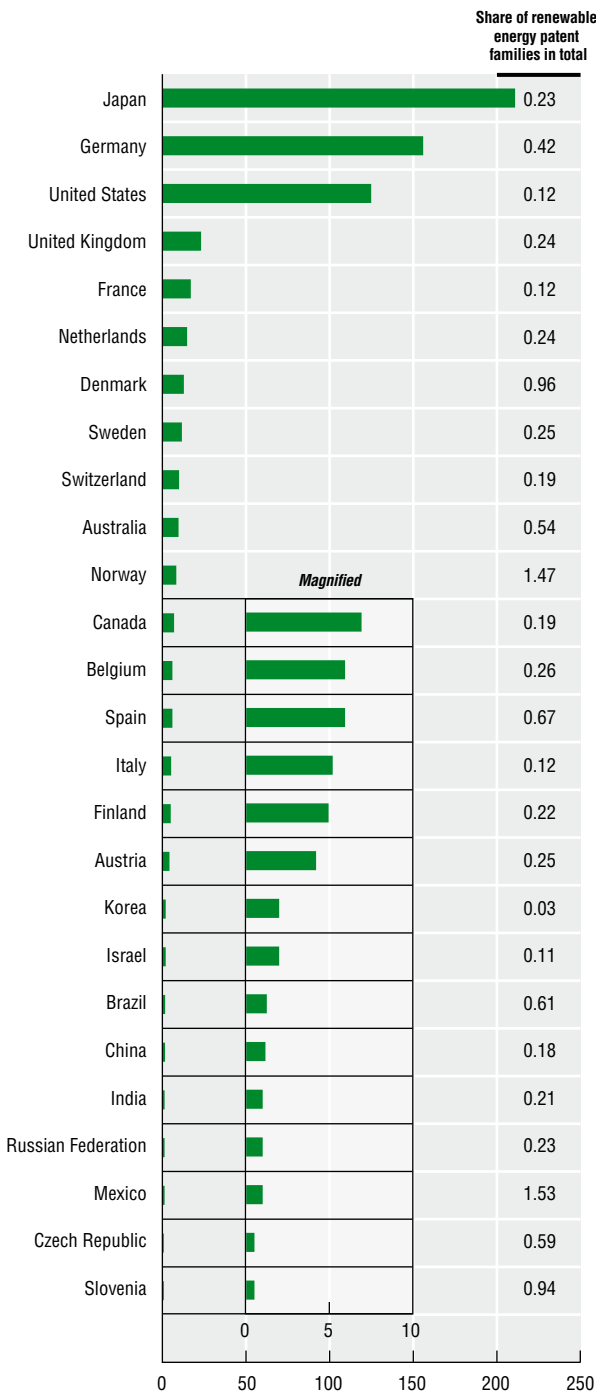


Climate change is one of the most significant policy challenges faced by OECD and non-OECD countries. The costs of meeting this challenge depend crucially on the pace of innovation in mitigation technologies. While there is some evidence that the pace is accelerating, further policy efforts are needed to ensure a sufficient response.

Renewable energy patents, 1998-2006

Number of triadic patent families



Source: OECD, Patent Database, January 2010. See chapter notes.
 StatLink <http://dx.doi.org/10.1787/836230555431>

DID YOU KNOW?

Patents to address climate change challenges are increasing and represent approximately 2% of total patent applications.

(OECD, *The Invention and Transfer of Environmental Technologies*, based on patent data, forthcoming.)

A number of technologies associated with energy use result in reduced emissions of greenhouse gases. Technological advances which allow for more efficient combustion, capture of emissions, or substitution of fossil fuels by renewable energy sources will result in reduced atmospheric emissions.

Innovation in climate change mitigation technologies has been increasing, driven largely by public policy incentives. However, in most fields it is still concentrated in Germany, Japan and the United States.

Countries tend to specialise. In 2007, Japan's patent applications were mostly for innovation in energy-efficient buildings and lighting, as well as electric and hybrid vehicles. Efforts in the United States focused particularly on renewable energy.

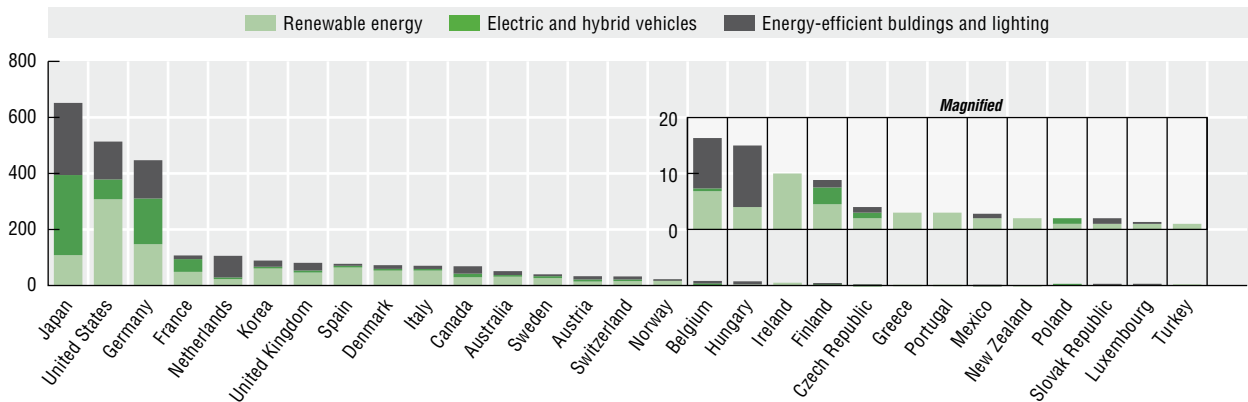
Some countries have begun to invest considerable resources in advanced climate change mitigation technologies (e.g. solar photovoltaic energy, hydrogen and fuel cells, carbon capture and storage). Such technologies are currently the most promising in terms of long-term abatement.

Definitions

Renewable energy patents include energy-generation technologies such as wind, solar, geothermal, ocean, hydro, biomass and waste-to-energy. For classifications see www.oecd.org/environment/innovation/indicator. The OECD triadic patent families are defined as a set of patents protecting the same invention filed at the European Patent Office (EPO), at the Japan Patent Office (JPO) and granted by the US Patent and Trademark Office (USPTO).

Patents for climate change mitigation technologies, 2007

PCT patent applications

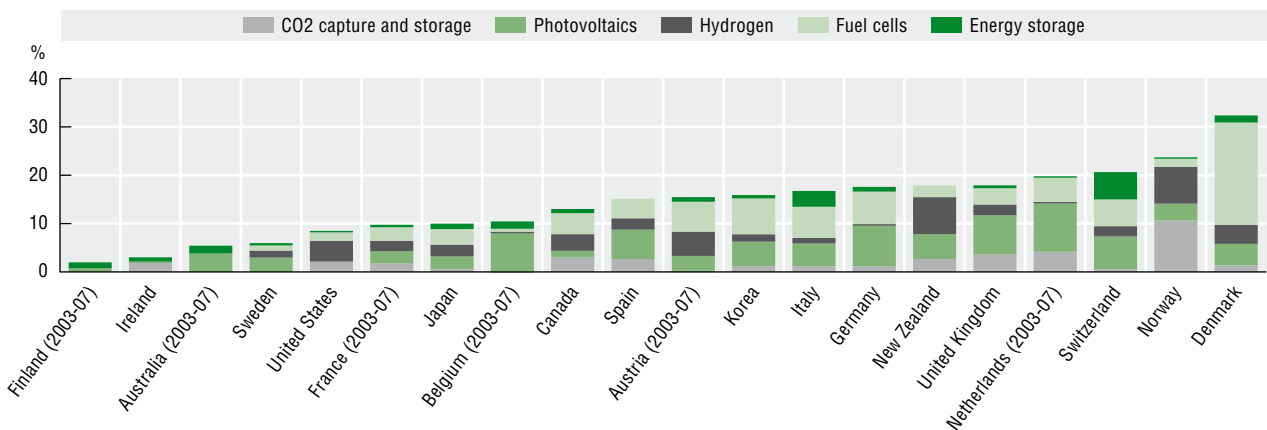


Source: OECD, Patent Database, January 2010. See chapter notes.

 StatLink <http://dx.doi.org/10.1787/836230555431>

Government research, development and demonstration (RD&D) expenditures on selected climate change mitigation technologies, 2004-08

As a percentage of yearly average RD&D budget



Source: OECD, Patent Database, January 2010; IEA, Energy Technology Research and Development Database, December 2009. See chapter notes.

 StatLink <http://dx.doi.org/10.1787/836230555431>
Measurability

The OECD uses search algorithms to generate data on patent applications for environmental technologies. The data are being further refined with inputs from the European Patent Office. Fields covered are: renewable energy; fuel cells and energy storage; alternatively fuelled vehicles; energy efficiency in the electricity, manufacturing and building sectors; and “clean” coal (including carbon capture and storage).

Data on government appropriations and outlays for R&D (GBAORD) by socioeconomic objectives classify energy and the environment separately. However, R&D on climate change mitigation is not explicitly distinguished. In addition, the International Energy Agency (IEA) collects data on public-sector RD&D budgets through inputs from the IEA Implementing Agreements on renewable energy technologies and from members of the Renewable Energy Working Party. In both cases coverage is restricted to OECD/IEA countries and a small number of non-member countries.

A significant gap concerns harmonised data on private-sector R&D expenditures on climate change mitigation. In addition, harmonised microdata are not available on the development and adoption (including licensing) of climate change mitigation technologies. Given the global scale of the challenge, data on non-OECD countries and technology transfer are sorely needed.