

## *The Patent System in a World of Limited Resources*

**Benjamin P. Liu**

As its patents approach expiry, a cancer-drug manufacturer orders Taiwanese farmers to pull up and burn plots of anti-cancer trees. Nearby, China confronts extreme environmental degradation and resource shortages, but its judges recently forbade a refurbisher from reclaiming patented glass bottles for further use. In resource rich countries, technology firms carefully plan the early obsolescence of their products, while printer cartridge makers actively seek anti-reuse patents. These examples compel us to take a close look at the effects of the patent system on the utilization of tangible resources. A growing body of legal scholarship examines the relationship of patent law to broader welfare issues, including biodiversity, ethical treatment of animals, indigenous self-determination, climate policy, and access to medicine. This paper adds a new area of inquiry to the list: Sustainability.

The initial part of the paper investigates the current understanding of the patent system as reducing resource use or promoting more efficient resource use. It concludes that, in the most general and aspirational sense, the patent system can encourage resource friendly inventions and the patent monopoly allows firms to under-utilize tangible resources. However, this simple prescription fails to account for anti-conservation practices engendered by specific features of the patent system. Sustainability as such simply has not been a factor in the development of patent doctrines.

I argue that, because the patent regime operates through the power to control material production, it necessarily requires the service of natural resources. The resulting tension between innovation and conservation can be identified and organized in a framework that assumes three level of generality. At the broadest incentive level, patentees receive their reward only when products embodying their patents are made and sold, which necessarily utilizes and consumes raw materials and energy. Therefore, the very incentive structure of the patent system expands the demand for resources. Second, specific patent doctrines may also encourage waste, such as when the repair and reconstruction doctrine prevents efficient refurbishment, when the exclusionary power of the IP law forces consumers to purchase equipment that are largely redundant, or when patent expiration generates a perverse incentive to over-exploit near the end of the patent term. Finally, individual patents can have an oversized effect on resource usage. For example, patents may encourage the discovery of better manufacturing practices while limiting the access of others to the same technology. Conversely, the patenting of anti-conservation technology such as printer cartridge locks leads to waste that could have been recycled. The sustainability angle also adds to the rights-based arguments in the debate of bio-resource patents and biodiversity.

The patent system is founded on a belief that the advancement of science is

generally good. Its benefits and costs are primarily measured in terms of technological advances. However, the incentive structure and operational rules of the patent system inevitably alters resource allocation. Therefore, the contours of specific patent doctrine should be susceptible to concerns of sustainability in order to prevent the recurrence of the wasteful distortions exemplified in this article.