

# GREEN 2.6 ECONOMY



In March 2009, the United Nations Environment Programme (UNEP) called for a Global Green New Deal. It recommended that governments should invest 1% of GDP over 2009–2010 in supporting the transition to a green economy. It suggested this would help the world economy recover, maintain and create jobs, and protect vulnerable groups, whilst promoting achievement of the Millennium Development Goals and, at the same time, reducing carbon dependence and ecosystem degradation. It identified as priority investment areas for developed countries efficient energy use in buildings, sustainable transport, and renewable energy. For developing countries, it recommended prioritising sustainable agriculture, drinking water management and sewerage.

Since then, the Green Economy Initiative (GEI) has been incorporated into the agenda of many international organisations working in fields related to the environment and the economy. It is intended to address the three crises affecting the world's financial, energy and ecological systems in a holistic and consistent manner.

In preparation for the meeting of the UNEP Governing Council in Bali in February 2010, the ministerial consultation document defined a green economy as *“a system of economic activities related to the*



*production, distribution and consumption of goods and services that result in improved human well-being over the long term, while not exposing future generations to significant environmental risks or ecological scarcities.”*

The European Council of October 2009 acknowledged the urgent need to change, “to an eco-efficient economy, i.e., a safe and sustainable low carbon, resource-efficient economy, based on sustainable production in all sectors and underpinned by more sustainable life-styles focusing inter alia on the housing, transport and food sectors”. For the European Council, it is possible to promote an eco-efficient economy by changing national sources of revenue by switching from

INDICATOR	GOAL	TREND
Energy intensity of the economy	Advance towards a low-carbon economy	Spain's energy intensity fell by 9.91% between 2005 and 2008
Total material requirement	Achieve rational resource use	Slight increase in Total Material Requirement, while imports are stabilising
Green jobs	Transform jobs in companies and economic sectors to preserve or restore environmental quality	The number of jobs created in Spain by renewable energy increased by 40% in four years
Research and development	Modernise economic processes to increase efficiency and decrease resource use	R&D and Innovation expenditure is increasing in Spain and is moving closer to European levels

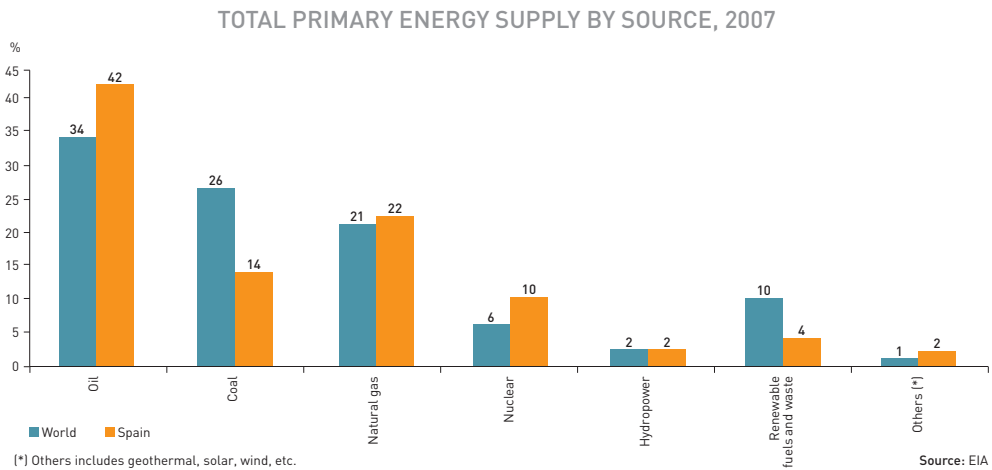
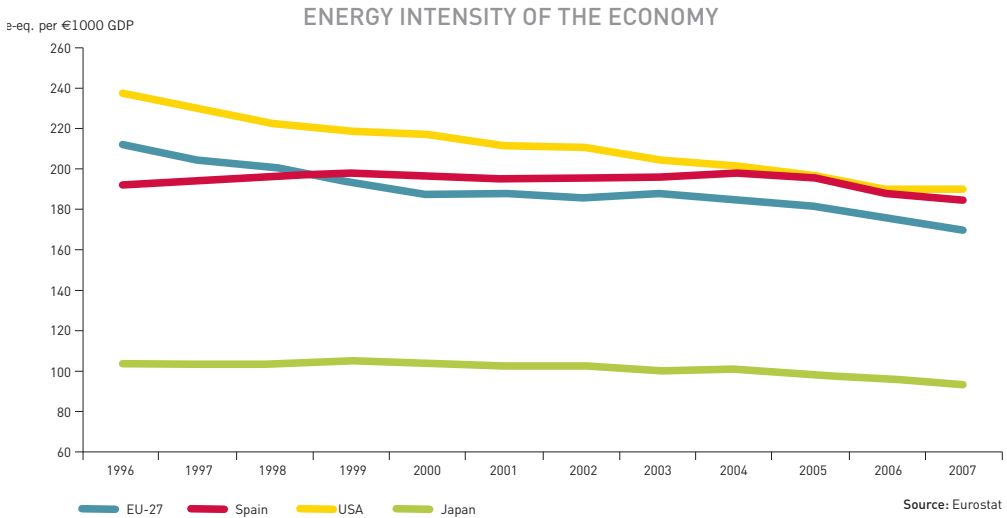
taxing work and enterprise to taxing resource and energy use and adverse effects on the environment.

The EU is promoting development of a global 10-year framework of programmes on sustainable consumption and production (10YFP on SCP) for adoption in 2011. It is also promoting the UNEP's Global Green New Deal and is recommending application of the OECD's Declaration on Green Growth, which was adopted in June 2009. Among other related measures, the European Council recommends urgent sector-by-sector review, with a view to gradual elimination, of subsidies that have considerable negative effects on the environment and that are incompatible with sustainable development.

In Spain, at the time of going to press, a draft Sustainable Economy Bill had been submitted to Parliament for debate. Item III, Environmental Sustainability, establishes the foundations for a sustainable energy model, a reduction in GHG emissions to meet the EU targets for 2020, the regulatory changes necessary to achieve sustainability in transport and mobility, and upgrades to housing, all of which would contribute to improving the quality and sustainability of the urban environment.

# Energy intensity of the economy

The Spanish economy's energy intensity has decreased significantly in recent years



The world's current energy supply model can be qualified as unsustainable. The heavy dependence on fossil fuels and renewable energy's still insufficient contribution to total energy supply, together with territorial distribution issues, supply insecurity and environmental impacts, have combined to trigger a severe energy crisis. Managing available energy sources is a key element in addressing

the challenges mentioned above, as well as in combating climate change. Commitments upheld by the EU clearly steer the economy towards a process of long-term decarbonisation.

Until 2004, Spain's economy showed an upward trend in energy intensity (primary energy consumption per unit of GDP). Since then, energy intensity has remained at the average level for EU countries and the USA. Increasing energy efficiency, a greater contribution by renewable energy and, towards the end of the period, a drop in economic activity, resulted in a significant decrease in energy intensity in Spain between 2005 and 2008.

In the transport sector, Spain's energy intensity differed from the average for the EU-27. Between 2000 and 2007, transport's energy intensity in the EU-27 fell by 4.5%, while in Spain it rose by 3 percentage points in 2004 before decreasing again to stand in 2007 at 0.9% above the 2000 level.

### SOURCES

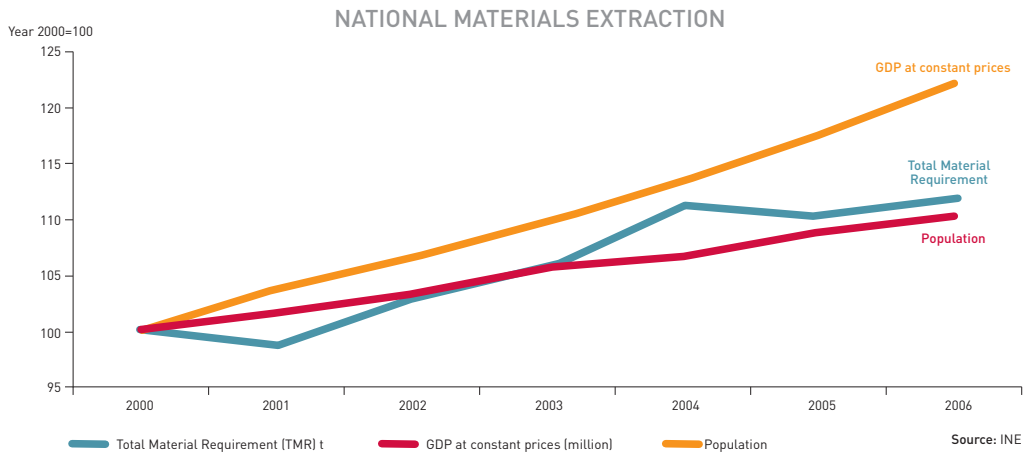
- International Energy Agency, Key world energy statistics, 2009.
- IDAE, MITyC, Energía en España 2008.
- MARM.
- Eurostat.

### FURTHER INFORMATION

- <http://www.iea.org>
- <http://www.marm.es>
- <http://www.mityc.es>
- <http://epp.eurostat.ec.europa.eu/>

# Total Material Requirement

Materials consumption in Spain is growing slower than GDP or population growth



Efficient use of natural resources is one of the basic requirements of the Green Economy. The Total Material Requirement indicator reflects the processes of extraction, consumption, transformation and final disposal of raw materials, chemicals and products used in economic activity.

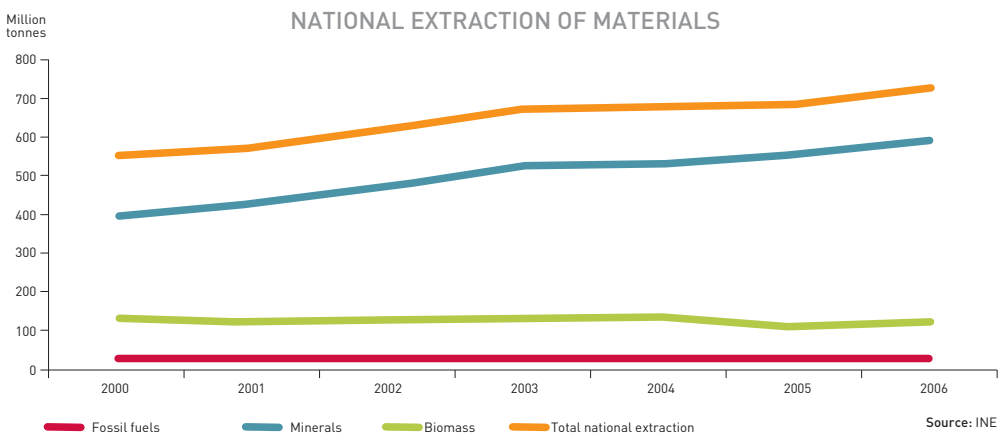
Between 2000 and 2006, the trend in GDP and population was consistently upward, with the economy growing faster than the population. Over this period, Total Material Requirement fluctuated, decreasing between 2000 and 2001, showing linear growth until 2004, registering a downturn in 2005, and then increasing moderately once more in 2006.

In total, over the six-year period (2000–2006), Total Material Requirement increased by 11.81%, while GDP (at constant prices) grew by 22% and population rose by 20.39%.

Nationally sourced materials include fossil fuels, minerals (metallic, non-metallic and construction materials) and biomass. Materials originating from national sources, but which become non-used resources (crop biomass and the by-products of mining and land excavation), are also considered. The indicator also includes indirect flows associated with imports. In addition to nationally sourced materials, it also takes into account those derived from imports, which can be,

according to their degree of processing, raw materials, semi-manufactured products, and finished and other products.

Between 2000 and 2006, the fall in nationally sourced fossil fuels and biomass was accompanied by considerable growth in mineral extraction. Within this category, extraction of metallic minerals decreased, while extraction of industrial minerals rose from 35,207,468 tonnes in 2000 to 38,357,890 tonnes in 2006. In the same year, the increases in quarried products, limestones, clays and granites were particularly noteworthy.



**NOTES**

- Changes made by the INE to some of the coefficients used in calculating this indicator prevent comparison with years prior to 2000. The aim of these changes was to include the modifications made to European methodology. These include the change to the minerals breakdown (in which the non-metallic and quarried minerals categories have been replaced by industrial minerals and construction minerals), and the new breakdown of types of waste to adapt to modifications in the Waste Statistics.

**SOURCES**

- Total Material Requirement: INE. Material flow accounts. INEbase. In Environment: Environmental accounts

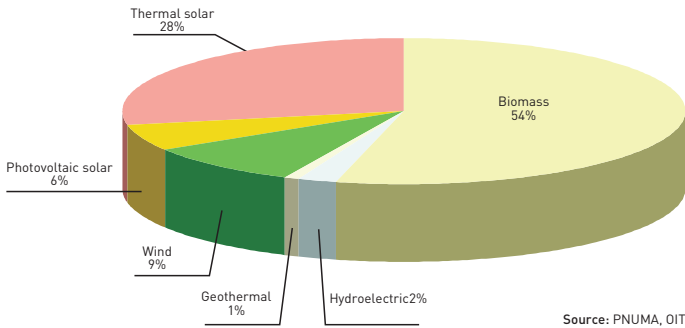
**FURTHER INFORMATION**

- <http://www.ine.es>

# Green jobs

Jobs in Spain related to renewable energy increased by 40% in four years

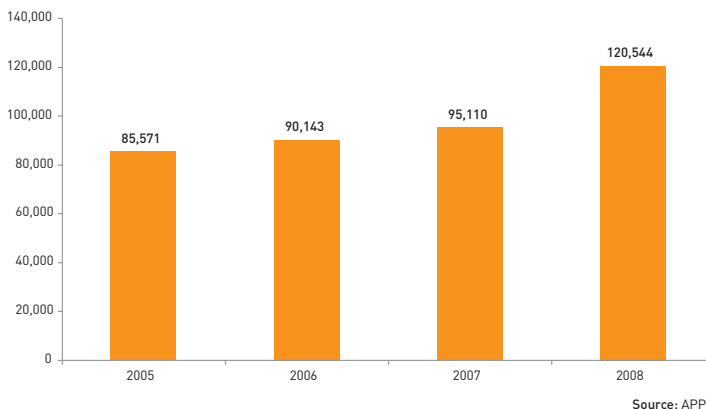
ESTIMATED EMPLOYMENT IN RENEWABLE ENERGY WORLDWIDE (2006)



Green jobs form part of the transformation proposed for economies, enterprises and labour markets and their creation is expected to contribute towards achieving a sustainable, low-carbon economy. Green jobs can be created in every sector and company. Potential direct jobs exist in sectors that produce green goods and services, while indirect and induced jobs exist in their supply chains when energy and raw material savings are invested in other more labour-intensive goods and services.

This edition will begin by considering only those jobs in Spain related to renewable energy. However, this field may be extended in successive editions as criteria are unified across the various sources of information used.

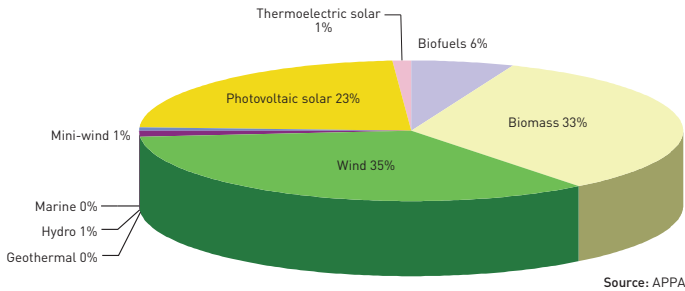
SPAIN: TOTAL NUMBER OF JOBS CREATED BY RENEWABLE ENERGY





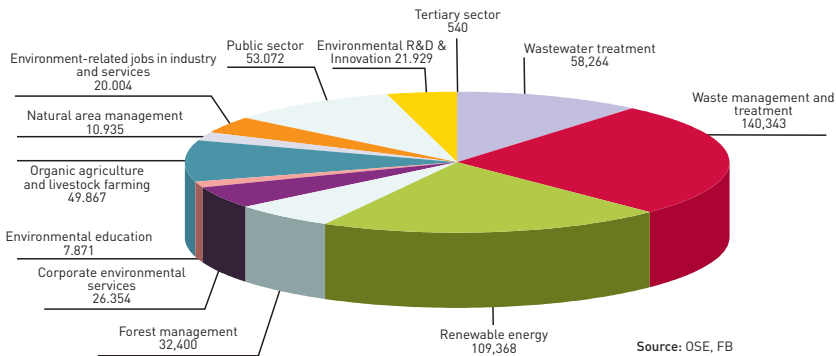
The renewable energy field has strong job-creation potential. Some forms of renewable energy have grown rapidly, though it is still a market subject to fluctuation. In Spain, the number of jobs in the sector grew by 40.87% in four years to total 120,000 in 2008.

SPAIN: BREAKDOWN OF JOBS IN RENEWABLE ENERGY



The report on green jobs in a sustainable economy, *Empleo verde en una economía sostenible*, produced by the Spanish Sustainability Monitoring Centre (OSE) and the Foundation for Biodiversity (FB) at the request of the Ministry of the Environment and Rural and Marine Affairs, estimated that in 2009 the number of people employed in activities traditionally associated with the environment (green jobs) stood at almost 531,000, equivalent to 2.6% of the working population.

ENVIRONMENT-RELATED JOBS (2009)



**SOURCES**

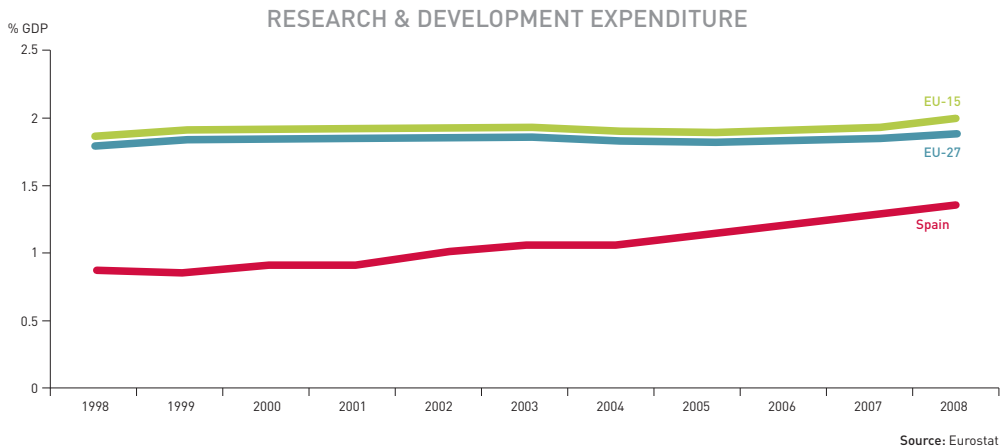
- UNEP. Green Jobs: Towards Decent Work in a Sustainable, Low-Carbon World, 2008.
- APPA. Estudio del Impacto Macroeconómico de las Energías Renovables en España. November 2009.
- OSE and FB. Report: Empleo verde en una economía sostenible, 2010

**FURTHER INFORMATION**

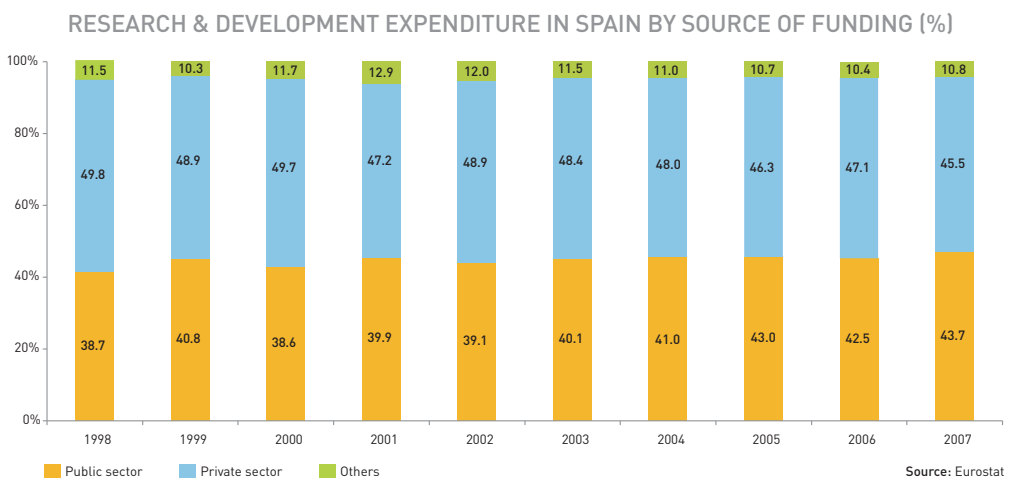
- <http://www.unep.org>
- <http://www.marm.es>
- <http://www.appa.es>
- <http://www.sostenibilidad-es.org/>

# Research and development

The percentage of Spain's GDP invested in research and development is increasing rapidly, particularly in the public sector



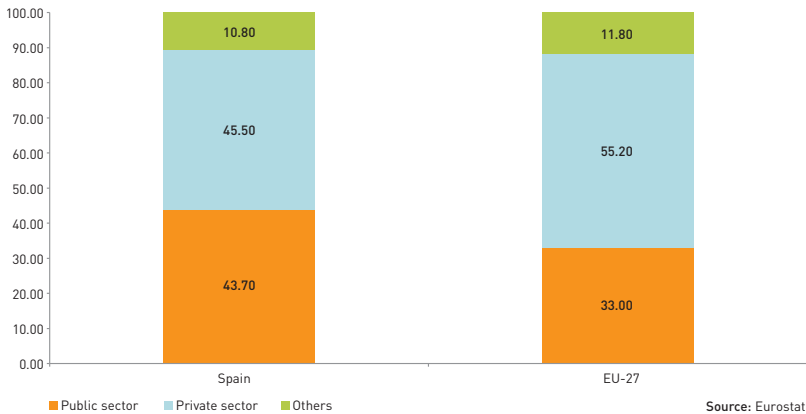
The average percentage of GDP invested in research and development in the European Union is higher than in Spain. Nevertheless, Spain has achieved significant growth in this field in recent years — between 1998 and 2008 the figure for the EU-27 rose by 6.15%, while in Spain it increased by 55.17% over the same period.



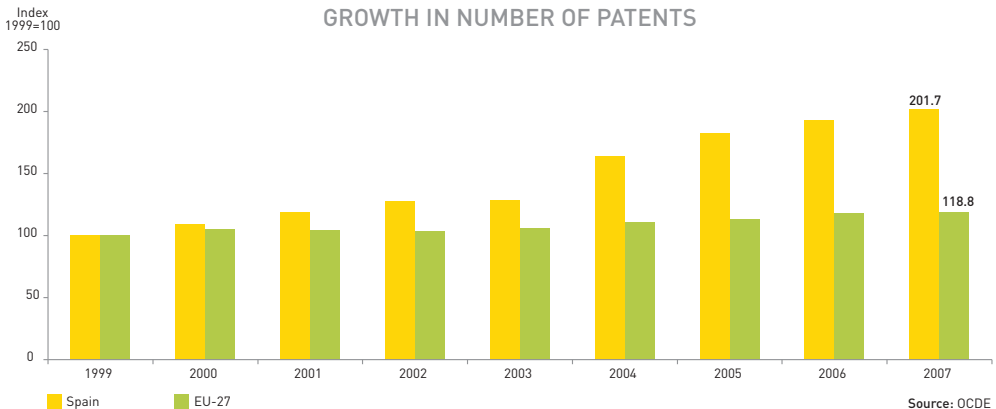
Analysis by source of funding reveals growth in Spain in the period 1998–2008 in public sector spending (5 percentage points during the period in question). Moreover, this increases further if university funding is taken into consideration. In

contrast, the percentage invested in research and development by the private sector fell by just over 4 percentage points. Comparing the source of these funds in 2007 in Spain and the EU-27 reveals a significant difference — in the EU, the funds invested in R&D by the private sector accounted for 55.2% of the total, while the public sector provided 33%. In Spain, the public sector supplied over 10 percentage points more (43.7%).

RESEARCH & DEVELOPMENT EXPENDITURE BY SOURCE OF FUNDING (2007)



The increase in Spain in spending on R&D has been reflected in a rise in the number of patents. According to OECD figures, the total number of patents registered in the EU-27 rose from 48,899 in 1999 to 58,059 in 2007, representing growth of 18.8%. In Spain, the number of patents registered with the European Patent Office (as in the case above) climbed from 733 in 1999 to 1,478 in 2007, representing growth of 101.7%.



It is particularly significant that in 2008 Spain's renewable energy industry invested 6.6% of its GDP in R&D, five times more than the national average.

Spain is ranked fifth internationally by number of patents in the renewable energy field, behind only the United States, Japan, Germany and the United Kingdom. The public sector's efforts are framed within the National Scientific Research, Development and Technological Innovation Plan (PNICDIT), which includes among its priorities achieving environmental and energy sustainability.

In 2008, Spain's wind energy sector comprised 700 companies present in 25 countries and it contributed €1.93 billion to the country's GDP. Furthermore, with investment in R&D of €174 million, it led international expenditure in this field. In 2008, the photovoltaic solar energy sector had an installed capacity of 3,120 MW, six times more than the previous year. The industry's identifying traits are its worldwide leadership in solar tracking technology, its well-established position in thin-film and concentration technologies, and its cell production capacity. In addition, in 2008, it accounted for 7% of global photovoltaic generator production.

#### SOURCES

- Eurostat. Gross domestic expenditure on R&D (GERD)
- OECD. Brevets par IPC Principaux
- MCI.
- IDAE, MITyC.
- APPA.

#### FURTHER INFORMATION

- <http://www.marm.es>
- <http://www.micinn.es>
- <http://epp.eurostat.ec.europa.eu/portal/>
- <http://www.oecd.org/>
- <http://www.appa.es>