

2. TARGETING NEW GROWTH AREAS

2.1. Patents in environment-related technologies

Investment in “clean” technologies can help achieve a wide range of environmental objectives, from mitigating climate change to controlling air and water pollution, to enhancing resource efficiency in general. Patents in renewable energy technologies or in techniques for controlling pollution and waste contribute to the development of clean technologies.

Renewable energy and air pollution control are the most dynamic groups of environmental technologies among patent applications filed under the Patent Co-operation Treaty (PCT). The number of patented inventions in renewable energy (+20%) and air pollution control (+12%) increased more rapidly than total patents (+11%) between 1996 and 2006. These are technologies that are more closely related to profitability and stringent regulation than solid waste and water pollution. In most countries, the proportion of renewable energy patents has more than doubled, on average, although the volume remains low (1 098 patents in 2006). As a consequence, the shares of water pollution control and solid waste management patents decreased significantly.

For all environment-related technologies, the largest number of patents resulted from European research: more than 30% of patented inventions had EU inventors in the mid-2000s. The United States and Japan contributed shares of between 18% and 26% in the four technological areas. The BRIICS countries (Brazil, Russian Federation, India, Indonesia, China, South Africa) are also substantially involved in waste management, water pollution control and renewable energy. Among European countries, Denmark is highly specialised in the development of wind energy technologies.

Environmental patents

The International Patent Classification system (IPC, 8th edition) was used to identify classes that matched environmental technologies more closely. Keyword searches in the patent document were also conducted to find patents embedding technology specific to a particular field. The focus here is on selected environmental technologies:

Air pollution control/abatement: B01D[46/*,47/*,49/*,50/*,51/*, D53/(34-36, 48-52, 54-58, 60, 62, 64, 66, 68-70,72)], B03C3/*, C10L10/(02,06), C21B7/22, C21C5/38, F01N[3/*, 5/*, 7/*, 9/*, 11/*], F23B80/*, F23C9/*, F23J15/*, F23G7/06, F27B1/18, G08B21/(12-14).

Water pollution control (water and wastewater management): B63J4/*, C02F[1/*,3/*,7/*,9/*,11/*], C05F7/*, C09K3/32, E02B15/(04,06,10), E03B3/*, E03C1/12, E03F.

Solid waste management: A23K1/(06,08,10), A43B(1/12, 21/14), A61L11/*, B03B9/06, B09B, B09C, B22F8/*, B27B33/20, B29B[17/*,7/66],B30B9/32, B62D67, B65F, B65H73/00, C04B[7/24-30, 11/26,18/04-10, 33/132-138], C05F9/*, C08J11/*, C09K11/01, C10G1/10, C10L[5/(46,48)], C10M175/*, C22B[7/*, 19/(28,30),25/06], D01B5/08,D01G[11/*, 19/22], D21B1/(08-10,32), D21C5/02, D21H17/01, E01H[6/*, 15/*], F23G[5/*, 7/*]

Renewable energy:

- Wind: F03D
- Solar: F03G6/*, F24J2/*,E04D13/18, H01L[27/142, 31/(04-078), 51/(42-48)], H02N6/*
- Geothermal: F24J3/*, F03G[4/*, 7/04]
- Ocean: F03B13/(10-26), F03G7/05, E02B9/08
- Hydro power: {E02B9/*, F03B[3/*, 7/*, 13/06-08, 15/*]} + NOT {F03B13/(10-26), F03G7/05, E02B9/08}
- Biomass: C10L5/40-48,F01K25/14,F02B43/08, F23G5/46, C10L[1/*, 3/*, 5/*] + {B09B[1/*, 3/*], F23G[5/*, 7/*]}, {F01K27/*, F02G5/*, F25B27/02} + {F23G[5/*, 7/*]}

For further details on the IPC, 8th edition, www.wipo.int/classifications/ipc/ipc8/?lang=en.

Source

OECD, Patent Database, June 2009, www.oecd.org/sti/ipr-statistics.

Going further

Johnstone, N., I. Hascic and D. Popp (2008), “Renewable Energy Policies and Technological Innovation: Evidence Based on Patent Counts”, *NBER Working Paper Series*, N.13760.

Johnstone, N., I. Hascic and P. Scapecchi (2009), “Environmental Policy Stability and Innovation in Environmental Technologies”, *Social Science Research Network Working Paper*, 30 March, <http://ssrn.com/abstract=1370336>.

OECD (2008), *Environmental Policy, Technological Innovation and Patents*, OECD, Paris.

OECD (2009), *OECD Patent Statistics Manual*, OECD, Paris.

Figure notes

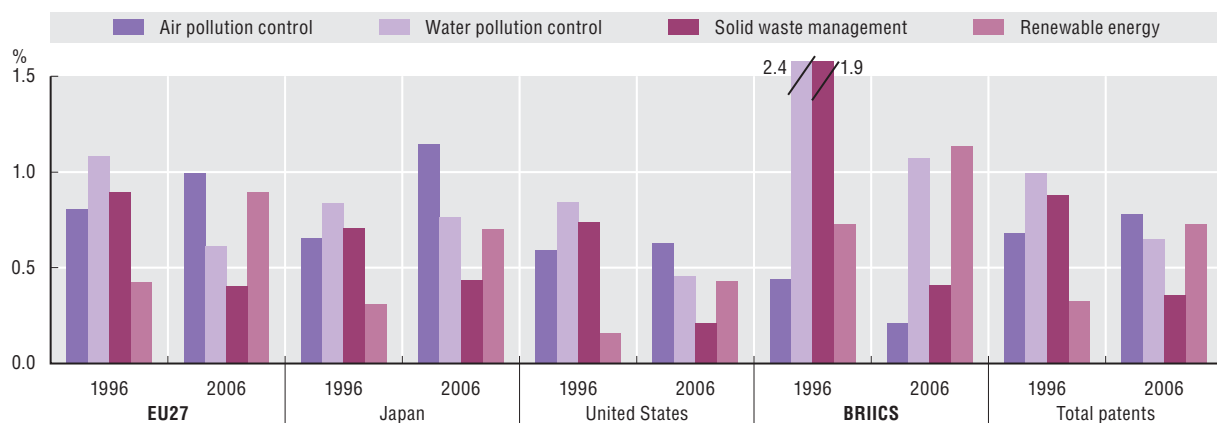
Data relate to patent applications filed under the PCT, at international phase, designating the European Patent Office (EPO). Patent counts are based on the priority date, the inventor’s country of residence and fractional counts.

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Patents in selected environmental technologies

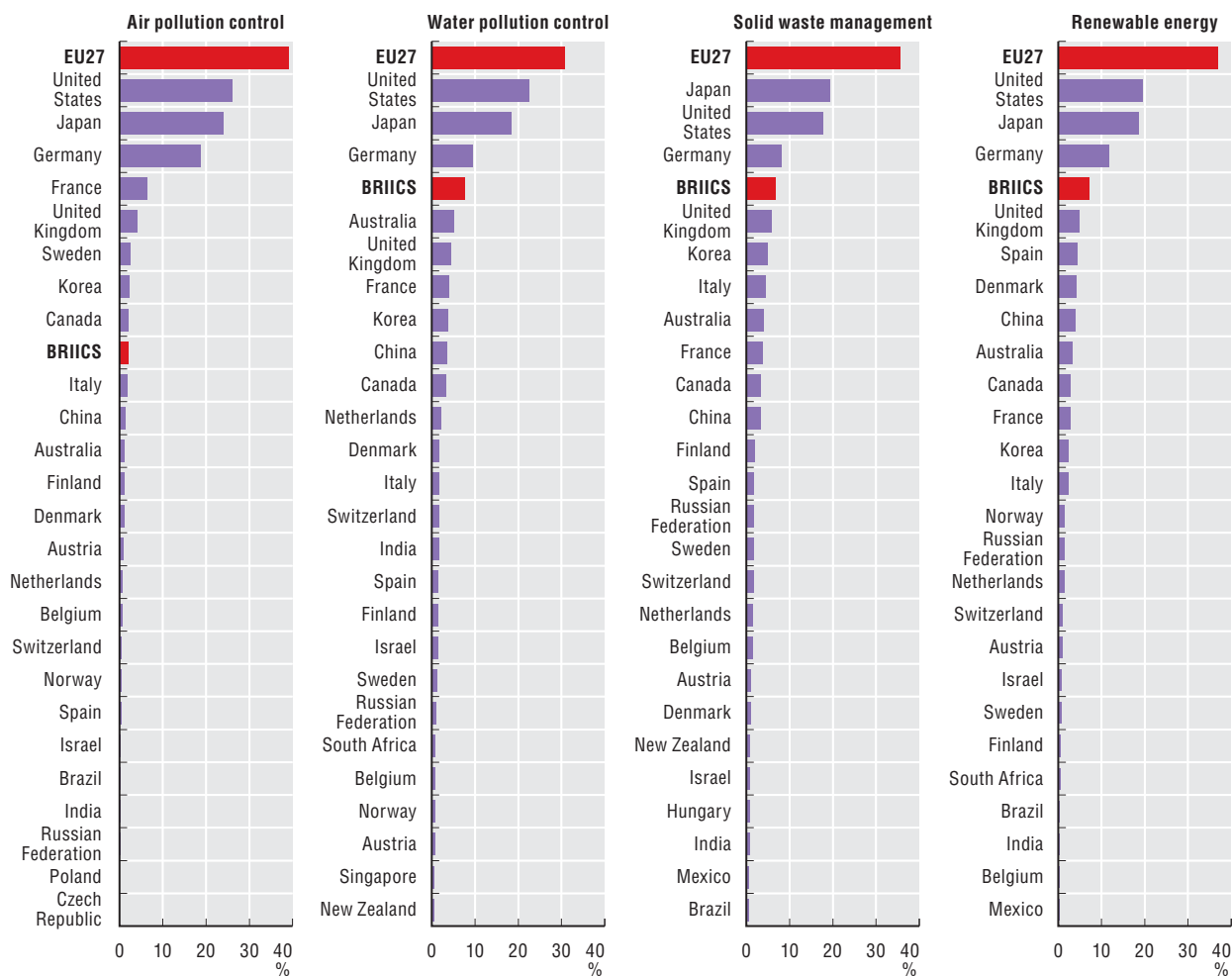
As a percentage of total PCT patent applications



StatLink <http://dx.doi.org/10.1787/742753678785>

Share of countries in environmental technology patents filed under PCT

Top 25 countries, 2004-06



StatLink <http://dx.doi.org/10.1787/742754285081>



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