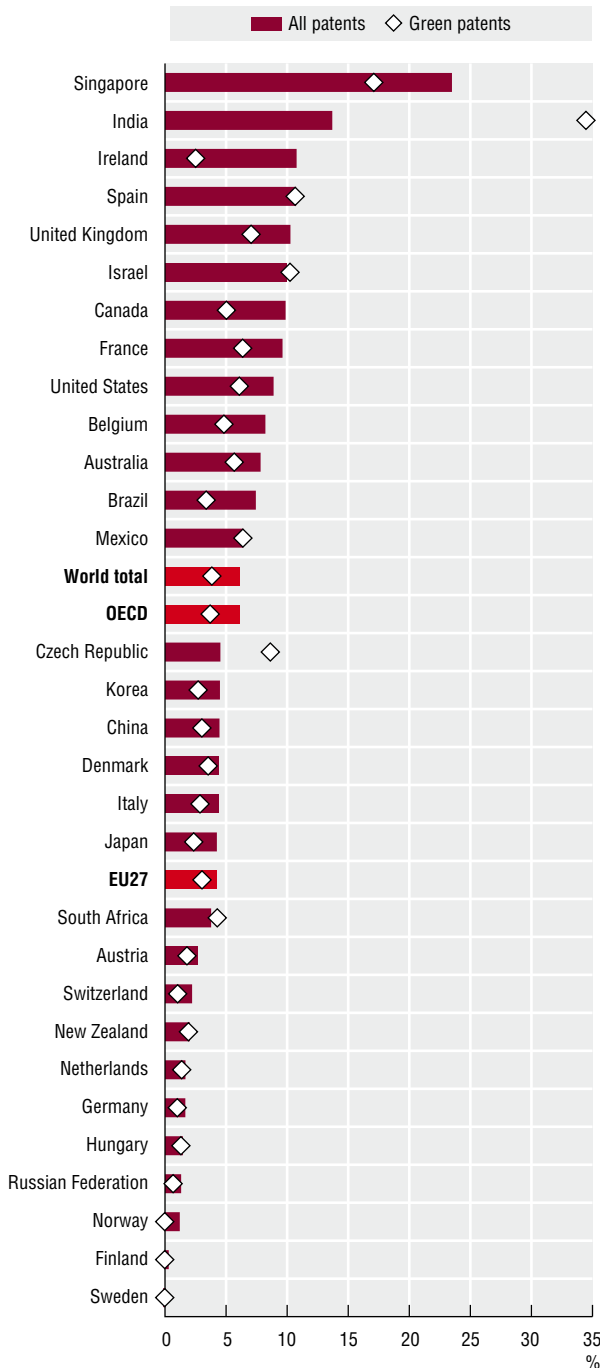


Public research has always been an important part of innovation systems and the source of significant scientific and technological breakthroughs. Effective linkages between public research institutions and industry are necessary to optimise the benefits from research.

Patents filed by public research organisations, 2000-07

As a percentage of patent applications filed under the PCT



Source: OECD, Patent Database, January 2010. See chapter notes.
StatLink <http://dx.doi.org/10.1787/836143718831>

DID YOU KNOW?

The Indian Council of Scientific and Industrial Research accounted for over 30% of all green patent applications by India between 2000 and 2007.

(OECD, Patent Database, 2010.)

Actors (business, non-profit organisations) can draw on the pool of available public research through different channels, one of which is commercialisation via patenting and licensing. Most patent applications are filed by the private sector. Public research organisations (PROs) usually file applications in specialised technological fields such as biotechnology but they also engage in research relating to green technologies (e.g. renewable energy and hybrid and electrical cars).

Links between PROs and industry also occur through spin-offs, joint research projects, training, consultancy and contract work, staff mobility between workplaces and informal co-operation by researchers.

Citation analysis (the analysis of non-patent literature cited in patents) is a novel way to assess science and industry linkages. For example, an indicator is developed using “green” innovations (patents) as the unit of analysis. Results show that green innovations mostly draw on material science, chemistry and engineering. However, compared to the United States, green innovations patented by Japanese inventors are more likely to draw on scientific production in chemistry and physics, while in Germany they are more likely to be linked to the engineering and energy fields.

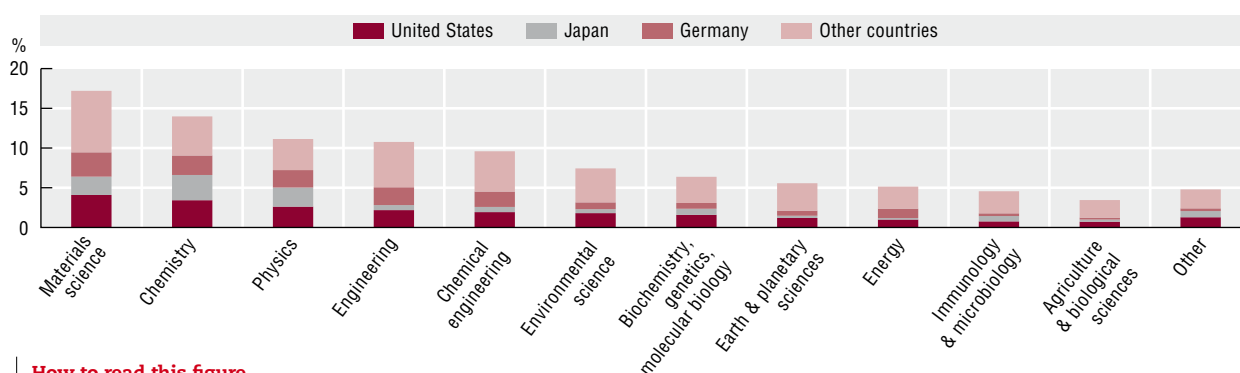
Definitions

Public research organisations (PROs) include government laboratories, universities and research hospitals. Data relate to patent applications filed under the Patent Co-operation Treaty (PCT), at international phase, designating the European Patent Office (EPO). The green patent category is a sub-sample of patents for pollution abatement and waste management and climate change mitigation technologies. For the classification of green patents, see www.oecd.org/environment/innovation/indicator.

The low share of patents filed by PROs in 2000-07 in some countries may be explained by a measure called the Teachers’ Exemption or “Professor privilege”, whereby academics own the intellectual property rights for their inventions. Over time this exemption has been removed, except in Sweden.

Main scientific fields cited in “green” patents, by inventor country, 2000-07

As a percentage of all citations


How to read this figure

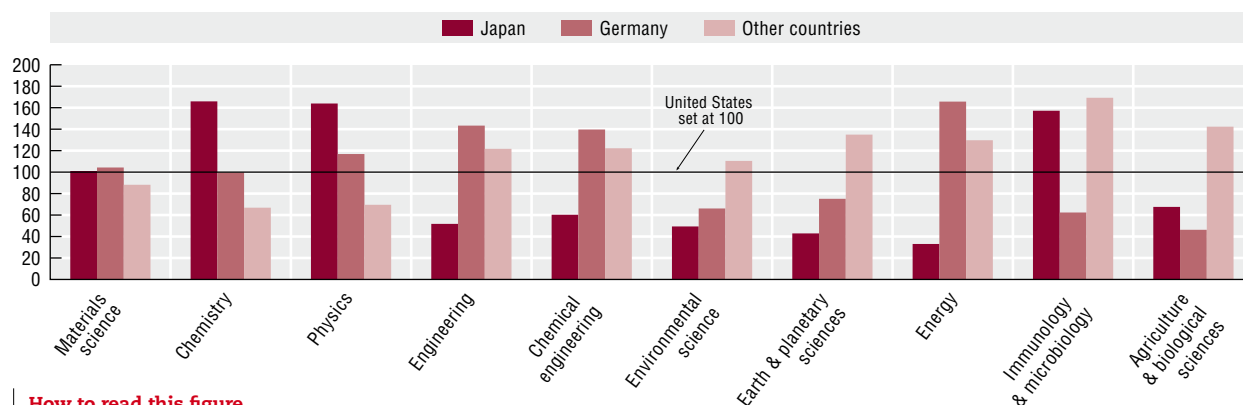
Environmental technologies draw on scientific knowledge that comes from material science (17%), from chemistry (14%), etc. The link to publications from material science (17%) originate from US patents (4%), from Japanese patents (2%), from German patents (3%), and the remaining 8% from all other countries.

Source: OECD calculations, based on Scopus Custom Data, Elsevier, July 2009; OECD, Patent Database, January 2010; and EPO, Worldwide Patent Statistical Database, September 2009.

StatLink <http://dx.doi.org/10.1787/836143718831>

Relative citation rate in “green” patents, by main scientific fields, 2000-07

United States citation rate = 100


How to read this figure

Japanese and German green patents are respectively 63% and 17% more likely to cite scientific articles in the field of physics than US patents.

Source: OECD calculations, based on Scopus Custom Data, Elsevier, July 2009; OECD, Patent Database, January 2010; and EPO, Worldwide Patent Statistical Database, September 2009.

StatLink <http://dx.doi.org/10.1787/836143718831>

Measurability

A search algorithm developed by the OECD and the EPO is used to generate the list of environmental patent applications. Fields include: renewable energy; fuel cells and energy storage; alternative-fuelled vehicles; energy efficiency in the electricity, manufacturing and building sectors; and “clean” coal (including carbon capture and storage).

The link between patents and the scientific literature is based on an analysis of the “non-patent literature” (NPL) listed in patent documents. NPL includes peer-reviewed scientific papers, conference proceedings, databases and other literature. The listed NPL gives journal title, author name(s), volume and page number, article title, but usually not information needed for bibliometric analysis (e.g. name and address of the author’s organisation, names of authors other than the first listed). To fill in information gaps, NPL was matched with Scopus, the scientific literature database. This makes it possible to know if the NPL is a scientific article and to obtain bibliographical information not recorded in NPL. The matches were based on combinations of volume, page, year, journal name, author name, and article title. As a result, 1 612 green patents were retained out of the 48 249, and 2 803 NPL were scientific papers recorded in Scopus.