

Innovation in mitigation technology is a means to address climate change. The patenting activity of regions in green technology provides a measure of the efforts and pace of innovation. Japan and the United States display the top performing regions in number of patents in new sectors, such as green technologies, biotechnologies and nanotechnologies. The number of patents in biotechnologies is higher and patenting activities less recent than in green and nanotechnologies. Among the top performing regions in green patenting, Aichi and Tokyo (Japan) have emerged most recently (Figure 32.1).

A limited number of regions have appeared as hot spots in patenting on renewable energy. In some cases, like Østjylland and Vestjylland (Denmark), Madrid and Barcelona (Spain) and Seoul and Gyeonggi-do (Korea), despite limited patenting activity on renewable energy at the country level. These regions can provide an indication of how to replicate a positive environment for business innovation (Figure 32.2).

Patent activities in green technologies have become a more collaborative process, as the increase in the number of partners in most recent years show (Figure 32.3). Southern-Kanto, Hokuriku and Tokai (Japan), Baden-Wuerttemberg and Bayern (Germany) and California (United States) are the leading regions in green patenting and have increased their collaborations with other regions between 3 and 20 times. New regions are becoming hubs in global co-invention networks. The Capital region and Chungcheong (Korea) have 37 times more collaborations with other regions than ten years ago. Guangdong (China) passed from 1 collaboration to more than 100 (Figure 32.3).

Universities account for 5% of total patent applications in green technologies. This share is close to the average of most technologies, with the exception of biotechnology where universities account for 23% of patent applications. There is a high and statistically significant correlation in business and university patenting activity across regions, suggesting that universities may be important partners for industrial research and development (R&D) (Figure 32.4).

Definition

A patent is an exclusive right granted for an invention, which is a product or a process with industrial applicability that provides, in general, a new way of doing something, or offers a new technical solution to a problem (“inventive step”). A patent provides protection for the invention to the owner of the patent. The protection is granted for a limited period, generally 20 years.

Data refer to overall patent applications to Patent Cooperation Treaty (PCT) applications.

Patent documents report the inventors (where the invention takes place), as well as the applicants (owners), along with their addresses and country of residence. Patent counts are based on the inventor’s region of residence and fractional counts. If on the patent document are registered two or more inventors, the patent is classified as a co-patent.

A co-patent is classified as a collaboration between business (companies) and non-business organisations (government, universities or hospitals) when there is at least one business applicant and at least one public applicant. The co-patents so classified are successively assigned to the region(s) of residence/work of the co-inventors. Co-patents involving only individuals are not classified as business-non business collaboration. This has to be taken into account in the results, since in some countries the weight of individuals’ applicants is quite high. The co-location statistics is the Spearman rank correlation between the number of patents in TL3 regions with a university applicant and the number of patents with non-university applicants (individuals and companies).

Green patents include those in waste management, air and water pollution reduction, renewable energies, hybrid/electric car technologies and energy efficiency in lighting and building.

Source

OECD REGPAT Database <http://dotstat/wbos/>.

For classifications of green and renewable energy patents, see www.oecd.org/environment/innovation/indicator.

See Annex B for data, source and country related metadata.

Reference years and territorial level

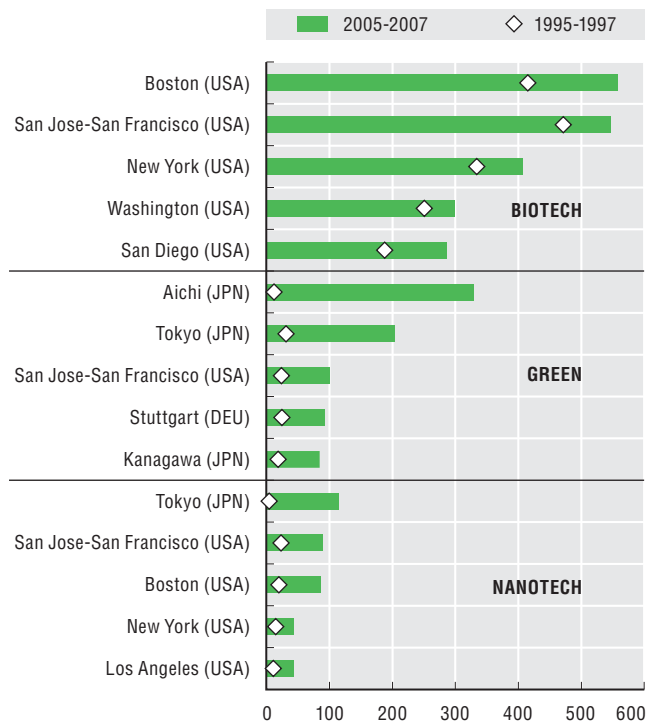
1995-2007; TL3.

Figure notes

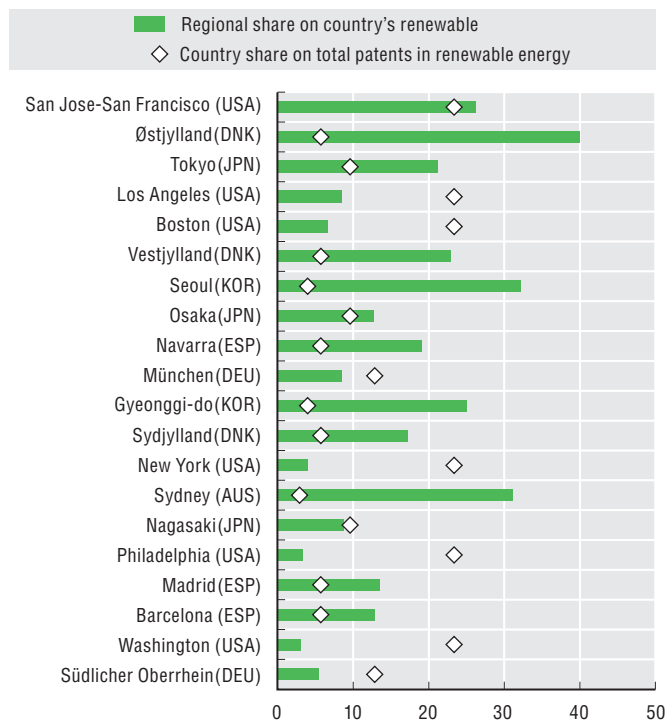
32.3: Ratio between the number of co-patents in green technologies in 2007 and in 1995.

32.4: * significant at 1% level.

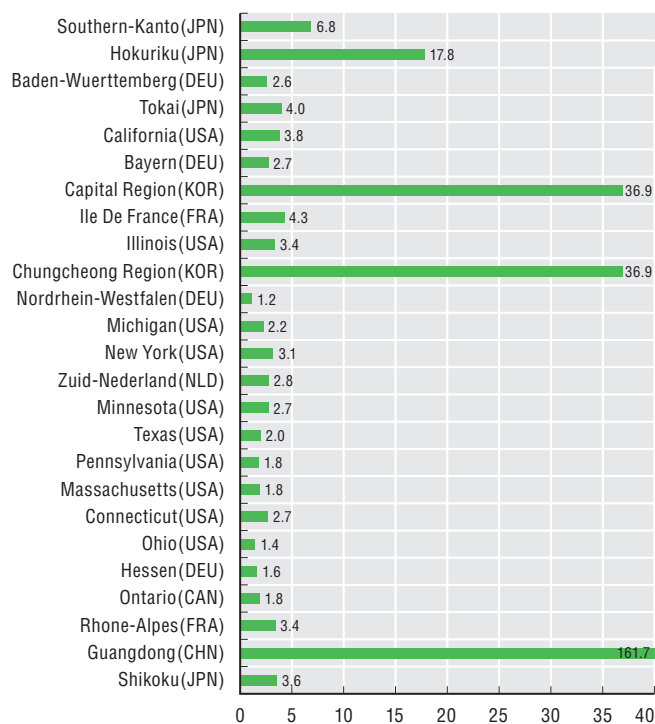
32.1. Patents in biotech, green and nanotech of the top five patenting TL3 regions in 2005-07 and their values in 1995-1997



32.2. Patents in renewable energy in the top 20 patenting TL3 regions as a % of the country's renewable energy patents, 2005-07



32.3. Increase in collaboration among regions, top 25 green patenting (TL2) regions, 1995-2007



32.4. Contribution of universities to patent applications in green technologies and co-location of university-business applications, 2005-07

	All TL3 regions (%)	Top innovators quintile (%)
Green technologies		
Share of universities applicants	5	5
Colocation university and business	33	26
All technologies		
Share of universities applicants	6	7
Colocation university and business	65	34



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