergencies or for “public non-commercial use.”⁴⁹ In the past, the TRIPS agreement has been utilized to compel patent holders to license their inventions at a lower price in the public health arena.⁵⁰ Under TRIPS, compulsory licensing of green technology could be compelled by the environmental “emergency” of pollution and climate change.⁵¹

However, the U.S. House of Representatives holds strongly against weakening intellectual property rights through compulsory licensing.⁵²

45. *Diamond v. Chakrabarty*, 447 U.S. 303, 309 (1980) (citing S. REP. NO. 82-1979 (1952); H. R. REP. NO. 82-1923 (1952)).

46. It would be difficult to reduce the patent term for green technology because under the TRIPS Agreement, the minimum patent term is set at 20 years. Agreement on Trade-Related Aspects of Intellectual Property Rights annex 1C, Apr. 15, 1994, 1869 U.N.T.S. 299, 33 I.L.M. 1125, 1197 (1994) [hereinafter *TRIPS Agreement*].

47. Tessa Schwartz, *Technology Transfer and Intellectual Property Issues Take Center Stage in UNFCCC Negotiations*, MORRISON & FORRESTER (Dec. 14, 2009), available at <http://www.mofo.com/technology-transfer-and-intellectual-property-issues-take-center-stage-in-unfccc-negotiations-12-14-2009/>.

48. World Trade Organization, Ministerial Conference [Doha Declaration], WT/MIN(01)/DEC/1 (Nov. 20, 2001); 41 I.L.M. 746 (2002). For example, one possible licensing policy would be “licensing to scale,” which would require the holder to charge a lower price and sell more. This is a more socially responsible way for an inventor to hold its “monopoly power.” *The Doha Declaration explained*, WTO, http://www.wto.org/english/tratop_e/dda_e/dohaexplained_e.htm (last visited Sept. 25, 2011).

49. TRIPS Agreement, *supra* note 46, at art. 31(b).

50. For example, compulsory licensing practices have been used on the patent for anthrax medicine and in the patent for AIDS medication. Fair, *supra* note 23, at 28–29.

51. *Id.* at 29.

52. Foreign Relations Authorization Act bill states that it shall be U.S. policy to “prevent any weakening of, and ensure robust compliance with and enforcement of, existing

Additionally, compulsory licensing policies would still cause economic backlash from patent holders and businesses.⁵³ Compulsory licensing may inhibit follow-up inventions and may need to be expanded to complementary inventions. Therefore, compulsory licensing for green technology as a practical solution would also have challenges.

In contrast, a solution that does not require government intervention is patent pooling. This method involves a private agreement between patent holders with related patents.⁵⁴ In such an agreement, participants choose to share technologies and aggregate their patents for the common good.⁵⁵ This type of agreement is especially important when emerging technologies require improvement on existing technologies.⁵⁶ Forming a patent pool may create more widespread use of the technology with continued royalty payments to the patent holder.⁵⁷ One existing green technology patent pool, Eco-Patent Commons, aggregates environmentally sustainable patents.⁵⁸ Big companies such as IBM, Sony, Nokia, and Pitney Bowes participate in the Commons with the idea that patent holders who submit their patents to this Commons can benefit from other companies' patents but must promise not to enforce their patents against one another.⁵⁹ However, anti-competitive patent pooling may wipe out any benefits if participants intend on simply strengthening their monopoly power instead of benefiting the common good.⁶⁰

international legal requirements as of the date of the enactment of this Act for the protection of intellectual property rights related to energy or environmental technology" Foreign Relations Authorization Act, Fiscal Years 2010 and 2011, H.R. 2410 (June 22, 2009), *available at* <http://www.govtrack.us/congress/billtext.xpd?bill=h111-2410>.

53. International businesses would argue that compulsory licenses to developing countries will lead to a loss of foreign investment to middle income states. Therefore, a tiered system might be more appropriate for developing countries. Fair, *supra* note 23, at 37.

54. Jeanne Clark et al., *Patent Pools: A Solution to the Problem of Access in Biotechnology Patents?*, U.S. PAT. & TRADEMARK OFFICE (2000), *available at* <http://www.uspto.gov/web/offices/pac/dapp/opla/patentpool.pdf>.

55. *See id.*

56. *Id.* at 8.

57. *Id.* at 9.

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

59. *Id.*

60. DEP'T OF JUSTICE & FED. TRADE COMM'N, ANTITRUST GUIDELINES FOR THE LICENSING OF INTELLECTUAL PROPERTY (1995), *available at* <http://www.justice.gov/atr/public/guidelines/0558.htm>.

VI. THE PTO'S GREEN TECHNOLOGY PILOT PROGRAM

On December 8, 2009, the USPTO commenced the Green Technology Pilot Program in response to the “green” problem.⁶¹ Under the Program, green technology receives accelerated status through the patenting process. The USPTO has accelerated status in the past, and the Program follows the basic framework of the existing Accelerated Examination procedures.⁶² The Program was amended in May 2010 and then extended in November 2010 for another year until December 31, 2011 with additional amendments.

A. Program Overview

The Green Technology Pilot Program was likely motivated by President Obama's stimulus plan that provided funding for green technology research and development. Initiated by the USPTO on December 8, 2009, the Green Technology Patent Pilot Program was open to any pending application filed before that date.⁶³ The Program was to run for 12 months or until 3000 grantable petitions were received, whichever occurred first.⁶⁴ If fewer than 3000 grantable petitions were received after 12 months, the Program would end.⁶⁵ The Program was capped at 3000 applications to allow adequate attention from examiners for those applications granted.⁶⁶ The application had to have three or fewer independent claims and twenty or fewer total claims to qualify.⁶⁷

61. Pilot Program for Green Technologies Including Greenhouse Gas Reduction, 74 Fed. Reg. 64666, 64666 (Dec. 8, 2009).

62. In 1987, former President Ronald Reagan, in order to accelerate superconductivity technology, requested that the USPTO speed up applications related to superconductivity inventions. In response, the USPTO allowed a “Petition to Make Special” on superconductivity inventions. Doing so gave the U.S. more opportunity to play a key role in the development of superconductivity technology. While the gravity of superconductivity technology did not develop as expected, it was still an important act by the U.S. President in demonstrating the importance of the USPTO's efficiency in the progress of innovation. Gene Quinn, *A Patent Proposal for Green Technology*, IPWATCHDOG (Mar. 30, 2009, 4:18 PM), <http://ipwatchdog.com/2009/03/30/a-patent-proposal-for-green-technology/id=2407/>.

63. See Pilot Program for Green Technologies Including Greenhouse Gas Reduction, 74 Fed. Reg. 64666 (Dec. 8, 2009); JOHN GLADSTONE MILLS III, ET AL., PATENT LAW FUNDAMENTALS, § 15:1.40 (2d ed. 2010).

64. MILLS ET AL., *supra* note 63.

65. *Id.*

66. Martin LaMonica, *Green-tech Patent Program Off Target Pace*, CNET (Aug. 27, 2010), http://news.cnet.com/8301-11128_3-20014880-54.html; Eric Lane, *USPTO's Green Patent Program: Stuck in Neutral*, GREENTECH ENTERPRISE (Apr. 13, 2010), <http://www.greentechmedia.com/articles/read/usptos-green-patent-program-stuck-in-neutral/>.

67. Pilot Program for Green Technologies Including Greenhouse Gas Reduction, 74 Fed. Reg. 64666, 64667.

The fee to acquire “special status”⁶⁸ was waived under the Program as well.⁶⁹ The Program allowed technology related to environmental quality, energy conservation, development of renewable energy, or greenhouse gas emission reduction.⁷⁰ The acceleration procedure of the Program was similar to the existing Accelerated Examination procedure, which accelerated the examination of a patent out of turn if the applicant filed a grantable Petition To Make Special.⁷¹ An application that qualified for the Program was placed on the examiner’s special docket prior to the first Office Action and had “special status”⁷² in any appeal to the Board of Patent Appeals and Interferences (BPAI) and in the patent publication process. However, it was placed on the examiner’s amended docket rather than on the examiner’s special docket after the first Office Action.⁷³

B. Initial Reception and Modification

One of the early modifications made to the Program was its classification of “green technology.” After six months, the Program found itself lagging behind its predicted progress because the USPTO dismissed or denied many patent submissions that applied for the Program as not qualifying under the technology class or subclass of “green technology.”⁷⁴ To remedy this challenge, the USPTO responded by changing the classification requirement of green technology applications.⁷⁵ Rather than having to fit into a specific classification, patent petitioners now needed to fall into four general areas: renewable energy, technology to improve environmental quality, energy

68. U.S. PAT. & TRADEMARK OFFICE, U.S. DEP’T OF COMMERCE, MANUAL OF PATENT EXAMINING PROCEDURE § 708.02 (8th ed. 2010) [hereinafter *MPEP*].

69. *Id.*

70. Pilot Program for Green Technologies Including Greenhouse Gas Reduction, 74 Fed. Reg. 64666, 64668 (Dec. 8, 2009).

71. *Accelerated Examination*, U.S. PAT. & TRADEMARK OFFICE, <http://www.uspto.gov/patents/process/file/accelerated/index.jsp> (last visited Sept. 25, 2011).

72. *MPEP*, § 2261.

73. *Id.*; Courtenay Brinckerhoff, *Current Options for Prioritized U.S. Examination*, PHARMAPATENTS BLOG (Oct. 14, 2010), <http://www.pharmapatentsblog.com/patent-office-practice/current-options-for-prioritized-us-examination/>.

74. As of May 3, 2010, there were 58 applications awaiting decision, 335 requests had been granted, 494 requests had been dismissed and 56 requests had been denied. Heather Clancy, *Time to bone up on green tech patents*, ZDNET (May 2010, 3:03 PM), http://www.zdnet.com/blog/green/time-to-bone-up-on-green-tech-patents/11899?tag=mantle_skin;content.

75. Elimination of Classification Requirement in the Green Technology Pilot Program, 75 Fed. Reg. 28554, 28555 (May 21, 2010).

conservation, or gas reduction.⁷⁶ The USPTO eliminated the specific classification requirement because some of the petitions that it denied had, in fact, disclosed green technology.⁷⁷ However, as of August 27, 2010, the participation in the Program was still short of the expected pace.⁷⁸

Despite these setbacks and participation well short of 3000 patents, on November 10, 2010, the USPTO announced that it was extending the Green Technology Pilot Program until December 31, 2011.⁷⁹ The USPTO also expanded eligibility for the Program to include applications that had been filed on or after December 8, 2009.⁸⁰ This expansion now allows petitions seeking accelerated status to be filed simultaneously with patent applications. Yet, just as before, if fewer than 3000 grantable petitions are received, the Program is said to end on December 31, 2011.⁸¹

VII. THE FUTURE OF GREEN TECHNOLOGY AND PATENT PROTECTION

For patent protection of green technology, reduced incentive and greater hindrance to dissemination remain its greatest challenge. However, an improvement in the speed of patenting would help to facilitate dissemination. So far, Program participation has been underwhelming. Reenergizing the Program will call for focusing on three goals: (1) increasing the incentive to innovate, (2) increasing participation in the Program, and (3) improving acceleration. Thus, achieving these goals will demand making the Program permanent, lifting restrictions to the Program, and continuing to improve the acceleration speed.

A. Program and Patent Theory

A preliminary question arises of whether patent theory is consistent with the patenting of green technology. As stated above, patents are meant to spur innovation by creating an incentive for inventors to invent and to make the invention available to the public. However, as

76. *Id.*

77. *Id.*

78. LaMonica, *supra* note 66.

79. Expansion and Extension of the Green Technology Program, 75 Fed. Reg. 69049, 69050 (Nov. 10, 2010).

80. *Id.*

81. *Id.*

demonstrated further, patent theory is not as applicable to green technology as it is to other categories of inventions.⁸²

On the one hand, several reasons exist as to why the incentivizing aspect of patent protection for green technology is not as powerful. First, green technology is not as easily imitated as pharmaceutical and biotechnological inventions; therefore, the lead time is not as crucial for inventors to profit.⁸³ Second, most basic technologies in the field are “off-patent,” and the patented aspects of green technology are often specific features or improvements to existing technology (which have less costs to recover than pharmaceutical developments).⁸⁴ As a result, a fair amount of existing competition between patented inventions has brought down prices and removed the “monopoly effect” of patent protection.⁸⁵ Third, methods such as superior channels of distribution and ability to manufacture at a lower cost may be sufficient for green technology to gain a competitive advantage in the marketplace.⁸⁶ A “lower ratio of regulatory barriers to imitation costs, the cumulative nature of innovation, and other methods of obtaining a competitive advantage” make patent protection for green technology unnecessary to encourage public-sector innovation.⁸⁷

On the other hand, green technology can be a risky venture for companies. To alleviate the risk, patent protection provides the value necessary to attract the needed resources that will help the manufacturing and marketing of green technology.⁸⁸ Because green technology is generally an expensive venture with unpredictable returns,

82. For example, patent theory is stronger for pharmaceuticals and biotechnology inventions, as will be explained further herein.

83. Ouellerre, *supra* note 21, at 1731; *see also* Dan L. Burk & Mark A. Lemley, *Policy Levers in Patent Law*, 89 VA. L. REV. 1575, 1589, & n.37 (2003).

84. John H. Barton, *Intellectual Property and Access to Clean Energy Technologies in Developing Countries*, INT’L CENTRE FOR TRADE & SUSTAINABLE DEV. 13 (Dec. 2007) (explaining that by contrast, pharmaceutical inventions are usually the result of completely new biochemical research which faces much higher research costs to recover and fewer competitors); *see also* Jay P. Kesan, *Transferring Innovation*, 77 FORDHAM L. REV. 2169, 2195-96, & nn.134-37 (2009); Paul R. Gupta & Stephanie Carpenter, *IP Aspects of Green Technology & Strategies for Building & Investing in Green Technology Companies*, 2009 GREEN TECH. L. & BUS. 11 (PLI Corp. L. & Practice Handbook Series No. 18722, 2009).

85. Gupta & Carpenter, *supra* note 84, at 18.

86. *See* Ouellerre, *supra* note 21.

87. *Id.* at 1731.

88. Press Release, U.S. Pat. & Trademark Office, The U.S. Commerce Department's Patent and Trademark Office (USPTO) Will Pilot a Program to Accelerate the Examination of Certain Green Technology Patent Applications (Dec. 7, 2009), http://www.uspto.gov/news/pr/2009/09_33.jsp.

many investors will not put their money in risky developments unless they are promised patent protection. Therefore, patent protection may still serve as an encouragement for investors in a risky technological field.

Compared to other categories of inventions, green technology should be treated differently, and patent protection *should be* weakened for green technology. However, distinguishing green technology from other categories of technology would require many changes within the current patent system.⁸⁹ The USPTO slows down the dissemination of green technology because the examination process is so lengthy. Therefore, even within the current structure, implementing improvements within the USPTO could help facilitate the dissemination of green technology. In addition, the private interests of patent holders run contrary to dissemination in developing countries that is crucial to global environmental goals.⁹⁰ While patent protection can be kept for green technology, efforts should be made to minimize the harms patent protection may cause to society.

B. Program Goals and Proposals

In its goals, the Green Technology Pilot Program seeks to encourage green innovations and “to help stimulate investment in green technology, bring more green inventions to market, and create jobs,” all in hope that accelerated patent prosecution would allow inventors to secure funding, create businesses, and bring green technology to the market sooner.⁹¹ As of November 7, 2011, roughly half of the 4588 petitions filed under the Program have resulted in examination with special status; 2674 petitions have been approved and 325 are pending.⁹² The increased speed of filing had accelerated the process to

89. Other countries provide “patent” protection of differing strengths. See, e.g., *The Innovation Patent*, IP AUSTRALIA, <http://www.ipaustralia.gov.au/get-the-right-ip/patents/types-of-patent/innovation-patent/> (last visited Sept. 25, 2011) (explaining that the innovation patent provides intellectual property rights for those incremental and lower level inventions).

90. Andrew Revkin & Kate Galbraith, *Energy Chief Seeks Global Flow of Ideas* (Mar. 26, 2009, 4:18 PM), N.Y. TIMES, <http://dotearth.blogs.nytimes.com/2009/03/26/energy-chief-seeks-global-flow-of-ideas/>.

91. Press Release, U.S. Pat. & Trademark Office, USPTO Extends Deadline to Participate in Green Technology Pilot Program by One Year (Nov. 20, 2010), http://www.uspto.gov/news/pr/2010/10_55.jsp.

92. *Green Technology Pilot Program*, U.S. PAT. & TRADEMARK OFFICE, http://www.uspto.gov/patents/init_events/green_tech.jsp (follow “Green Petition Report Summary” hyperlink) (last visited Nov. 10, 2011); see also Scott Nyman, *USPTO Expands Green Technology Pilot Program for Expedited Patent Examination*, TACTICALIP.COM (Feb.

forty-nine days for the first Office Action and issuance of a patent within twelve months of the filing date, as opposed to the usual thirty months to the first Office Action and forty months to a final decision.⁹³

As the USPTO modified and extended the Program over the past year, it has improved its original form by broadening the classification system and opening up eligibility for incoming patents. However, the Program still falls short of a permanent solution.

1. Increase the Incentive to Innovate

One of the key aspects of the Program is its utility as an incentive for innovation. The initial Program requirements granted accelerated status only to patents that had already been filed.⁹⁴ This requirement removed the incentive for future innovation. However, the recent expansion of the Program allows patent applications that have not yet been filed to participate in the Program.⁹⁵ Therefore, accelerated status can act as an incentive for future green technology innovation and investment. While this expansion is a step in the right direction, the USPTO should now make the Program permanent, thereby removing uncertainty relating to the Program's lifespan. Making the Program permanent allows it to act as an incentive for inventors and investors who have not yet contemplated patent protection.

2. Increase Participation in the Program

Some speculate that participation in the Program has underperformed because the target audience of start-up companies has underutilized the Program.⁹⁶ One possible explanation for this shortcoming suggests that firms have not budgeted for the legal costs of patent protection at the accelerated pace.⁹⁷ Also, certain doctrines sway

1, 2011), <http://tacticalip.com/2011/02/01/uspto-expands-green-technology-pilot-program-for-expedited-patent-examination/>.

93. Nyman, *supra* note 92; David Kappos, Under Sec'y, U.S. Pat. & Trademark Office, *Expansion of the USPTO's Green Technology Pilot*, PUB. L. BLOG (Nov. 22, 2010, 5:27 PM), http://www.uspto.gov/blog/director/entry/expansion_of_the_uspto_s.

94. Karl Reichenberger, *USPTO's Expansion of Green Technologies Pilot Program Broadens Expedited Examination Opportunities*, NANO & CLEANTECH BLOG (Nov. 11, 2010), <http://www.nanocleantechblog.com/2010/11/articles/patent/usptos-expansion-of-green-technologies-pilot-program-broadens-expedited-examination-opportunities/>.

95. Andrew Dufresne, *PTO Expands Program Expediting Green Tech Patents*, REWEABLEENERGYWORLD.COM (Nov. 12, 2010), <http://www.renewableenergyworld.com/rea/blog/post/2010/11/pto-expands-program-expediting-green-tech-patents1>.

96. LaMonica, *supra* note 58.

97. *Id.* (stating that there were 1,477 requests for accelerated status as of August 26,

companies from early patent filing because rushed disclosure does not allow the invention to be fully understood or tested. If inventions are patented too early, they may not receive adequate disclosure, and that inadequate disclosure may result in the patent being rejected under the utility, written description, or enablement requirements of the Patent Act.⁹⁸ Alternatively, early patenting before the invention has been fully understood would not give inventors the broadest patent protection possible or the disclosure of the invention's most valuable claim potential.⁹⁹ Others speculate that larger companies may be less motivated to achieve accelerated status because they patent for defensive purposes.¹⁰⁰ While these fears remain with any accelerated process, broadening the eligibility of the Program would help to encourage the broadest possible participation. Thus, to encourage more people to participate, the 3000 patent cap must be lifted so that companies can anticipate guaranteed participation, the claim restrictions must be removed so that all eligible applications can participate regardless of the number of claims, and the patent fee must be reduced so that companies have the financial ability to participate.¹⁰¹ These improvements would broaden eligibility and encourage participation, thus patenting more green technology through the Program.

3. Improve Acceleration Speed

Lastly, the Program aims to stimulate the economy by accelerating the timeframe in which key innovations can enter the marketplace and create capital. The Program is successful in removing the neutral nature of the patent process by making it favorable toward green technology. To keep up with the global competition, however, the U.S. needs to improve the acceleration rate further, so that companies are able to quickly commercialize and utilize the green technology.¹⁰² Therefore,

2010).

98. See 35 U.S.C. § 112 (2006).

99. Dennis Crouch & Jason Rantanen, *The Trade Secret Value of Early Patent Filing*, PATENTLYO (Oct. 23, 2008), <http://www.patentlyo.com/patent/2008/10/the-trade-secre.html>.

100. Defensive purposes include a strategy to sue companies that infringe a patent in their patent portfolio rather than developing their own patented technology.

101. The fee for "petition to make special" has been waived under the program. Pilot Program for Green Technologies Including Greenhouse Gas Reduction, 74 Fed. Reg. 64666, 64666 (Dec. 8, 2009).

102. In 2010, 509,367 patent applications were filed and 264,119 patents were accepted by the USPTO. The average time between filing and receiving the first office action for a patent was 25.7 months and the average total pendency (i.e., time from the filing date to patent issuance or abandonment) was 35.3 months. *United States Patent and Trademark Office Performance and Accountability Report Fiscal Year 2010*, U.S. PAT. & TRADEMARK

the USPTO should continue to improve the rate at which green technology patents are being granted.¹⁰³

In conclusion, to maximize the incentivizing aspect of patent theory, the USPTO should make the Program permanent. To encourage participation in the Program, the USPTO should remove restrictions and broaden eligibility to the Program. Lastly, to compete with the global community and to facilitate commercialization of important green innovations, the USPTO must continue to improve its acceleration speed.

C. Patent Reform Outlook

Improving the acceleration speed will require additional funding allocated to the USPTO.¹⁰⁴ The type of venture capitalism that is required to finance green technology may depend on economic recovery as a whole. As a result, the inefficiencies of the USPTO, with respect to all technology, are affecting the success of the Green Technology Pilot Program.

Backlogged with 700,000 patents, the USPTO takes an average of 3 years to grant a patent.¹⁰⁵ In a recent statement, USPTO Director David Kappos has recognized that changes need to be made. His goal is to reduce the wait time for First Action to ten months, and overall wait to

OFFICE, available at www.uspto.gov/about/stratplan/ar/2010/USPTOFY2010PAR.pdf.

103. The U.S. is falling behind as a leader in global innovations. Department of Energy Secretary Steven Chu stated that the U.S. had fallen behind other countries in the competition to develop clean technology despite having the world's greatest "innovation machine." For example, companies in Japan, Germany, Korea, and Taiwan have been dominating the clean technology sector while companies in the U.S. without a strong patent portfolio, struggle to enter the market. Emerging world power, China, spends \$9 billion a month to improve its clean energy supply and to develop its wind energy technology. *Clean Energy Jobs and American Power Act: Hearing on S. 1733 Before the S. Comm. on Environment and Public Works*, 111th Cong. (2009) (testimony of Steven Chu, Sec'y of U.S. Dept. of Energy), available at <http://energy.gov/articles/secretary-chus-testimony-senate-committee-environment-and-public-works-prepared-delivery>. Many countries already have existing "fast-track" programs for green technology, such as South Korea's "super speed" program, which claims to approve patents within one month. Press Release, No. 398, Korean Intellectual Prop. Office, Thanks to superspeed examination, green technology acquires patent in a month (Oct. 20, 2009), http://www.kipo.go.kr/kpo/user.tdf?a=user.english.board.BoardApp&c=1001&board_id=kipo_news&catmenu=ek20200.

104. Additional funding will generally come from the U.S. Department of Commerce or the U.S. Department of Energy.

105. David Kappos, Under Sec'y, U.S. Pat. & Trademark Office, Remarks as Prepared: Securing America's Innovation Future: Challenges & Progress for the Intellectual Property System (Dec. 14, 2010), available at http://www.uspto.gov/news/speeches/2010/Kappos_Columbia_Speech.jsp.

twenty months, cutting the current pendency by one-half.¹⁰⁶ The backlog of patent applications is harming the national economy. For investors, green technology is already a gamble, but the slowdown within the USPTO is driving innovators away from the “innovation game.”¹⁰⁷ Ultimately, industry “gamblers” need to invest their capital in green innovations to restore the economy and to begin seeing the effects of the government stimulus money.

As part of the solution to the backlog, the USPTO should receive greater financial resources from the federal government. The USPTO is plagued by its limited budget that restricts its ability to issue patents. A larger budget would allow the USPTO to hire more examiners and to improve infrastructure in order to improve efficiency. The USPTO, a self-sufficient entity, derives its financing from patent fees.¹⁰⁸ However, Congress restricts the amount of those revenues that the USPTO is allowed to keep.¹⁰⁹ The patent office needs to be reorganized to prevent Congress from siphoning funds from the USPTO into other venues. Although President Obama increased the USPTO’s budget in 2010 by an additional \$129 million, \$53.5 million of the fees collected remained unavailable to the USPTO.¹¹⁰

The Leahy-Smith America Invents Act, passed on September 16, 2011, takes aim at this problem by allowing the USPTO to access all fees it collects and prevent “fee diversion” by Congress.¹¹¹ The Act creates a

106. *USPTO Oversight: Hearing Before the H. Judiciary Comm.*, 111th Cong. 11-24 (2010) (statement of David J. Kappos, Under Sec’y, U.S. Pat. & Trademark Office) available at judiciary.house.gov/hearings/pdf/Kappos100505.pdf; see also *Director Kappos Testimony to Congress*, PATENTLYO (May 10, 2010), <http://www.patentlyo.com/patent/2010/05/director-kappos-testimony-to-congress.html>.

107. Gene Quinn, *Patent Office to Accelerate Green Technology Patents*, IP WATCHDOG (Dec. 8, 2009, 10:21 AM), <http://ipwatchdog.com/2009/12/08/patent-office-to-accelerate-green-technology-patents/id=7609/>.

108. Gene Quinn, *Top 10 Patent, Innovation & IP Events of 2010*, IP WATCHDOG (Dec. 28, 2010, 6:30 AM), <http://ipwatchdog.com/2010/12/28/top-10-patent-innovation-ip-events-of-2010/id=14010/>.

109. *Id.*

110. *Financial Highlights*, U.S. PAT. & TRADEMARK OFFICE, http://www.uspto.gov/about/stratplan/ar/2010/mda_06_01.html (last visited Sept. 25, 2011); see also Paul R. Michel & Henry R. Nothhaft, *Inventing Our Way Out of Joblessness*, N.Y. TIMES, Aug. 5, 2010, http://www.nytimes.com/2010/08/06/opinion/06nothhaft.html?_r=2&scp=1&sq=Michel%20Hank%20Nothhaft&st=cse (“since 1992, Congress has diverted more than \$750 million in patent fees to other purposes”).

111. David Goldman, *Patent reform is finally on its way*, CNN MONEY (June 24, 2011, 11:05 AM), http://money.cnn.com/2011/06/24/technology/patent_reform_bill/index.htm.

Patent and Trademark Reserve Fund from excess paid-in user fees that may be accessed by the USPTO through a request to Congress.¹¹² This is the type of change that the USPTO needed in order to eliminate the patent backlog and function more efficiently. Money should not be taken away from innovation during this crucial period. Improving the USPTO is good policy for economic recovery and for green technology innovation. Hopefully, the Leahy-Smith America Invents Act will improve the functioning of the USPTO in years to come.

D. Global Outlook

On a global scale, strong patent protection inhibits access to green technology by developing countries.¹¹³ Developing countries that urge for looser patent protection for green technology argue that infusing green technology into their countries is the only way to combat the environment's global problems.¹¹⁴ This infusion of green technology would require compromises by industrialized countries like the U.S. To achieve a better global outlook and a better-fitting public policy, the U.S. must address its international challenges, even though the solution to these challenges may not coincide with the solutions to its domestic economic and environmental problems.

The U.S. has traditionally exhibited protectionist policies with respect to access to climate-related technology by developing countries.¹¹⁵ So, while there is consensus in the UNFCCC that a reduction in greenhouse emissions by industrialized and developing countries is necessary to counteract global warming, international negotiations among UNFCCC delegates have been unable to achieve a consensus on how new technology should be disseminated.¹¹⁶ Industrialized countries fear that changing the current intellectual property framework, considered as the most effective way to incentivize and to disseminate technology, would adversely affect the domestic economy.¹¹⁷

112. Leahy-Smith America Invents Act, Pub. L. No. 112-29 (2011).

113. Ouellette, *supra* note 23.

114. See *Essential Background*, UNFCCC, http://unfccc.int/essential_background/items/2877.php (last visited Sept. 25, 2011).

115. See Foreign Relations Authorization Act, Fiscal Years 2010 and 2011, H.R. 2410 (June 22, 2009), available at <http://www.govtrack.us/congress/billtext.xpd?bill=h111-2410>.

116. Tessa J. Schwartz & Sarah Tierney Niyogi, *Special Feature - Technology Transfer and Intellectual Property Issues Take Center Stage in UNFCCC Negotiations*, INTELLECTUAL PROP. TODAY (Dec. 16, 2009), <http://www.iptoday.com/news-article.asp?id=4743>.

117. See Kevin E. Davis, *Regulation of Technology Transfer to Developing Countries: The Relevance of Institutional Capacity*, 27 LAW & POL'Y 6 (2005).

The U.S. government has made clear its unwillingness to relax intellectual property rights for green technology at the expense of innovation.¹¹⁸ While removing patent rights and imposing compulsory licensing of green technology are not realistic options for the U.S. at this time, other options could be utilized. For example, voluntary licensing models for green technology patent holders can be used in conjunction with the accelerated status of their patents.¹¹⁹ Companies and non-governmental organizations have made choosing open sharing and licensing-to-scale models more attractive for companies. For example, GreenXchange is a partnership that brings green technology companies and their inventions into a sharing pool.¹²⁰ By sharing, the partnership can create more efficient, profitable, and meaningful business opportunities and models for patent holders.¹²¹ Alternatively, patent pools, such as the Eco-Patent Commons, should be encouraged to promote sharing for the common good. All of these private-sector solutions avoid the conflict that arises with government intervention.

However, as the economy improves, policies for reasonable licensing should become a part of UNFCCC negotiations. For the U.S., policies for reasonable licensing may include reforming the Bayh-Dole Act to compel universities and non-profit organizations that receive federal funds to practice responsible licensing for green technology.¹²² In addition to requiring reasonable licensing practices under the Bayh-Dole Act, the same reasonable licensing practices should be enacted for all green technology patents with respect to licensing to developing countries. The U.S. needs to become a global leader and concede that patent protection for green technology should be relaxed for the good of the global environment. A balance must be struck between incentivizing innovation and providing access of these essential technologies to “non-commercial” markets.¹²³

118. See Foreign Relations Authorization Act, Fiscal Years 2010 and 2011, H.R. 2410, 111th Cong. § 329 (June 22, 2009), available at <http://www.govtrack.us/congress/billtext.xpd?bill=h111-2410>.

119. See Schwartz, *supra* note 47; Eric Raciti & Nicole Parsons, *Is IP Standing in the Way of a Green Planet?*, RENEWABLEENERGYWORLD.COM (Nov. 5, 2010), <http://www.renewableenergyworld.com/rea/news/article/2010/11/is-ip-standing-in-the-way-of-a-green-planet>.

120. THE GREENXCHANGE, <http://greenxchange.force.com/vGXhome> (last visited Sept. 25, 2011).

121. *Id.*

122. Boettiger & Bennett, *supra* note 41, at 320–23.

123. “Non-commercial” markets are low-income markets that are not targeted for commercialization by patent holders, i.e. developing countries. *Id.*

VIII. CONCLUSION

The USPTO should aim to create incentives for industry to pursue new green technology that will create more jobs, reduce U.S. energy consumption, and improve national security through energy independence. The government should continue to provide research funding and an incentive to commercialize in the form of patent protection. The Green Technology Pilot Program is good public policy in the advancement of clean energy and sustainability. Once the USPTO expedites green patents, green inventions will help to raise capital and help to move the economy forward. To improve, the Program should become a permanent feature for green inventions, and to reach a larger target audience, the USPTO should remove the 3000 patent cap, eliminate claim limitations, and reduce filing costs. Lastly, to keep up with global competitors, the U.S. should continue to accelerate the patenting of green technology. As a future goal, the U.S. needs to cooperate with the international community and develop flexible licensing plans to provide green technology to developing countries. These policies will help to fix the “green problem” that must be solved from a global perspective.

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