

ANNEX 3.A1

Description of indicators and method

The first graph for each country – the radar graph – illustrates the position of the country against the OECD average performance on a set of common indicators. Data for non-OECD countries are not included in the average. The indicators were selected on the basis of policy relevance, as well as availability of quality data for a majority of countries, in order to provide a broad snapshot of science and innovation performance. They focus on research and innovation inputs, scientific and innovation outputs, linkages and networks, including international linkages, and human resources. As an overview:

- *Gross expenditure on R&D (GERD) as a percentage of GDP* is the main aggregate used for international comparison of R&D expenditures, and represents a country's domestic R&D-related expenditure for a given year.
- *Business enterprise expenditure on R&D (BERD) as a percentage of GDP* is an indicator of R&D activities carried out in the business sector by performing firms and institutes, regardless of the origin of funding. Industrial R&D is most closely linked to the creation of new products and production techniques, as well as to a country's innovation efforts.
- *Venture capital as a percentage of GDP* is a measure of one important source of funding for new technology-based firms. Venture capital plays a crucial role in promoting the radical innovations often developed by such firms and is one of the decisive determinants of entrepreneurship.
- *Triadic patents per million population* is an indicator of innovation outputs, adjusted to account for the size of the country. Triadic patents are a set of patents taken at the European Patent Office, the Japan Patent Office and the US Patent and Trademark Office that protect the same invention. The use of triadic patents as an indicator eliminates the problems of home advantage and influence of geographical location that are encountered with single-office patent indicators and thus improves the international comparability of the data.
- *Scientific articles per million population* is an indicator often used to highlight the scientific "productivity" of countries and is an important measure of research output, since publication is the main means of disseminating and validating research results. Article counts are based on science and engineering* articles, notes and reviews published in a set of the world's most influential scientific and technical journals. Some caveats regarding this indicator should be noted: the journals have good international coverage, although journals of regional or local importance may not be included; there is an English-language bias; the propensity to publish differs across countries and fields of study; and incentives to publish can lead to questions about quality.

* Science and engineering includes life sciences, physical sciences, social and behavioural sciences, and computer sciences.

- *Percentage of firms with new-to-market product innovations* provides a measure of innovation and novelty. Firms that first develop innovations can be considered as drivers of the process of innovation. Many new ideas and knowledge originate from these firms, with the full economic impact of their innovations depending on their adoption by other firms.
- *Percentage of firms undertaking non-technological innovation* looks more closely at marketing and organisational innovations, which are an important dimension of many firms' innovation activities and are particularly relevant for service firms.
- *Percentage of innovative firms collaborating* aims to highlight the extent of active participation in joint innovation projects with other organisations. Collaboration is an important part of the innovation activities of many firms, and can involve the joint development of new products, processes or other innovations with customers and suppliers, as well as horizontal work with other enterprises or public research bodies.
- *Patents with foreign co-inventors* is one measure of the internationalisation of research. It constitutes an indicator of formal R&D co-operation and knowledge exchange between inventors located in different countries, and highlights how institutions seek competencies or resources beyond their national borders.
- *Percentage of GERD financed by abroad* is another measure of internationalisation. Foreign funding of R&D is an important source of financing for many countries.
- *Researchers per 1 000 total employment* measures one of the central human resource elements of the research and development system. Researchers are professionals engaged in the conception and creation of new knowledge, products, processes, methods and systems and are directly involved in the management of projects.
- *Science and engineering degrees as a percentage of all new degrees* is an indicator of a country's potential for assimilating, developing and diffusing advanced knowledge and supplying the labour market with human resources that possess critical skills for research and development.
- *HRST occupations as a percentage of total employment* is an indicator of the extent of innovation-related skills in the workforce. This category of workers corresponds to professionals and technicians as defined in the International Standard Classification of Occupations (ISCO-88).

To construct the radar graphs, the raw data for each indicator (shown in Table 3.A1.1 of Annex 3.A1) was transformed into an index, with the country with the maximum value of the indicator taking an index value of 100 and the other countries taking values below this as appropriate. For example, for the indicator on *Gross expenditure on R&D (GERD) as a percentage of GDP*, Israel was the country with the highest value (4.53%) and thus took the index value of 100. Following the transformation of the raw data into indices, an OECD average for each indicator was obtained. This allowed the construction of an average value for each indicator (the dotted line in the radar graphs), against which individual country results were plotted (the solid line in the radar graphs).

The radar graph averages were calculated by taking into account all OECD countries with available data. Non-OECD countries were not included in the average. Table 3.A1.1 in Annex 3.A1 indicates where data was unavailable for some countries. In some instances of data unavailability, alternative indicators were used, if these were considered to provide a good replacement. These alternative indicators are specified in Table 3.A1.1. For example, for the indicator on *Venture capital as a percentage of GDP*, the alternative indicator *Industry-financed GERD as a percentage of GDP* was used for Iceland, Luxembourg and Turkey. To calculate the radar indicator in this case, an index for *Industry-financed GERD as a percentage of GDP* was constructed, in the same manner as described above. The index values yielded for Iceland, Luxembourg and Turkey were then used as an alternative for *Venture capital as a percentage of GDP*.

Table 3.A1.1. Radar graph indicators and values¹

	GERD as % of GDP	BERD as % of GDP	Venture capital as % GDP	Triadic patents per million population	Scientific articles per million population	% of firms with new-to-market product innovations (as a % of all firms)	% of firms undertaking non-technological innovation (as a % of all firms)	% of firms collaborating (as a % of all firms)	Patents with foreign co-inventors	% of GERD financed by abroad	Researchers per 1 000 total employment	Science and engineering degrees as % of all new degrees	HRST occupations as % of total employment
OECD members													
Australia	1.78	1.04	0.20	18.74	791.24	7.20	30.50	9.00	20.40	2.82	8.40	20.87	37.60
Austria	2.45	1.66	0.03	39.70	604.35	25.41	39.88	9.11	26.10	16.63	7.79	28.17	30.50
Belgium	1.83	1.24	0.17	34.44	636.59	20.86	35.06	18.32	35.97	12.40	7.93	22.44	32.90
Canada	1.94	1.06	0.05	24.04	783.19	31.00	Share of services in business R&D 39.42	14.00	28.70	9.08	7.74	20.17	35.51
Czech Republic	1.54	1.02	0.00	1.54	289.17	15.91	26.55	14.71	38.85	3.06	5.17	26.60	32.70
Denmark	2.43	1.62	0.08	42.18	981.63	24.78	42.06	22.23	20.71	10.07	10.21	18.14	36.90
Finland	3.45	2.46	0.09	53.04	997.89	21.48	Share of services in business R&D 14.87	19.22	14.24	7.09	16.56	30.07	33.90
France	2.11	1.34	0.11	39.35	516.22	12.57	23.08	12.87	17.16	7.49	8.15	27.05	30.50
Germany	2.53	1.77	0.04	76.38	536.90	8.96	46.96	10.39	12.90	3.75	7.22	31.25	35.80
Greece	0.57	0.17	0.01	1.00	342.00	15.91	25.79	8.61	31.32	18.99	4.28	28.65	22.80
Hungary	1.00	0.48	0.04	4.06	247.10	7.57	12.67	7.66	36.44	11.30	4.49	10.22	26.60
Iceland	2.78	1.43	Industry-financed GERD as % GDP 1.34	21.53	701.76	40.32	–	15.14	38.94	11.18	13.36	15.09	31.10
Ireland	1.32	0.89	0.05	14.95	440.49	23.22	36.28	16.84	34.53	8.92	5.96	25.22	22.60
Italy	1.09	0.54	0.07	12.33	428.72	11.30	21.34	4.70	9.80	7.96	3.38	22.11	31.00
Japan	3.39	2.62	0.01	117.21	470.34	12.00	60.00	7.40	3.07	0.35	11.05	24.84	16.00
Korea	3.23	2.49	0.07	58.40	287.28	AAGR patents 1995-2005 25.57	Share of services in business R&D 7.23	Business-funded R&D in HE and GOV 9.07	4.60	0.30	8.65	37.80	16.83
Luxembourg	1.47	1.25	Industry-financed GERD as % GDP 1.25	50.48	102.22	26.94	42.61	15.89	54.50	3.56	7.35	31.47	38.40

Table 3.A1.1. Radar graph indicators and values¹ (cont.)

	GERD as % of GDP	BERD as % of GDP	Venture capital as % GDP	Triadic patents per million population	Scientific articles per million population	% of firms with new-to-market product innovations (as a % of all firms)	% of firms undertaking non-technological innovation (as a % of all firms)	% of firms collaborating (as a % of all firms)	Patents with foreign co-inventors	% of GERD financed by abroad	Researchers per 1 000 total employment	Science and engineering degrees as % of all new degrees	HRST occupations as % of total employment
Mexico	0.50	0.25	0.03	0.16	36.48	AAGR patents 1995-2005 4.86	–	Business-funded R&D in HE and GOV 1.13	45.26	0.75	1.19	25.56	Tertiary-level graduates in total employment 1.76
Netherlands	1.67	0.96	0.09	66.94	830.61	16.55	19.52	13.50	18.30	11.28	5.47	15.86	36.40
New Zealand	1.16	0.49	0.05	15.32	751.10	21.00	43.00	17.14	24.61	5.22	10.47	19.00	26.31
Norway	1.52	0.82	0.09	25.59	731.43	13.50	24.44	12.30	23.74	8.03	9.21	15.99	35.51
Poland	0.56	0.18	0.01	0.34	177.25	11.48	17.25	10.44	35.97	7.04	4.44	14.11	26.20
Portugal	0.83	0.35	0.05	1.07	251.41	12.32	29.69	7.92	25.70	4.70	4.14	25.71	17.50
Slovak Republic	0.49	0.21	0.00	0.53	175.29	9.51	14.13	8.62	56.03	9.05	5.52	27.19	29.60
Spain	1.20	0.67	0.09	4.55	400.58	7.25	20.90	6.33	21.38	5.94	5.79	24.59	23.70
Sweden	3.73	2.79	0.23	81.01	1 142.78	26.16	Share of services in business R&D 10.60	21.38	16.72	7.71	12.60	26.46	39.10
Switzerland	2.90	2.14	0.13	107.56	1 153.54	AAGR patents 1995-2005 1.02	–	Business-funded R&D in HE and GOV 5.69	33.68	5.23	6.08	26.72	38.20
Turkey	0.76	0.28	Industry-financed GERD as a % of GDP 0.35	0.36	88.02	AAGR patents 1995-2005 29.84	–	Business-funded R&D in HE and GOV 19.73	23.68	0.47	1.91	22.11	Tertiary-level graduates in total employment 0.38
United Kingdom	1.78	1.10	0.49	27.41	810.83	20.55	Share of services in business R&D 21.61	13.16	23.90	17.04	5.83	23.78	26.80
United States	2.62	1.84	0.13	53.11	725.60	AAGR patents 1995-2005 3.14	Share of services in business R&D 36.32	Business-funded R&D in HE and GOV 2.74	12.49	R&D expenditure of foreign affiliates as a % of R&D expenditure 14.01	9.64	15.66	32.20

Table 3.A1.1. **Radar graph indicators and values**¹ (cont.)

	GERD as % of GDP	BERD as % of GDP	Venture capital as % GDP	Triadic patents per million population	Scientific articles per million population	% of firms with new-to-market product innovations (as a % of all firms)	% of firms undertaking non-technological innovation (as a % of all firms)	% of firms collaborating (as a % of all firms)	Patents with foreign co-inventors	% of GERD financed by abroad	Researchers per 1 000 total employment	Science and engineering degrees as % of all new degrees	HRST occupations as % of total employment
Non-OECD members													
Brazil	1.02	0.49	–	0.31	53.69	3.56	36.10	2.91	28.42	–	1.48	10.78	% population aged 25-64 with tertiary degree 7.76
Chile	0.67	0.31	–	0.20	1.62	–	–	–	31.58	8.67	3.20	21.09	% population aged 25-64 with tertiary degree 13.16
China	1.43	1.02	–	0.27	22.59	–	–	–	27.87	1.61	1.60	39.18	% population aged 25-64 with tertiary degree 9.48
Israel	4.53	3.50	–	60.28	1 037.57	–	–	–	16.21	3.34	–	24.25	% population aged 25-64 with tertiary degree 45.36
Russian Federation	1.08	0.72	–	0.44	109.13	1.76	3.26	% of collaborating firms refers to innovators only 48.32	46.28	9.43	6.78	24.77	% population aged 25-64 with tertiary degree 54.57
South Africa	0.92	0.54	–	0.63	50.38	15.80	42.70	20.60	19.00	13.55	1.45	16.41	–

Note: The table shows actual indicator values. For each indicator in the radar graph, the country with the maximum value is set at 100 and the average is calculated by taking into account all OECD countries with available data.

1. See Table 3.A1.2 for precise years.

Table 3.A1.2. Radar graph country data notes

	GERD as % of GDP 2006	BERD as % of GDP 2006	Venture capital as % GDP 2006	Triadic patents per million population 2005	Scientific articles per million population 2003	% of firms with new-to-market product innovations (as a % of all firms) 2002-04	% of firms undertaking non- technological innovation (as a % of all firms) 2002-04	% of firms collaborating (as a % of all firms) 2002-04	Patents with foreign co-inventors 2002-04	% of GERD financed by abroad 2006	Researchers per 1 000 total employment 2006	Science and engineering degrees as % of all new degrees 2005	HRST occupations as % of total employment 2006
OECD members													
Australia	2004	2005	2006	2005	2003	2001-03	2001-03	2001-03	2002-04	2004	2004	2005	2006
Austria	2006	2006	2006	2005	2003	2002-04	2002-04	2002-04	2002-04	2006	2006	2005	2006
Belgium	2006	2006	2006	2005	2003	2002-04	2002-04	2002-04	2002-04	2005	2006	2005	2006
Canada	2006	2006	2006	2005	2003	2002-04, Manufac. only	Share of services in business R&D 2004	2002-04 Manufac. only	2002-04	2006	2004	2005	2006
Czech Republic	2006	2006	2006	2005	2003	2002-04	2002-04	2002-04	2002-04	2006	2006	2005	2006
Denmark	2006	2006	2006	2005	2003	2002-04	2002-04	2002-04	2002-04	2005	2006	2005	2006
Finland	2006	2006	2006	2005	2003	2002-04	Share of services in business R&D 2004	2002-04	2002-04	2006	2006	2005	2005
France	2006	2006	2006	2005	2003	2002-04	2002-04	2002-04	2002-04	2005	2005	2005	2006
Germany	2006	2006	2006	2005	2003	2002-04	2002-04	2002-04	2002-04	2005	2006	2005	2006
Greece	2006	2006	2006	2005	2003	2002-04	2002-04	2002-04	2002-04	2005	2006	2005	2006
Hungary	2006	2006	2006	2005	2003	2002-04	2002-04	2002-04	2002-04	2006	2006	2005	2006
Iceland	2005	2005	Industry- financed GERD as % GDP 2005	2005	2003	2002-04	–	2002-04	2002-04	2005	2005	2005	2005
Ireland	2006	2006	2006	2005	2003	2002-04	2002-04	2002-04	2002-04	2006	2006	2005	2006
Italy	2005	2006	2006	2005	2003	2002-04	2002-04	2002-04	2002-04	2005	2005	2005	2006
Japan	2006	2006	2006	2005	2003	1999-2001	1999-2001	1999-2001	2002-04	2006	2006	2005	2004
Korea	2006	2006	2006	2005	2003	AAGR patents 1995-2005	Share of services in business R&D 2004	Business- funded R&D in HE and GOV 2004	2002-04	2006	2006	2005	2006
Luxembourg	2006	2006	Industry- financed GERD as % GDP 2005	2005	2003	2002-04	2002-04	2002-04	2002-04	2005	2006	2000	2005

Table 3.A1.2. Radar graph country data notes (cont.)

	GERD as % of GDP 2006	BERD as % of GDP 2006	Venture capital as % GDP 2006	Triadic patents per million population 2005	Scientific articles per million population 2003	% of firms with new-to-market product innovations (as a % of all firms) 2002-04	% of firms undertaking non-technological innovation (as a % of all firms) 2002-04	% of firms collaborating (as a % of all firms) 2002-04	Patents with foreign co-inventors 2002-04	% of GERD financed by abroad 2006	Researchers per 1 000 total employment 2006	Science and engineering degrees as % of all new degrees 2005	HRST occupations as % of total employment 2006
Mexico	2005	2005	2006	2005	2003	AAGR patents 1995-2005	–	Business-funded R&D in HE and GOV 2004	2002-04	2005	2005	2005	Tertiary-level graduates in total employment 2004
Netherlands	2006	2006	2006	2005	2003	2002-04	2002-04	2002-04	2002-04	2003	2006	2005	2006
New Zealand	2005	2005	2006	2005	2003	2003-04	2003-04	2003-04	2002-04	2005	2005	2005	2005
Norway	2006	2006	2006	2005	2003	2002-04	2002-04	2002-04	2002-04	2005	2005	2005	2006
Poland	2006	2006	2006	2005	2003	2002-04	2002-04	2002-04	2002-04	2006	2006	2005	2006
Portugal	2006	2006	2006	2005	2003	2002-04	2002-04	2002-04	2002-04	2005	2005	2005	2006
Slovak Republic	2006	2006	2006	2005	2003	2002-04	2002-04	2002-04	2002-04	2006	2006	2005	2006
Spain	2006	2006	2006	2005	2003	2002-04	2002-04	2002-04	2002-04	2006	2006	2005	2006
Sweden	2006	2006	2006	2005	2003	2002-04	Share of services in business R&D 2003	2002-04	2002-04	2005	2006	2005	2006
Switzerland	2004	2004	2006	2005	2003	AAGR patents 1995-2005	–	Business funded R&D in HE and GOV 2002	2002-04	2004	2004	2005	2005
Turkey	2006	2006	Industry-financed GERD as % GDP 2006	2005	2003	AAGR patents 1995-2005	–	Business-funded R&D in HE and GOV 2004	2002-04	2006	2006	2005	Tertiary-level graduates in total employment 2004
United Kingdom	2006	2006	2006	2005	2003	2002-04	Share of services in business R&D 2004	2002-04	2002-04	2006	2006	2005	2006
United States	2006	2006	2006	2005	2003	AAGR patents 1995-2005	Share of services in business R&D 2003	Business funded R&D in HE and GOV 2004	2002-04	R&D expenditure of foreign affiliates as % R&D expenditure 2005	2005	2005	2006

Table 3.A1.2. Radar graph country data notes (cont.)

	GERD as % of GDP 2006	BERD as % of GDP 2006	Venture capital as % GDP 2006	Triadic patents per million population 2005	Scientific articles per million population 2003	% of firms with new-to-market product innovations (as a % of all firms) 2002-04	% of firms undertaking non- technological innovation (as a % of all firms) 2002-04	% of firms collaborating (as a % of all firms) 2002-04	Patents with foreign co-inventors 2002-04	% of GERD financed by abroad 2006	Researchers per 1 000 total employment 2006	Science and engineering degrees as % of all new degrees 2005	HRST occupations as % of total employment 2006
Non-OECD members													
Brazil	2006	2006	–	2005	2005	2003-05	2003-05	2003-05	2002-04	–	2006	2005	% population aged 25-64 with tertiary degree 2004
Chile	2004	2004	–	2004	Scientific publications, Academy of Sciences 2003	–	–	–	2002-04	2004	2004	2005	% population aged 25-64 with tertiary degree 2004
China	2006	2006	–	2005	2003	–	–	–	2002-04	2006	2006	2004	% population aged 25-64 with tertiary degree 2005
Israel	2006	2006	–	2005	2003	–	–	–	2002-04	2003	–	2005	% population aged 25-64 with tertiary degree 2005
Russian Federation	2006	2006	–	2005	2003	2006	2006	% of collaborating firms refers to innovators only 2006	2002-04	2006	2006	2004	% population aged 25-64 with tertiary degree 2003
South Africa	2005	2005	–	2005	2003	2002-04	2002-04	2002-04	2002-04	2005	2005	2003	–

Table 3.A1.3. **Radar graph: country with maximum value**

Indicator	All countries	OECD countries
Gross expenditure on R&D (GERD) as % of GDP	Israel	Sweden
Business expenditure on R&D (BERD) as % of GDP	Israel	Sweden
Venture capital as % GDP	United Kingdom	United Kingdom
Industry-financed GERD as % GDP	Japan	Japan
Triadic patent families per million population	Japan	Japan
Scientific articles per million population	Switzerland	Switzerland
% of firms with new-to-market product innovations (as a % of all firms)	Iceland	Iceland
Average annual growth rate (AAGR) patents 1995-2005	China	Turkey
% of firms undertaking non-technological innovation (as a % of all firms)	Japan	Japan
Share of services in business R&D	Australia	Australia
% of firms collaborating (as a % of all firms)	Denmark	Denmark
Business funded R&D in the higher education (HE) and government (GOV) sectors	Turkey	Turkey
Patents with foreign co-inventors	Slovak Republic	Slovak Republic
R&D expenditure of foreign affiliates as % R&D expenditure	Ireland	Ireland
% of GERD financed by abroad	Greece	Greece
Researchers per 1 000 total employment	Finland	Finland
Science and engineering degrees as % of all new degrees	China	Korea
Human resources for science and technology (HRST) occupations as % of total employment	Sweden	Sweden
Tertiary-level graduates in total employment	Spain	Spain
% of population aged 25 to 64 with tertiary degree	Russian Federation	Canada

Note: Shaded indicators represent alternative indicators.

Table 3.A1.4. Radar graph data sources and methodological notes

Indicator	Notes	Source
Gross expenditure on R&D (GERD) as % of GDP.	See MSTI for full notes.	OECD, <i>Main Science and Technology Indicators (MSTI) Database, 2008/1</i> ; data for Brazil, Chile and India have been compiled from national sources.
Business expenditure on R&D (BERD) as % of GDP.	See MSTI for full notes.	OECD, <i>Main Science and Technology Indicators (MSTI) Database, 2008/1</i> ; Data for Brazil, Chile (CONICYT) and India compiled from national sources.
Venture capital as % GDP.	–	OECD, <i>Venture Capital Database, 2008</i> .
Industry-financed GERD as % GDP.	See MSTI for full notes.	OECD, <i>Main Science and Technology Indicators (MSTI) Database, 2008/1</i> .
Triadic patent families per million population.	Patent counts are based on the earliest priority date, the inventor's country of residence and fractional counts. Triadic patent families refers to patents filed at the European Patent Office (EPO), the US Patent and Trademark Office (USPTO) and the Japan Patent Office (JPO) which protect the same invention.	OECD, <i>Patent Database, 2008</i> , based on <i>EPO worldwide Statistical Patent Database (PATSTAT, October 2007)</i> .
Scientific articles per million population.		National Science Foundation, <i>Science and Engineering Indicators 2008</i> ; Academy of Science for Chile.
% of firms with new-to-market product innovations (as a % of all firms).		Eurostat, Community Innovation Survey (New Cronos) 2007; data for Australia, Brazil, Canada, Japan, New Zealand, the Russian Federation and South Africa have been compiled from national sources.
Average annual growth rate (AAGR) patents 1995-2005.	Patent counts are based on the earliest priority date, the inventor's country of residence and fractional counts. Triadic patent families refers to patents filed at the European Patent Office (EPO), the US Patent and Trademark Office (USPTO) and the Japan Patent Office (JPO) which protect the same invention.	OECD, <i>Patent Database, 2008</i> .
% of firms undertaking non-technological innovation (as a % of all firms).	–	Eurostat, Community Innovation Survey (New Cronos) 2007; data for Australia, Brazil, Japan, New Zealand, the Russian Federation and South Africa have been compiled from national sources.
Share of services in business R&D.	–	OECD, <i>ANBERD Database, 2007</i> .
% of firms collaborating (as a % of all firms).	–	Eurostat, Community Innovation Survey (New Cronos) 2007; data for Australia, Brazil, Canada, Japan, Korea, New Zealand, the Russian Federation and South Africa have been compiled from national sources.
Business funded R&D in the higher education (HE) and government (GOV) sectors.	See MSTI for full notes.	OECD, <i>Main Science and Technology Indicators (MSTI) Database, 2008/1</i> .
Patents with foreign co-inventors.	Patent counts are based on the earliest priority date, the inventor's country of residence, using simple counts. Share of patent applications to the European Patent Office (EPO) with at least one foreign co-inventor in total patents invented.	OECD, <i>Patent Database, 2008</i> .
R&D expenditure of foreign affiliates as % of R&D expenditure.	See MSTI for full notes.	OECD, <i>Main Science and Technology Indicators (MSTI) Database, 2008/1</i> .
% of GERD financed by abroad.	See MSTI for full notes.	OECD, <i>Main Science and Technology Indicators (MSTI) Database, 2008/1</i> ; CONICYT for Chile.
Researchers per 1 000 total employment.	See MSTI for full notes.	OECD, <i>Main Science and Technology Indicators (MSTI) Database, 2008/1</i> ; data for Brazil, Chile and India have been compiled from national sources.
Science and engineering degrees as % of all new degrees.	–	OECD, <i>Education Database 2007</i> , UNESCO Institute for Statistics and <i>China Statistical Yearbook</i> .
Human Resources for Science and Technology (HRST) occupations as % of total employment.	–	OECD, <i>Science and Technology and Industry Scoreboard 2007</i> .
Tertiary-level graduates in total employment	–	OECD, <i>Educational Attainment Database, 2007</i> .
Educational attainment as % population aged 25-64 with tertiary degree.	–	OECD, <i>Education database, 2007</i> .

Table 3.A1.5. **Country-specific figures: data sources**

	Left figure	Right figure
OECD members		
Australia	R&D by sector of performance as a percentage of GDP: OECD, MSTI, 2008/1.	Firms collaborating in innovation activities by size, 2002-04 (or nearest years): National source – Australian Bureau of Statistics Innovation Survey and Eurostat, CIS-4 (New Cronos), May 2007.
Austria	Venture Capital investment as a percentage of GDP, 2006: OECD, 2008 based on data from Thomson Financial, PwC, EVCA, LVCA and National Venture.	Austrian researchers per thousand total employment, 2006: OECD, MSTI, 2008/1.
Belgium	BERD as a percentage of GDP: OECD, MSTI, 2008/1.	Labour productivity growth, average annual percentage change, 1995-2000 and 2001-06: OECD, <i>Productivity Database</i> .
Canada	Business expenditure on R&D, 1981-2006: OECD, MSTI, 2008/1.	Firms collaborating in innovation with government institutions by size, 2002-04 (as a percentage of all firms): National Sources and Eurostat, CIS-4 (New Cronos), May 2007.
Czech Republic	Venture Capital investment as a percentage of GDP, 2006: OECD, 2008, based on data from Thomson Financial, PwC, EVCA, LVCA and National Venture.	Annual growth rate of patenting (PCT filings 1997-2004): OECD, <i>Patent Database</i> and ANBERD.
Denmark	R&D expenditure in Denmark, as a percentage of GDP: OECD, MSTI, 2008/1.	S&E degrees as a percentage of total new degrees, 2005: OECD, <i>Education Database</i> , September 2007.
Finland	HERD as a % of GDP: OECD, MSTI, 2008/1.	Funds from abroad, as a percentage of Business enterprise R&D, 2006 or latest year: OECD, MSTI, 2008/1.
France	Growth of business R&D, 1996-2006 (annual average growth rate in spending, in USD PPP of 2000): OECD, MSTI, 2008/1.	In-house product innovators by sector (as a percentage of all firms), 2002-04: Eurostat, CIS-4 (New Cronos, May 2007), National data sources.
Germany	Countries' shares in environmental technology patents filed under PCT, 1 2000-04, Top 3 performers: OECD, <i>Patent Database</i> , April 2007.	Expenditure on R&D in Germany, as a percentage of GDP: OECD, MSTI, 2008/1.
Greece	Enterprises with innovation activity (%), 2002-04: Hellenic Republic Ministry of Development (2007), The Greek Innovation System: Review of Greece's Innovation Policy by the OECD: Background Report: Part 2, p. 8.	Number of patent applications to the EPO (priority year), 1995-2005: OECD, MSTI, 2008/1.
Hungary	Business R&D units and BERD – the share of foreign-affiliated businesses in Hungary: OECD Background Report 2007: National System of Innovation in Hungary (p. 86).	R&D personnel – Hungary: OECD, MSTI, 2008/1.
Iceland	Firms with new-to-market product innovations by size (as a percentage of all firms), 2002-04: Eurostat, CIS-4 (New Cronos, May 2007), National data sources.	Business Enterprise Expenditure on R&D (BERD) – Iceland: OECD, MSTI, 2008/1.
Ireland	Gross Domestic Expenditure on R&D – Ireland: OECD, MSTI, 2008/1.	Non-technological innovators by sector (as a percentage of all firms), 2002-04: Eurostat, CIS-4 (New Cronos, May 2007), National data sources.
Italy	Triadic patent families per million population, 2005: OECD, <i>Patent Database</i> , 2008.	GERD as a percentage of GDP: OECD, MSTI, 2008/1.
Japan	Patents with foreign co-inventors, 2002-04: OECD, <i>Patent Database</i> , 2008.	Share of R&D expenditure and turnover of affiliates under foreign control in total R&D and turnover, 2004: OECD, <i>AFA Database</i> , April 2007.
Korea	GERD and basic research as a percentage of GDP: OECD, MSTI, 2008/1.	Internationalisation of R&D in Korea, 2001-04: OECD, <i>Patent Database</i> , 2008.
Luxembourg	Luxembourg – Domestic R&D expenditure by sector of performance (% share): OECD, MSTI, 2008/1.	Luxembourg R&D personnel by sector (FTE): The Future of Science and Technology in Europe: Setting the Lisbon Agenda on Track (Gago, José Mariano (ed.), 2007, p 267).
Mexico	Relationship between R&D intensity and GDP per capita, 2005: GDP per capita: OECD Science, Technology and Industry Scoreboard, 2007, p. 203. GERD/GDP: OECD MSTI 2007/2.	Patents with foreign co-inventors, 2002-04: OECD, <i>Patent Database</i> , 2008.
Netherlands	R&D intensity as a percentage of GDP: OECD, MSTI, 2008/1.	Share of turnover due to new-to-market product innovations, by firm size (as a percentage of turnover), 2002-04: Eurostat, CIS-4 (New Cronos, May 2007).

Table 3.A1.5. **Country-specific figures: data sources** (cont.)

	Left figure	Right figure
New Zealand	Firms with foreign co-operation on innovation, 2002-04, as a percentage of all firms: Eurostat, CIS-4 (New Cronos), May 2007 and national data sources.	New Zealand's share of world biotechnology patent applications to the EPO: OECD, <i>Patent Database</i> , 2008.
Norway	R&D intensity in the business sector adjusted for industrial structure, as percentage of business sector value added, average over 2001-03: OECD, ANBERD and STAN databases.	In-house process innovators by sector (as a percentage of all firms), 2002-04: Eurostat, CIS-4 (New Cronos, May 2007), National data sources.
Poland	BERD as a percentage of GDP: OECD, MSTI, 2008/1.	Growth of business researchers, Average annual growth rate, 1996-2006: OECD, MSTI, 2008/1.
Portugal	S&E degrees as a percentage of total new degrees, 2005: OECD, <i>Education Database</i> , September 2007.	Non-technological innovators by sector (as a percentage of all firms), 2002-04: Eurostat, CIS-4 (New Cronos, May 2007), National data sources.
Slovak Republic	Growth of R&D personnel 1996-2006, Average annual growth rate: OECD, MSTI, 2008/1.	In-house process innovators by sector (as a percentage of all firms), 2002-04: Eurostat, CIS-4 (New Cronos, May 2007), National data sources.
Spain	Growth of HRST occupations, average annual growth rate 1996-2006: OECD estimates, based on data from EU Labour Force Survey.	Rate of tax subsidies: Warda (2008), based on national sources.
Sweden	BERD as a percentage of GDP: OECD, MSTI, 2008/1.	Annual growth in patenting, 1997-2004: OECD, <i>Patent Database</i> , April 2007.
Switzerland	Ratio of triadic patent families to industry-financed R&D: selected countries, 1995-2005: OECD, <i>Patent and R&D Databases</i> , April 2007.	Gross domestic expenditure on R&D as a % of GDP: OECD, MSTI, 2008/1.
Turkey	R&D by sector of performance, 2006, as a percentage of the national total: OECD, MSTI, 2008/1.	Researchers, 1995-2006: OECD, MSTI, 2008/1.
United Kingdom	BERD as a percentage of GDP: OECD, MSTI, 2008/1.	Firms collaborating in innovation activities with Public Research Organisations, by size, 2002-04, Higher education and government institutions: Eurostat, CIS-4 (New Cronos, May 2007), National data sources.
United States	Science and engineering degrees, 2005: OECD, <i>Education Database</i> , September 2007.	Ratio of triadic patent families to industry-financed R&D: main OECD regions, 1995-2005: The data mainly derives from the <i>EPO Worldwide Statistical Patent Database</i> , April 2007.
Non-OECD members		
Brazil	Science and engineering degrees, as a % of total new degrees, 2005: OECD, <i>Education Database</i> , September 2007.	Foreign ownership of domestic inventions: OECD, <i>Patent Database</i> , June 2007.
Chile	R&D intensity, 2006: OECD, MSTI, 2008/1.	Innovation outcomes in Chile: OECD Reviews of Innovation Policy: Chile, 2007.
China	China R&D intensity and GERD structure (by funding), 1996-2006: OECD, MSTI, 2008/1.	Chinese high-tech exports by ownership of firms: Data provided by MOST.
Israel	Israel – R&D intensity: OECD, MSTI, 2008/1.	2003-06 trends in Venture Capital investment as a percentage of GDP: Thomson Financial, PwC, EVCA, NVCA, AVCAL, NZVCA and OECD calculation.
Russian Federation	Foreign funding as a share of GERD, %: OECD, MSTI, 2008/1.	Human capital in Russia, 1994-2006: OECD, MSTI, 2008/1.
South Africa	Percentage of GERD financed by the Business Enterprise sector: OECD, MSTI, 2008/1.	Business performed R&D, share of GERD, 2005: OECD, MSTI, 2008/1.

Chapter 3

Science and Innovation: Country Notes

This chapter complements Chapters 1 and 2 by providing an individual profile of the science and innovation performance of each OECD country, as well as observers to the OECD Committee on Science and Technology Policy (Brazil, Chile, China, Israel, Russia and South Africa), in relation to their national context and current policy issues. The graphs enable countries to see some of their relative strengths and weaknesses as compared to other countries' performance.

The common indicators in the first (radar) graphs were selected on the basis of current policy issues. They focus on research and innovation inputs, scientific and innovation outputs, linkages and networks, including international linkages, and human resources. A standard set of indicators is used; however, when data are not available, alternative indicators may be applied. The annex provides a full list and description of the indicators, methodological notes and data sources.

For each indicator in the radar graph, the country with the maximum value is set at 100, taking into account all OECD and non-OECD countries with available data. The average is calculated by taking into account all OECD countries with available data (non-OECD countries are excluded from the average). The annex provides further details.

The radar graphs are accompanied by country-specific figures that further illustrate national characteristics and underpin policy-specific comments. The selection of comparator countries in these graphs aims to highlight the general position of the focal country and, in some instances, data on other countries may also be shown.

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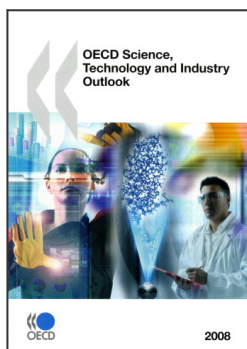
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