



**EWEA**

THE EUROPEAN WIND ENERGY ASSOCIATION



Photo: Karpov

# Wind in power

2009 European statistics

February 2010

## Contents

<b><u>Executive summary</u></b> .....	3
<b><u>2009 annual installations</u></b> .....	4
<u>Wind map 2009</u> .....	4
<u>Wind installations 2009</u> .....	5
<u>Power capacity installations</u> .....	6
<b><u>Trends &amp; cumulative installations</u></b> .....	7
<u>Renewable power installations account for</u> <u>the majority of new installations</u> .....	7
<u>Net changes in EU installed capacity</u> .....	7
<u>Total installed power capacity</u> .....	8
<b><u>Data for wind power installations</u></b> .....	8
<u>Annual wind power installations</u> .....	8
<u>Cumulative wind power installations</u> .....	9

## Contributors

Justin Wilkes (Policy Director, EWEA) - Author

Jacopo Moccia (Regulatory Affairs Advisor - Member State Liaison, EWEA) – Data compilation and analysis

## Data sources

Platts PowerVision, January 2010

EWEA, Wind Energy Data

EPIA, Solar PV Data

ESTELA, CSP Data

EUROPEAN OCEAN ENERGY ASSOCIATION, Ocean Energy Data

FEBRUARY 2010

## Executive summary

---

### 2009 annual installations

- 10,163 MW of wind power capacity installed in the EU during 2009, up 23% from the previous year;
- More wind power capacity was installed during 2009 than any other electricity generating technology, 39% of total 2009 installations;
- Investment in EU wind farms in 2009 was €13 billion;
- Renewable power installations accounted for 61% of new installations during 2009, with a total of 25,963 MW of new power capacity being installed.

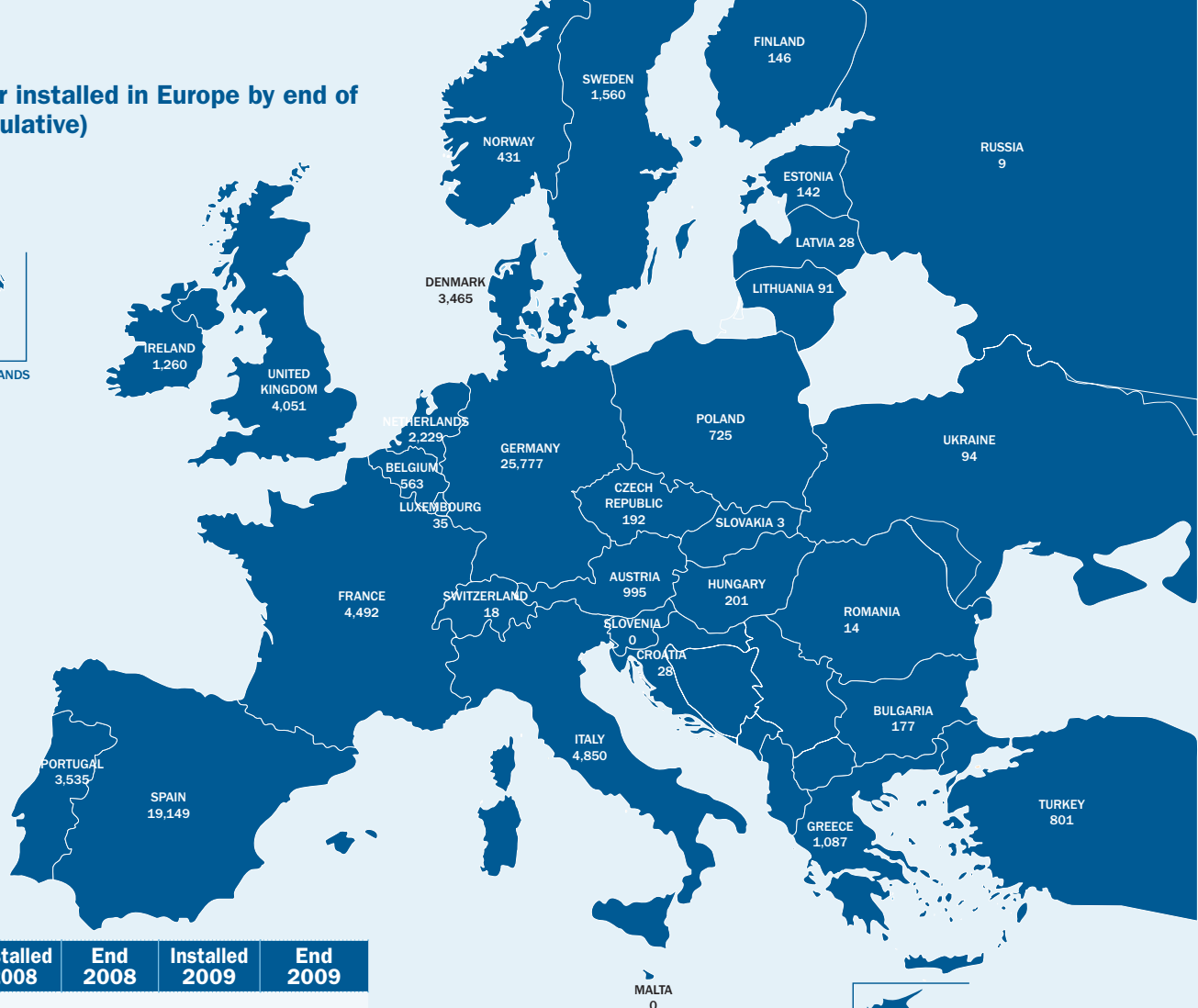
### Trends & cumulative installations

- Wind power installations accounted for 39% of new installations in 2009, the second year running that more wind power was installed than any other generating technology;
- Renewable power installations accounted for 61% of new installations in 2009, the second year running that renewables accounted for the majority of new power installations;
- The EU power sector continues its move away from coal, fuel oil and nuclear, each technology continuing to decommission more than it installs;
- The EU's total installed power capacity increased 20,150 MW, to 820,606 MW with wind power increasing its share of installed capacity to 74,767 MW (9.1%).

### Data for wind power installations

- Annual installations of wind power have increased steadily over the last 15 years from 472 MW in 1994 to 10,163 MW in 2009, an annual average market growth of 23%.
- A total of 74,767 MW is now installed in the European Union with Germany remaining the EU country with the largest installed capacity, followed by Spain, Italy, France, and the UK.

## Wind power installed in Europe by end of 2009 (cumulative)



	Installed 2008	End 2008	Installed 2009	End 2009
<b>EU Capacity (MW)</b>				
Austria	14	995	0	995
Belgium	135	415	149	563
Bulgaria	63	120	57	177
Cyprus	0	0	0	0
Czech Republic	34	150	44	192
Denmark	60	3,163	334	3,465
Estonia	19	78	64	142
Finland	33	143	4	146
France	950	3,404	1,088	4,492
Germany	1665	23,903	1,917	25,777
Greece	114	985	102	1,087
Hungary	62	127	74	201
Ireland	232	1,027	233	1,260
Italy	1010	3,736	1,114	4,850
Latvia	0	27	2	28
Lithuania	3	54	37	91
Luxembourg	0	35	0	35
Malta	0	0	0	0
Netherlands	500	2,225	39	2,229
Poland	268	544	181	725
Portugal	712	2,862	673	3,535
Romania	3	11	3	14
Slovakia	0	3	0	3
Slovenia	0	0	0	0
Spain	1558	16,689	2,459	19,149
Sweden	262	1,048	512	1,560
United Kingdom	569	2,974	1,077	4,051
<b>Total EU-27</b>	<b>8,268</b>	<b>64,719</b>	<b>10,163</b>	<b>74,767</b>
<b>Total EU-15</b>	<b>7,815</b>	<b>63,604</b>	<b>9,702</b>	<b>73,194</b>
<b>Total EU-12</b>	<b>453</b>	<b>1,115</b>	<b>461</b>	<b>1,574</b>
Of which offshore and near shore	374	1,479	582	2,061

European Union: 74,767 MW  
Candidate Countries: 829 MW  
EFTA: 449 MW  
Total Europe: 76,152 MW

	Installed 2008	End 2008	Installed 2009	End 2009
<b>Candidate Countries (MW)</b>				
Croatia	1	18	10	28
FYROM*	0	0	0	0
Turkey	311	458	343	801
<b>Total</b>	<b>312</b>	<b>476</b>	<b>353</b>	<b>829</b>
<b>EFTA (MW)</b>				
Iceland	0	0	0	0
Liechtenstein	0	0	0	0
Norway	103	429	2	431
Switzerland	2	14	4	18
<b>Total</b>	<b>105</b>	<b>443</b>	<b>6</b>	<b>449</b>
<b>Other (MW)</b>				
Faroe Islands	0	4	0	4
Ukraine	1	90	4	94
Russia	0	9	0	9
<b>Total</b>	<b>1</b>	<b>103</b>	<b>4</b>	<b>107</b>
<b>Total Europe</b>	<b>8,686</b>	<b>65,741</b>	<b>10,526</b>	<b>76,152</b>

\*FYROM = Former Yugoslav Republic of Macedonia  
Note: Due to previous-year adjustments, 114.77 MW of project de-commissioning, re-powering and rounding of figures, the total 2009 end-of-year cumulative capacity is not exactly equivalent to the sum of the 2008 end-of-year total plus the 2009 additions.

## 2009 annual installations

### Wind installations 2009

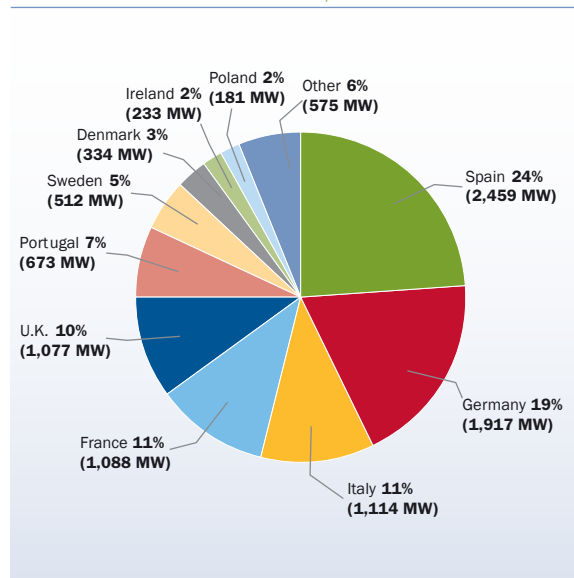
During 2009 10,526 MW of wind power was installed across Europe, 10,163 MW of that being in the European Union countries. This represents a market growth in the EU of 23% compared to 2008 installations. Of the 10,163 MW installed in the European Union, 9,581 MW was installed onshore, and 582 MW offshore. In 2009 the onshore wind power market grew 21% compared to the previous year, and the offshore wind power market grew 56% compared to the previous year.

Investment in EU wind farms in 2009 was €13 billion. The onshore wind power sector attracted €11.5 billion during 2009, the offshore wind power sector accounted for approximately €1.5 billion.

In terms of annual installations Spain was the largest market in 2009, installing 2,459 MW, compared to Germany's 1,917 MW. Italy, France and the United Kingdom battled for third, fourth and fifth place respectively, with Italy installing 1,114 MW, and France 1,088 MW and the UK 1,077 MW.

Europe's 2009 installations are characterised by a continuing strong development in the mature markets

EU MEMBER STATE MARKET SHARES FOR NEW CAPACITY INSTALLED DURING 2009. TOTAL 10,163 MW FIGURE 1.1



of Spain and Germany, together with countries such as Italy, France, and the United Kingdom. Portugal (673), Sweden (512), Denmark (334), and Ireland (233) also performed strongly.



Photo: Sisse Brimberg & Cotton Coulson

### 2009 power capacity installations

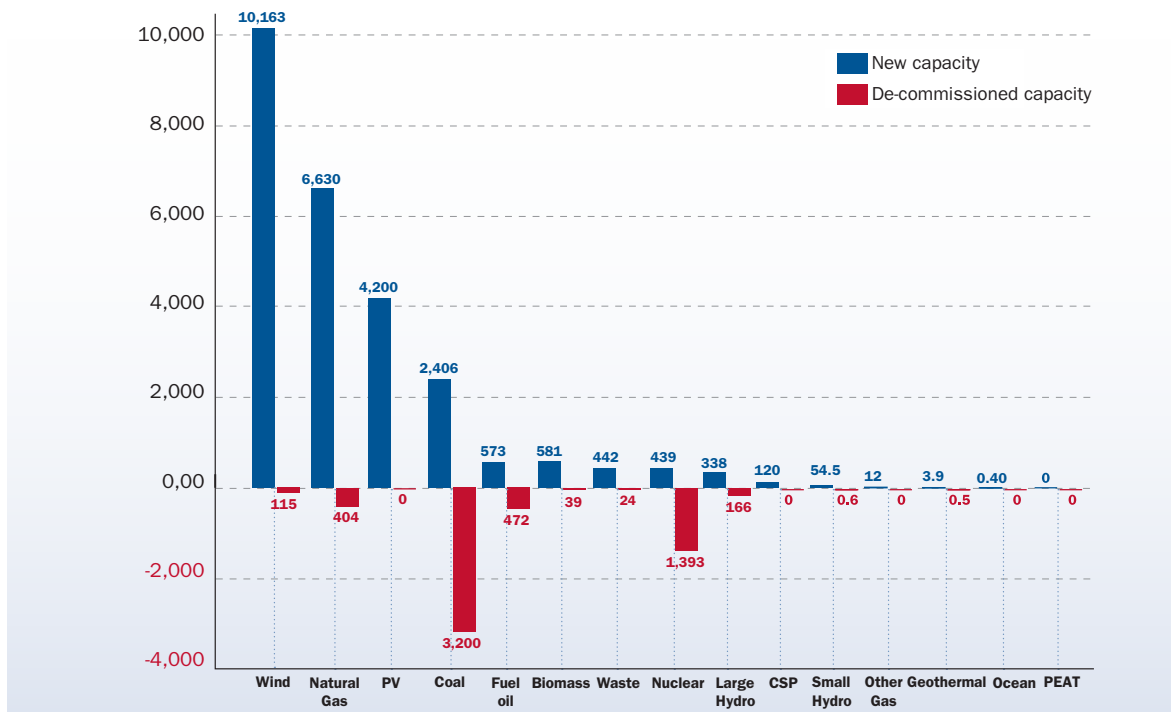
In 2009, for the second year running, in the EU more wind power was installed than any other electricity generating technology. 25,963 MW of new capacity was installed in total, of which 10,163 MW (39%) was wind and 6,630 MW was gas (26%). Solar PV - came in third at 4,200 MW<sup>1</sup> (16%). In addition 2,406 MW (9%) of new coal was installed, 581 MW (2.2%) of biomass, 573 MW (2.2%) of fuel oil, 442 MW (1.7%) of waste, 439 MW (1.7%) of nuclear, 338 MW (1.3%) of large hydro, 120 MW<sup>2</sup> (0.46%) of concentrated solar power,

55 MW (0.2%) of small hydro, 12 MW (0.04%) of other gas, 3.9 MW (0.01%) of geothermal, and 405 kW<sup>3</sup> of ocean power.

During 2009 the nuclear and coal power sectors decommissioned more MW than they installed: nuclear power sector decommissioned 1,393 MW, and the coal power sector decommissioned 3,200 MW, the continuation of an ongoing trend (see next section).

NEW INSTALLED CAPACITY AND DE-COMMISSIONED CAPACITY IN EU 2009 IN MW. TOTAL 25,963 MW

FIGURE 1.2



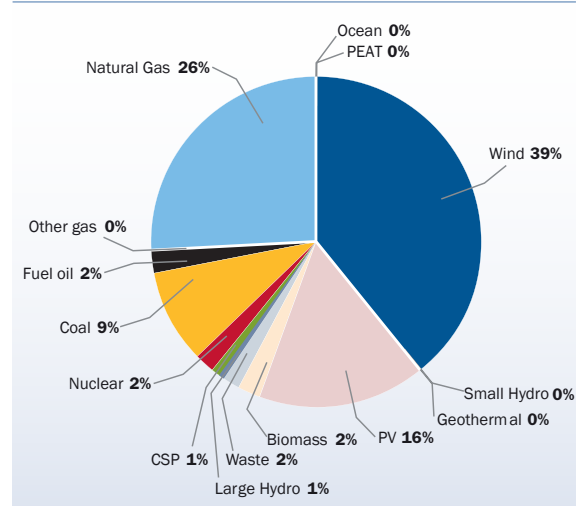
### 2009: renewables continue to dominate new power installations

2009 was the second year running where more wind power was installed than any other generating technology, and the second year running that renewables accounted for more than 50% of new installations, cementing a rising trend initiated over a decade ago.

In total, renewable energy accounted for 61% (15,904 MW) of all new generating capacity installed in the EU during 2009 (Figure 1.3).

SHARE OF NEW POWER INSTALLATIONS IN EU

FIGURE 1.3



<sup>1</sup> EPIA. January 2010. Provisional figure

<sup>2</sup> ESTELA. January 2010

<sup>3</sup> European Ocean Energy Association. January 2010

## Trends & cumulative installations

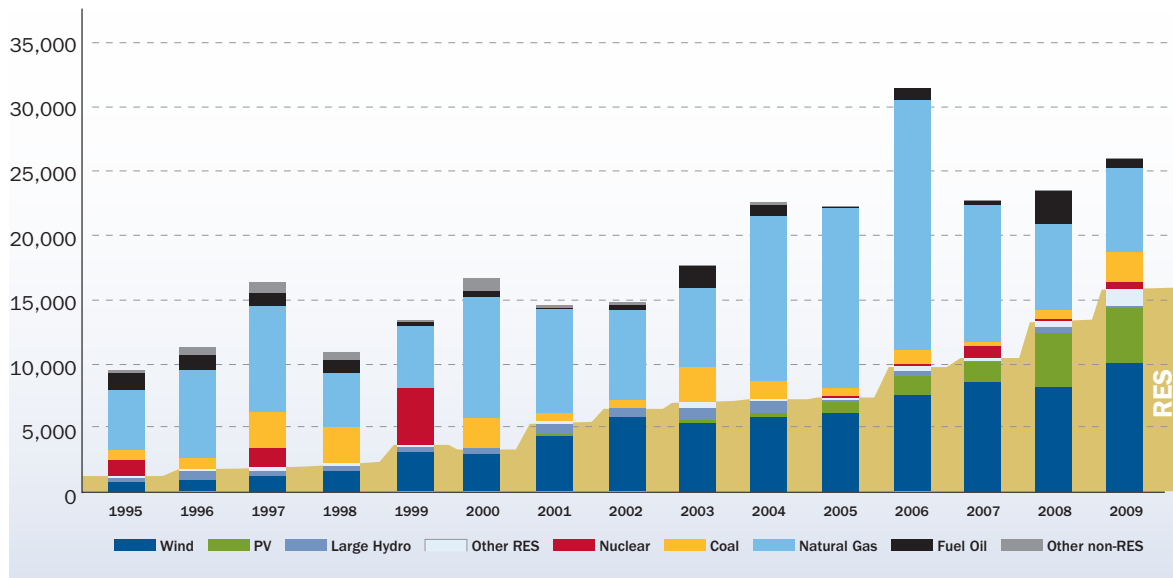
### Renewable power installations account for the majority of new installations

Since 2008, each year renewable electricity generating technologies have accounted for more than 50% of new power installations – mostly wind power, but

also solar PV, hydro power, and biomass. This trend has increased from just 14% of new installations in 1995, to 61% in 2009.

NEW INSTALLED CAPACITY PER YEAR IN MW

FIGURE 2.1



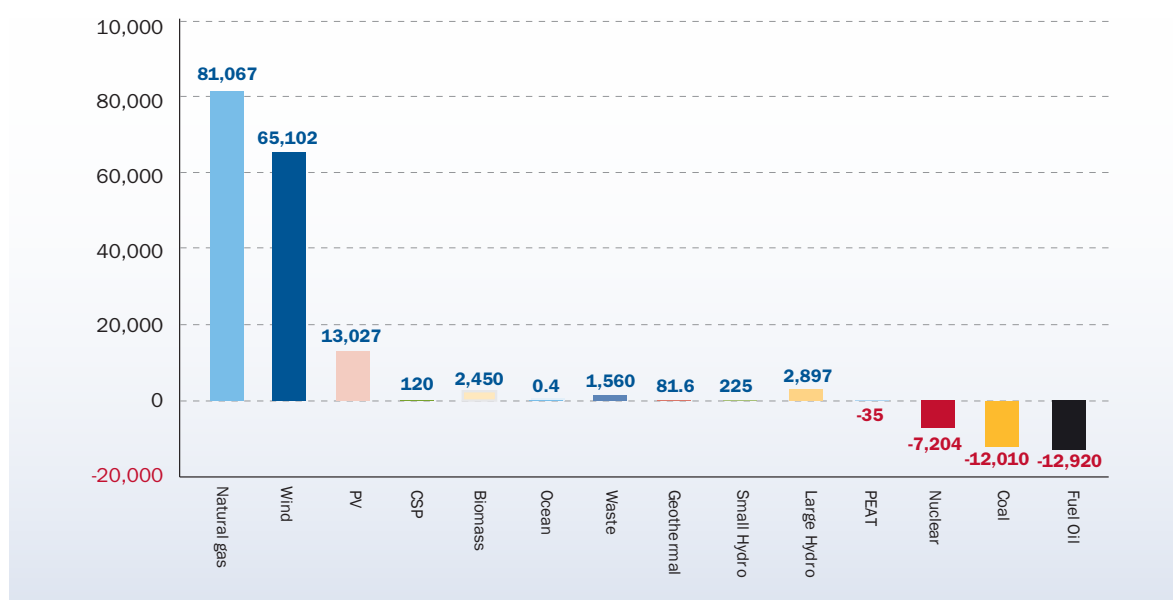
### Net changes in EU installed capacity

2009's installations continue the trend in changes in EU net installed capacity for the various electricity generating technologies from 2000 to 2009. The net growth of natural gas (81 GW) and wind power

(65.1 GW) came about at the expense of fuel oil (down 12.9 GW), coal (down 12 GW) and nuclear power (down 7.2 GW).

NET ELECTRICITY GENERATING INSTALLATIONS IN EU 2000 - 2009 IN MW

FIGURE 2.2

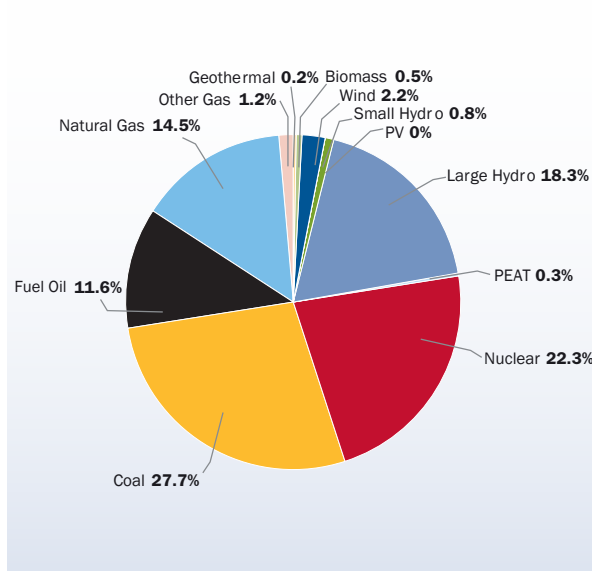


**Total installed power capacity**

Wind power's share of total installed capacity in the EU has increased from 2% in 2000 to 9% in 2009.

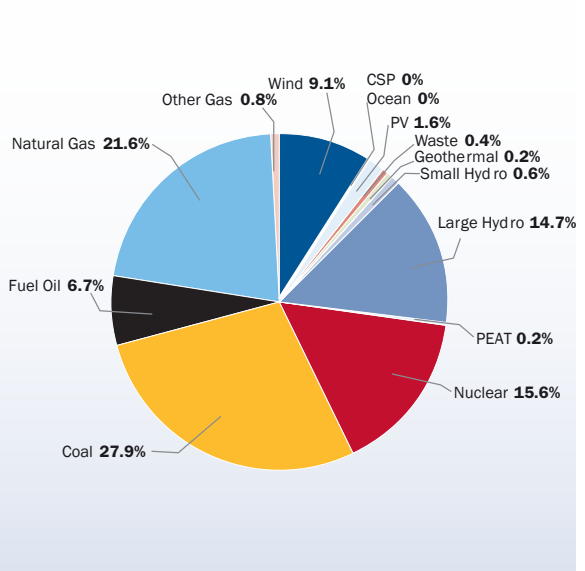
EU POWER CAPACITY MIX 2000

FIGURE 2.3



EU POWER CAPACITY MIX 2009

FIGURE 2.4



**Data for wind power installations**

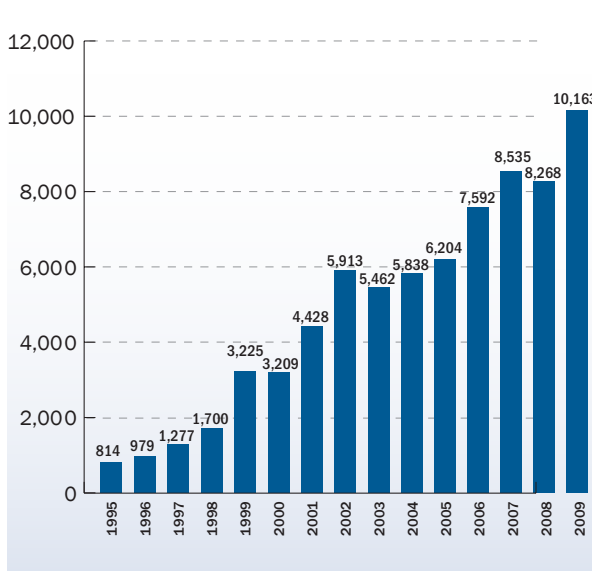
**Annual wind power installations**

Annual installations of wind power in the EU have increased steadily over the last 15 years from 472 MW in 1994 to 10,163 MW in 2009, an annual average market growth of 23%.

In 2009 Spain was the EU country with the largest annual market in terms of MW installations, followed by Germany, Italy, France, and the UK.

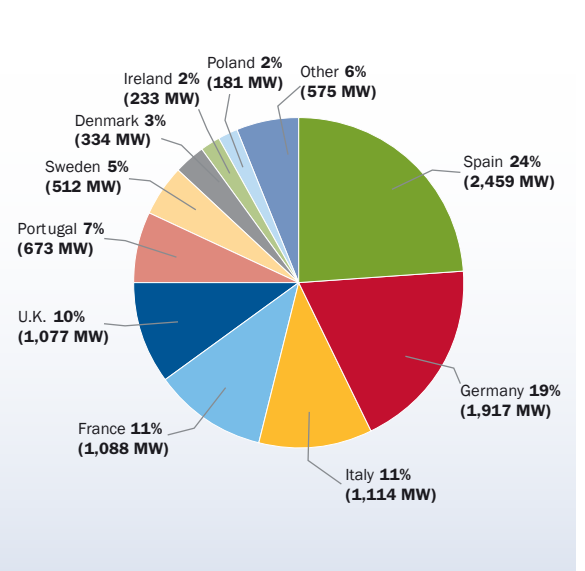
ANNUAL WIND POWER INSTALLATION IN EU IN MW

FIGURE 3.1



EU MEMBER STATE MARKET SHARES FOR NEW CAPACITY (AS OF END 2009). TOTAL 10,163 MW

FIGURE 3.2



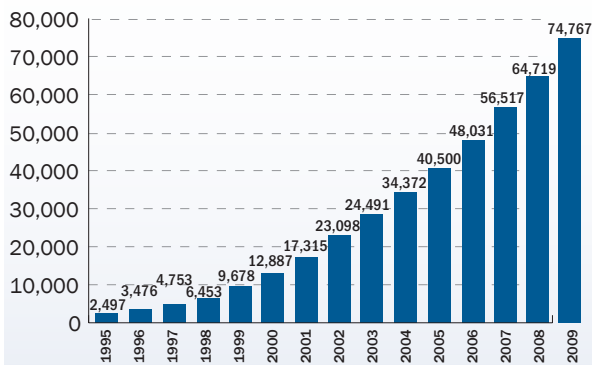


## Cumulative wind power installations

A total of 74,767 MW is now installed in the European Union.

Germany remains the EU country with the largest installed capacity, followed by Spain, Italy, France, and the UK.

CUMULATIVE WIND POWER INSTALLATIONS MW FIGURE 3.3



EU MEMBER STATE MARKET SHARES FOR TOTAL INSTALLED CAPACITY (2009), TOTAL 74,767 MW FIGURE 3.4

