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1 CHAPTER 5

1.1 IMPORTANCE OF RENEWABLE ENERGY SOURCES IN THE 6 PARTNER COUNTRIES

It is understood by renewable energy solutions, all those forms of energy whose utilization rate is lower than its rate of renewal.

Its sources can come from solar, gravitational and land. Agricultural, urban and industrial wastes are also considered renewable energy.

Portugal is a poor country in what concerns the availability of more common energy sources, so-called non-renewable sources (Oil, Coal, and Natural Gas). Portugal is very strongly dependent on the outside: during the 90^s, the country imported more than 80% of energy consumed.

Portugal remains dependent on imported fossil fuels in spite of being a country rich in sun and wind. Renewable energy solutions are of an extremely important role, representing the total national production of energy.

1.1.1 POPULATION

Portugal (1) is a Country of Southeast Europe. Situated in the western part of the Iberian Peninsula, it covers an area of 92 391 km². It is bordered to the north and east by Spain and the south and west by Atlantic Ocean.

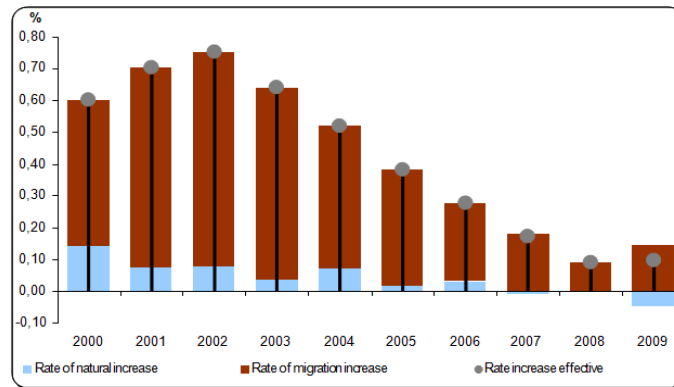
The Portuguese territory is composed of three territorial units: Continental Portugal or Mainland Portugal, the Azores and Madeira (Autonomous regions of Portugal) (1).

1.1.2 GROWING OF POPULATION AT AN ANNUAL RATE

According (2) to the National Statistics Institute (INE) Demographic trends in 2009 is characterized by a slight increase in resident population in Portugal (10.463), which was essential to the positive migration balance (+15.408 persons) as the natural growth appeared negative (-4945).

As a result of these movements, the resident population in Portugal on December 31, 2009, was estimated at 10.637.713 people (5.148.203 males and 5.489.510 females) (see Chart).

Chart - Rate of natural increase, Rate of migration increase and Rate increase effective (per hundred inhabitants), Portugal, 2000-2009 (2)



1.1.3 CONSUMPTION AND GROW CONSUMPTION OF ENERGY

The electricity consumption in Portugal has risen consistently in recent years at about 146.000 toe (tonnes oil equivalent) / year. Most of this energy comes from heat produced in power stations dedicated (3).

1.1.4 GROWTH OF WELFARE AND GROWTH OF ENERGY CONSUMPTION

The January 1 came into force legislation that requires the energy certification of all service buildings and housing, but the certification process has been running since 2006. The Ministry of Economy, Lisbon, has a certificate of public buildings with category B, but most government buildings are not equipped with energy certificate (3).

In practice, the entry into force of this law that is no more than assign a category for energy buildings, similar to what happens already with refrigerators, for example, if an owner does not possess the certificate cannot trade their property (3) .

In a first phase, the technician makes an evaluation of buildings through the plants, but mainly in relation to older buildings, it is essential that the technician perform measurements on the place to be certifying (3).

According to the Energy Agency (ADENE), at least 10 000 buildings per year will be evaluated according to the level of indoor air quality (IAQ) within the system of energy certification (3).

For those who own a building / housing-ranked (with A or A+) will have access to tax benefits on IRS. There are special conditions for historic buildings but all cases must be reviewed by a specialist (3).

1.1.5 TIME-EVOLUTION OF PRIMARY ENERGY AND ELECTRICITY CONSUMPTION ENERGY POLICY

In 2001, the Portuguese government launched a new energy policy instrument – the E4 Programme (Energy Efficiency and Endogenous Energies), consisting of a set of multiple, diversified measures aimed at promoting a consistent, integrated approach to energy supply and demand. By promoting energy efficiency and the use of renewable energy (endogenous) sources, the programme seeks to upgrade the competitiveness of the Portuguese economy and to modernize the country's social fabric, while preserving the environment by reducing gas emissions, especially the carbon dioxide responsible for climate change (4).

While in the past 5 years the main priorities were focused on the introduction of natural gas (aiming at progressively replacing oil and coal in the energy balance) and liberalization of the energy market (by opening this former state-owned sector to competition and private investment), the emphasis for the next 8-10 years will be put on energy efficiency (supply and demand sides) and use of endogenous (renewable) energy. In 2010, Portugal was getting 45 percent of its electricity from renewables - an increase of 28 percent in 5 years.

The largest hydroelectric power station is at the Alto Lindoso dam, with a capacity of 630 MW. Portugal has about 100 small hydro systems, with a capacity of 256 MW, which produce 815 GWh/year.

In March 2007, there was 1,874 MW of wind power generating capacity installed in Portugal, with another 908 MW under construction. The major wind turbine manufacturers in the Portuguese market are Enercon, Vestas and Gamesa.

The 240 MW Alto Minho Wind Farm in the Viana do Castelo district became fully operational in November, 2008. At the time of completion it was Europe's largest on-shore wind farm.

Other major wind farms which are operating, or under construction, include: Arada-Montemuro Wind Farm (112 MW), Gardunha Wind Farm (106 MW), Pinhal Interior Wind Farm (144 MW), Ventominho Wind Farm (240 MW).

A large photovoltaic power project, the Serpa solar power plant, has been completed in Portugal, in one of Europe's sunniest areas. The 11 megawatt plant covers 150 acres (0.61 km²) and has 52,000 PV panels. The panels are raised 2 metres off the ground and the area will remain productive grazing land. The plant provides enough energy for 8,000 homes and will save an estimated 30,000 tonnes of carbon dioxide emissions per year.

Not far from there, Moura photovoltaic power station is under construction. With more than 376,000 solar modules, it will have an installed capacity of 62MWp when it is finished in 2010. The first stage of construction is scheduled for completion in 2008. A solar panel factory is also being built in the city of Moura, where there are plans to build a research lab.

Portugal main investment of use this type of energy is in Azores. There is a small use since the 80's in Chaves and S. Pedro do Sul, Continental Portugal with 3 MWt.

In Azores the use of Geothermal energy is very common, with investments in 8 of the 9 Islands, producing about 235.5 MWt. In 2003, 25% of the electricity consumed in São Miguel was produced by geothermal energy.

2 CHAPTER 6

2.1 CURRENT STATUS OF RENEWABLE ENERGY IN THE 6 PARTNER COUNTRIES

2.1.1 CURRENT STATUS OF RENEWABLE ENERGY IN PORTUGAL

The total renewable installed capacity reached 9321 MW at the end of June 2010. The increase in power, for May, is due to the wind power installed and small hydro power (3).

The total production of electricity from renewables, increased by 90% in 1st half of 2010 compared to same period in 2009. This growth continues to contribute strongly the behavior of its water component that, in the second quarter, even triple its production relative to that found in the same quarter last year (3).

The wind power production in the 1st half of 2010 grew 49% over the same period of 2009. In June, production was 42% higher than in the corresponding month of previous year and there is a decrease in production in June, according to seasonally (3).

2.1.2 RENEWABLES ENERGY IN ELECTRICITY PRODUCTION

At the end of June 2010, Portugal had 9321 MW of installed capacity for electricity generation from renewable energy sources in (RES). The increase of installed power to the end of June, for May, was due to the entry into operation of two small hydro power and enhanced power in three of the existing wind farms (3).

The incorporation of RES in the gross consumption of electricity, for the purposes of EU Directive, was 45% in 2009. Portugal was in 2008, the fifth country in the European Union (EU 15) with greater incorporation of renewable energy. The change in the position of Portugal in 2008 was due to a decrease of about 30%, occurred in hydro production (3).

The production of electricity from renewables grows, following the evolution of its water component (53% of installed capacity in 2009). Comparing the production recorded in the first half of 2010 with the registered in same period of 2009, there is an increase in output (17.3 versus 9.1 TWh), while production in hydro power grows 128%, as was found for the first five months of the year (3).

The production of electricity from RES is concentrated in the north of Continental Portugal, mainly in the districts of Viana do Castelo, Bragança, Viseu, Coimbra, Vila Real, Castelo Branco and Braga (1084, 1063, 1040, 994, 856, 650 and 646 MW). Excluding large hydro, Viseu, Coimbra, Castelo Branco, Vila Real, Viana do Castelo, Lisboa, Guarda, Leiria, Santarém and Braga are the leading districts in terms of installed capacity (790, 727, 540, 476, 419, 375, 265, 233, 206 and 191 MW), corresponding to power of this ten districts 83% of the total in June 2010 (3).

2.1.3 THE WIND ENERGY (THE NATIONAL WIND ENERGY SECTOR)

The wind power installed by the end of June 2010 stood at 3802 MW, distributed over 205 farms, with a total of 1996 wind turbines along the entire Continental Portugal. 38% of installed capacity is located in parks with power equal to or less than 25 MW.

Production in 2009 stood at 2231 hours equivalent per MW, with 72% of energy generated in wind farm with more than 2000 hours in 2009.

The districts with the largest installed capacity in June 2010, are Viseu, Coimbra, Castelo Branco, Vila Real, Viana do Castelo, Lisboa, Leiria, Santarém, Braga and Guarda (660, 508, 495, 385, 356, 301, 231, 157, 151 and 150 MW). The districts with the greatest wind resource in 2009 were Santarém, Guarda, Lisboa, Porto, Bragança, Coimbra, Vila Real and Castelo Branco (2840, 2655, 2497, 2377, 2370, 2312, 2300, 2251 and 2207 equivalent hours).

2.1.3.1 RENEWABLES IN ELECTRICITY PRODUCTION

2.1.3.1.1 ENERGY AND POWER BY SOURCE OF ENERGY

Gráfico...B.1 - Evolução da energia produzida a partir de fontes renováveis (TWh)

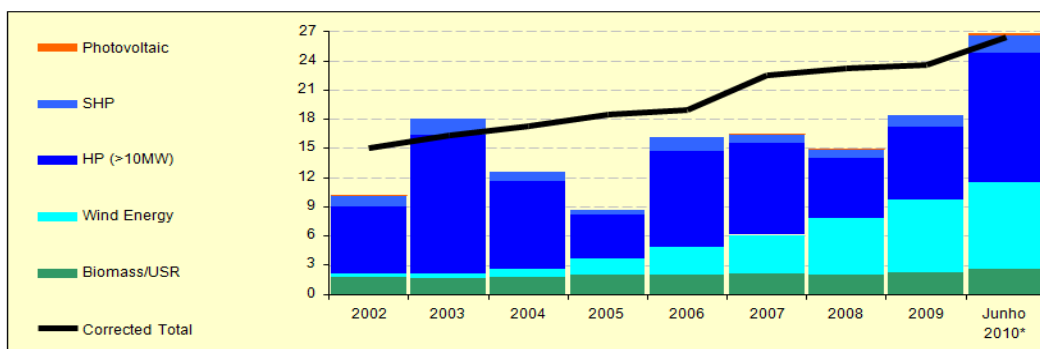


Table - Historical development of electricity produced by renewable sources (GWh) Mainland Portugal (3)

	2002	2003	2004	2005	2006	2007	2008	2009	June 2010
Total Hydro Power	8 096	15 894	10 053	5 000	11 323	10 351	7 102	8 717	15 040

Hydro Power (>30 MW)	6 896	14 303	9 065	4 454	9 897	9 406	6 190	7 547	13 241
Small Hydro Power (>10 e <=30 MW)	615	822	487	265	702	504	478	618	945
Small Hydro Power (<= 10 MW)	585	769	501	281	724	441	434	552	854
Wind Energy	341	468	787	1 741	2 892	4 007	5 720	7 440	9 008
Biomass (with cogeneration)	1 166	1 069	1 206	1 286	1 302	1 361	1 381	1 390	1 465
Biomass (without cogeneration)	42	43	52	64	78	149	146	311	487
Solid Urban Residues	518	523	475	545	532	498	441	458	485
Biogas	2.5	2.3	14	31	33	55	67	80	87
Photovoltaic	1.8	2.6	2.9	3.8	4.1	23.6	41.4	159.9	189.5
Waves/Tides									
Total	10 167	18 002	12 590	8 671	16 164	16 445	14 898	18 556	26 761
Index Producibility to Hydro Power (IPH Directive - 1997)	0.623	1.115	0.680	0.336	0.800	0.631	0.461	0.634	1.024
Corrected Total Hydro Power (IPH Directive)	12 995	14 255	14 784	14 881	14 154	16 404	15 406	13 749	14 688
Corrected Total	15 066	16 363	17 321	18 552	18 995	22 498	23 202	23 588	26 409
Gross Production + Import Balance (I B). (GWh)	46 652	48 220	50 017	51 729	52 749	52 952	53 558	52 808	53 970
% de renewable (Real)	21.8%	37.3%	25.2%	16.8%	30.6%	31.1%	27.8%	35.1%	49.6%
% de renewable (Directive)	32.3%	33.9%	34.6%	35.9%	36.0%	42.5%	43.3%	44.7%	48.9%

Table - Historical evolution of the total installed power in renewable energy (MW) Mainland Portugal (3)

	2002	2003	2004	2005	2006	2007	2008	2009	June 2010	AAGR ¹
Total Hydro Power	4 288	4 292	4 561	4 752	4 784	4 787	4 792	4 821	4 829	1.7%
Hydro Power (>30MW)	3 783	3 783	4 043	4 234	4 234	4 234	4 234	4 234	4 234	1.6%
Small Hydro Power (>10 and <=30 MW)	251	251	251	232	263	263	263	263	263	0.7%
Small Hydro Power (<= 10 MW)	254	258	267	286	287	290	295	324	332	3.5%
Wind Energy	175	253	537	1 047	1 681	2 446	3 012	3 566	3 802	53.8%
Biomass (with cogeneration)	372	352	357	357	357	357	357	359	360	-0.5%
Biomass (without cogeneration)	8	8	12	12	24	24	24	101	106	43.7%
Urban Solid Residues	88	88	88	88	88	88	88	88	88	0.0%
Biogas	1.0	1.0	7.0	8.2	8.2	12.4	12.4	20.0	21.0	53.4%
Photovoltaic	1.5	2.1	2.7	2.9	3.4	14.5	58.5	106.1	111.1	83.8%
Waves/Tides							4.2	4.2	4.2	
Total	4 934	4 996	5 565	6 267	6 946	7 729	8 348	9 065	9 321	9.1%

¹ - AAGR - Average Annual Growth Rate between 2002 and 2009

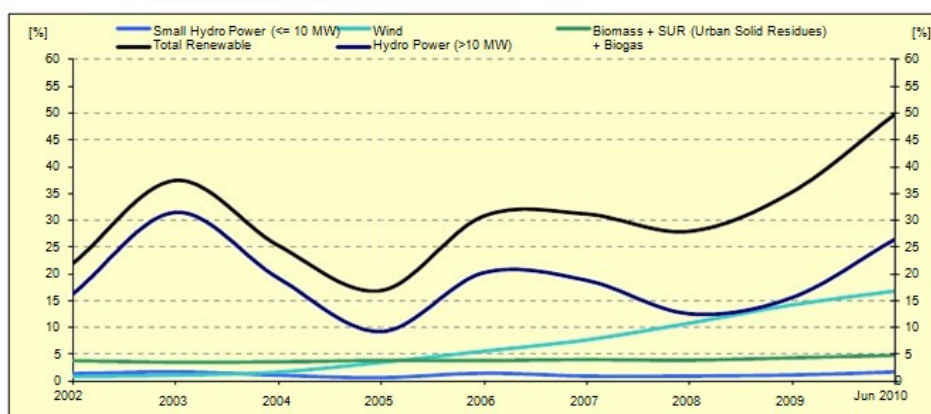


Chart - Evolution of the weight of the production of renewable energy in gross production + import balance (Mainland Portugal) (3)

Table - Evolution of the weight of the production of renewable energy in gross production + import balance (Mainland Portugal) (3)

	2002	2003	2004	2005	2006	2007	2008	2009	June 2010
Total Hydro Power	17.4	33.0	20.1	9.7	21.5	19.5	13.3	16.5	27.9
Hydro Power (>30MW)	16.1	31.4	19.1	9.1	20.1	18.7	12.5	15.5	26.3
Small Hydro Power (>10 and <=30)	14.8	29.7	18.1	8.6	18.8	17.8	11.6	14.3	24.5
Small Hydro Power (<= 10 MW)	1.3	1.7	1.0	0.5	1.3	1.0	0.9	1.2	1.8
Hydro Power (>30MW)	1.3	1.6	1.0	0.5	1.4	0.8	0.8	1.0	1.6
Wind Energy	0.7	1.0	1.6	3.4	5.5	7.6	10.7	14.1	16.7
Biomass + Urban Solid Residues (USR) + Biogas	3.7	3.4	3.5	3.7	3.7	3.9	3.8	4.2	4.7
Biomass (with cogeneration)	2.5	2.2	2.4	2.5	2.5	2.6	2.6	2.6	2.7
Biomass (without cogeneration)	0.1	0.1	0.1	0.1	0.1	0.3	0.3	0.6	0.9
Solid Urban Residues	1.1	1.1	0.9	1.1	1.0	0.9	0.8	0.9	0.9
Biogas	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.2
Photovoltaic	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.4
Total de renewable	21.8	37.3	25.2	16.8	30.6	31.1	27.8	35.1	49.6

Table - Evolution of the weight of the production of each technology on the total of renewable energy production (Mainland Portugal) (3)

	2002	2003	2004	2005	2006	2007	2008	2009	June 2010
Total Hydro Power	79.6	88.3	79.8	57.7	70.1	62.9	47.7	47.0	56.2

Hydro Power (>30MW)	73.9	84.0	75.9	54.4	65.6	60.3	44.8	44.0	53.0
Small Hydro Power (>10 and <=30 MW)	67.8	79.5	72.0	51.4	61.2	57.2	41.5	40.7	49.5
Small Hydro Power (<= 10 MW)	6.0	4.6	3.9	3.1	4.3	3.1	3.2	3.3	3.5
Hydro Power (>30MW)	5.8	4.3	4.0	3.2	4.5	2.7	2.9	3.0	3.2
Wind Energy	3.4	2.6	6.3	20.1	17.9	24.4	38.4	40.1	33.7
Biomass + Urban Solid Residues (USR) + Biogas	17.0	9.1	13.9	22.2	12.0	12.5	13.7	12.1	9.4
Biomass (with cogeneration)	11.5	5.9	9.6	14.8	8.1	8.3	9.3	7.5	5.5
Biomass (without cogeneration)	0.4	0.2	0.4	0.7	0.5	0.9	1.0	1.7	1.8
Solid Urban Residues	5.1	2.9	3.8	6.3	3.3	3.0	3.0	2.5	1.8
Biogas	0.0	0.0	0.1	0.4	0.2	0.3	0.4	0.4	0.3
Photovoltaic	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.9	0.7
Total de renewable	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Chart - Evolution of average yearly hours of equivalent production by technology (A) (3)

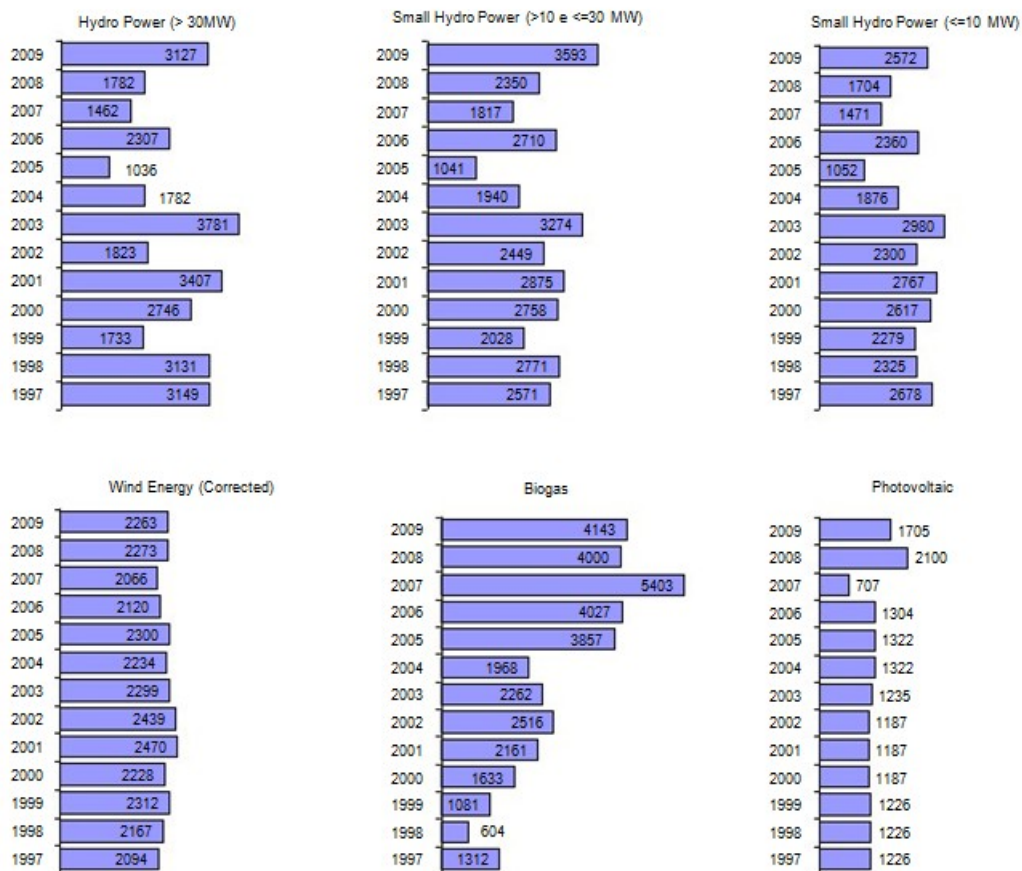
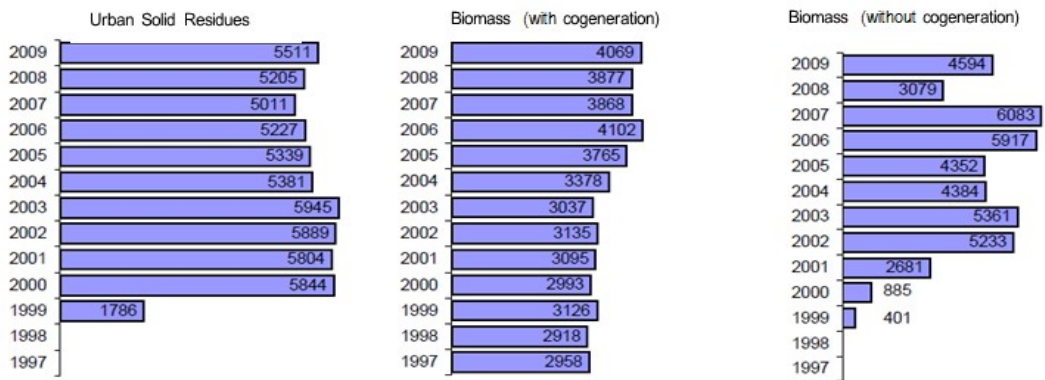


Chart 5 - Evolution of average yearly hours of equivalent production by technology (C) (3)



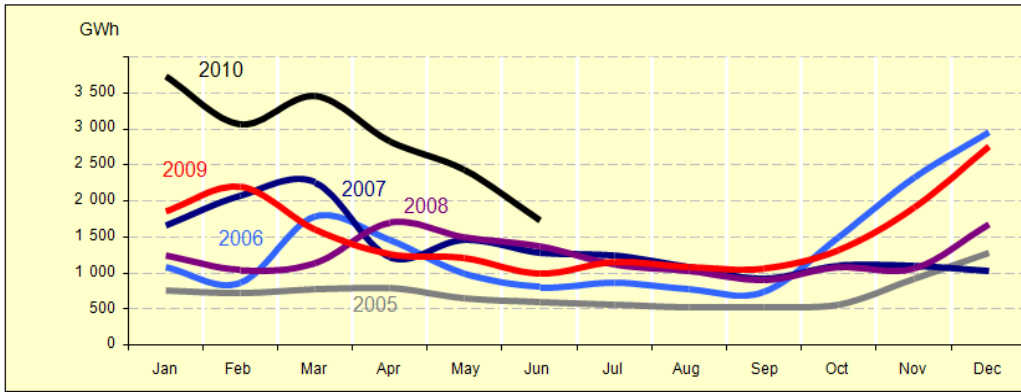


Chart - Monthly production of electricity from renewable sources (GWh) Mainland Portugal (3)

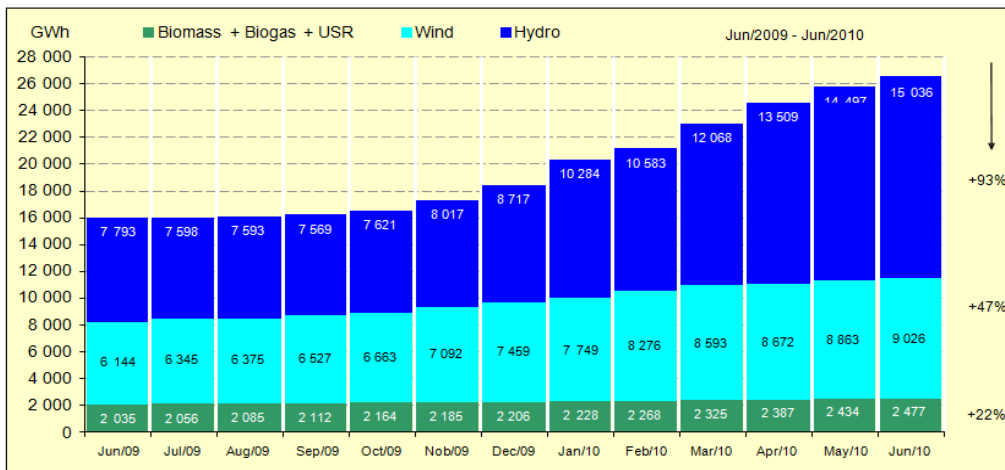


Chart - Production of electricity from renewable energy sources - Current years (GWh) Mainland Portugal (3)

Mainland Portugal

Table - Current state of electricity generation from renewable energy (3)

	Production (GWh)									
	2°Qua 2008	3°Qua 2008	4°Qua 2008	1°Qua 2009	2°Qua 2009	3°Qua 2009	4°Qua 2009	1°Qua 2010	2°Qua 2010	
Total Hydro Power	2 798	1 442	1 434	3 437	1 478	1 220	2 582	6 790	4 449	
Hydro Power (>30MW)	2 356	1 357	1 299	2 904	1 314	1 169	2 160	5 902	4 010	
Small Hydro Power (>10 e <=30 MW)	226	54	71	283	83	28	224	464	230	
Small Hydro Power (<= 10 MW)	215	31	64	250	81	23	198	424	210	
Wind Energy	1 231	1 098	1 871	1 739	1 434	1 472	2 795	2 872	1 868	
Biomass (with cogeneration)	339	366	343	340	342	354	354	333	398	
Biomass (without cogeneration)	38	36	36	32	73	97	109	126	155	
Solid Urban Residues	130	123	113	108	95	135	120	117	114	
Biogas	16	17	18	19	19	20	22	22	23	
Photovoltaic	11	12	8	25	47	55	32	34	64	
Waves/Tides										
Total	4 564	3 094	3 823	5 700	3 488	3 354	6 014	10 294	7 071	
Total (Without/ Hydro Power (>30MW))	2 208	1 737	2 524	2 796	2 174	2 184	3 854	4 392	3 061	

2.1.3.1.2 ENERGY AND POWER BY DISTRICT

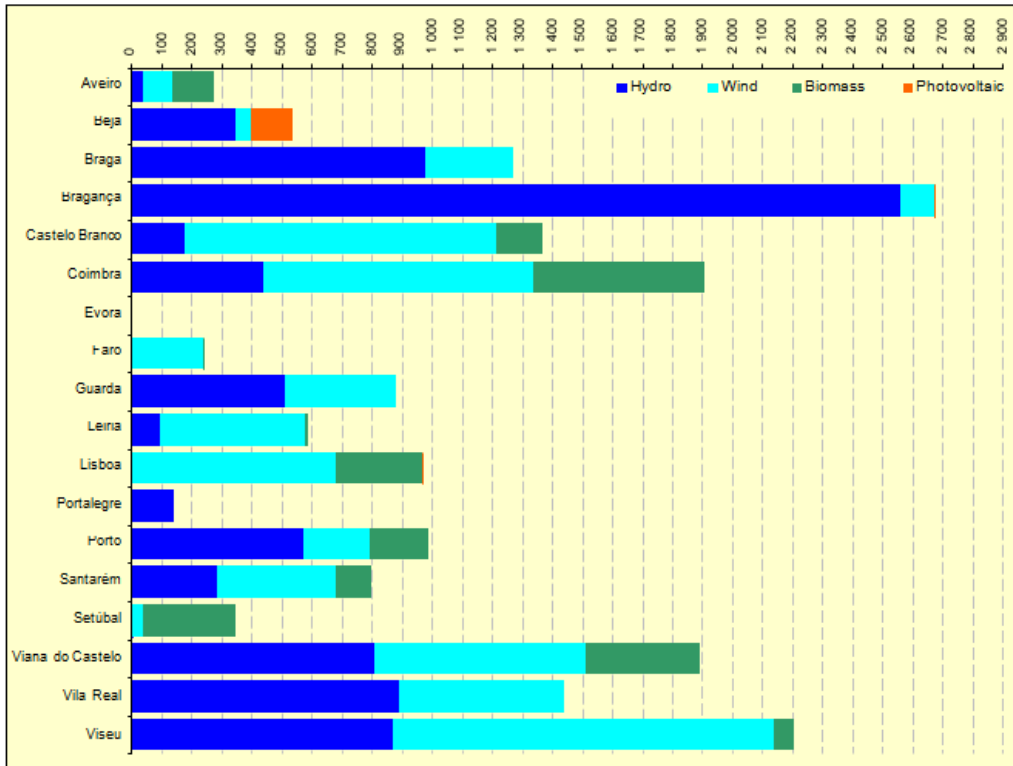


Chart - Production of electricity from renewable sources by district in 2009 (GWh) Mainland Portugal (3)

Table - Evolution of electricity produced by renewable sources (GWh) Continental Portugal
(excludes small photovoltaic) (3)

Districts	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Total Mainland	13 314	16 078	10 166	18 000	12 588	8 667	16 160	16 421	14 890	18 526
Aveiro	150	177	200	210	206	179	278	259	284	267
Beja	0.7	2.9	1.1	0.8	105	84	171	299	305	536
Braga	949	1 021	674	959	783	660	1 438	1 380	1 279	1 271
Bragança	3 489	4 161	2 070	5 049	3 308	1 745	3 214	3 351	2 098	2 674
Castelo	375	528	299	636	344	235	665	887	1 126	1 370
Coimbra	1 123	1 275	1 155	1 295	984	1 103	1 502	1 230	1 366	1 910
Évora	0.6	1.3	0	0	0	0	0	0	0	0
Faro	19	22	21	23	45	49	49	74	102	241
Guarda	657	878	590	1 111	596	335	795	729	755	879
Leiria	149	190	99	233	136	132	318	412	436	586
Lisboa	339	364	358	373	353	573	669	749	872	970
Portalegre	274	454	205	551	350	83	294	310	161	142
Porto	898	812	751	1 067	757	532	926	912	796	981
Santarém	595	911	477	1 122	619	336	1 089	853	690	803
Setúbal	312	305	310	230	349	394	379	318	321	358
Viana do Castelo	1 272	1 612	786	1 161	721	507	1 253	1 232	1 407	1 897
Vila real	1 521	1 911	1 141	2 136	1 601	918	1 459	1 541	1 167	1 440
Viseu	1 189	1 453	1 029	1 842	1 332	801	1 660	1 886	1 726	2 201

Table - Historical evolution of the total installed capacity of renewable by district (MW)
Portugal Continental (excludes small photovoltaic) (3)

Districts	2001	2002	2003	2004	2005	2006	2007	2008	2009	June 2010
Total Mainland	4 818	4 932	4 994	5 562	6 264	6 959	7 719	8 331	9 036	9 292
Aveiro	74	74	79	81	81	118	118	118	140	140
Beja	1.4	1.4	1.4	261	261	271	282	348	367	380
Braga	295	298	300	324	598	601	611	636	646	646
Bragança	986	986	986	992	992	992	992	1 001	1 063	1 063
Castelo Branco	153	153	166	170	170	327	554	602	622	650
Coimbra	451	464	464	505	643	685	691	755	949	994
Évora	1.2	1.2	1.2	1.2	1.0	1.2	1.0	1.2	1.2	1.2
Faro	13	13	23	23	24	36	40	50	146	146
Guarda	293	304	307	326	326	360	399	444	466	466
Leiria	50	50	50	61	111	160	202	235	283	283
Lisboa	65	66	79	129	192	250	265	312	361	375
Portalegre	152	152	152	152	153	153	152	152	153	153
Porto	284	284	285	301	332	337	377	382	407	407
Santarém	305	310	310	330	389	449	436	434	469	469
Setúbal	103	103	103	107	124	124	124	124	138	139
Viana do Castelo	722	748	729	763	780	819	1 080	1 080	1 080	1 084
Vila Real	482	492	521	572	585	627	629	690	743	856
Viseu	386	430	437	462	502	650	766	968	1 003	1 040

Table - Evolution of the total installed capacity of renewables, excluding large hydro > 30 MW and small photovoltaics (MW) Portugal (3)

Districts	2001	2002	2003	2004	2005	2006	2007	2008	2009	June 2010
Total	1 035	1 149	1 211	1 519	2 030	2 668	3 484	4 097	4 802	5 057
Aveiro	74	74	79	81	81	118	118	118	140	140
Beja	1	1	1	1	2	12	23	89	108	121
Braga	47	50	51	76	158	161	171	196	206	206
Bragança	25	25	25	31	31	31	31	39	102	102
Castelo Branco	43	43	56	60	60	203	444	492	513	540
Coimbra	184	197	197	238	376	408	424	488	682	727
Évora	1.2	1.2	1.2	1.2	1.0	1.2	1.0	1.2	1.2	1.2
Faro	13	13	23	23	24	36	40	50	146	146
Guarda	92	102	106	125	125	159	197	242	265	265
Leiria	0	0	0	11	61	95	153	185	233	233
Lisboa	65	66	79	129	192	236	265	312	361	375
Portalegre	19	19	19	19	19	19	18	18	19	19
Porto	45	45	46	63	93	98	138	143	168	168
Santarém	27	32	32	52	110	171	158	156	191	191
Setúbal	103	103	103	107	124	124	124	124	138	139
Viana do Castelo	57	83	64	98	115	154	415	415	415	419
Vila Real	102	112	141	192	205	247	249	310	363	476
Viseu	135	180	187	212	252	397	515	718	753	790

2.1.3.1.3 INTERNATIONAL COMPARISON

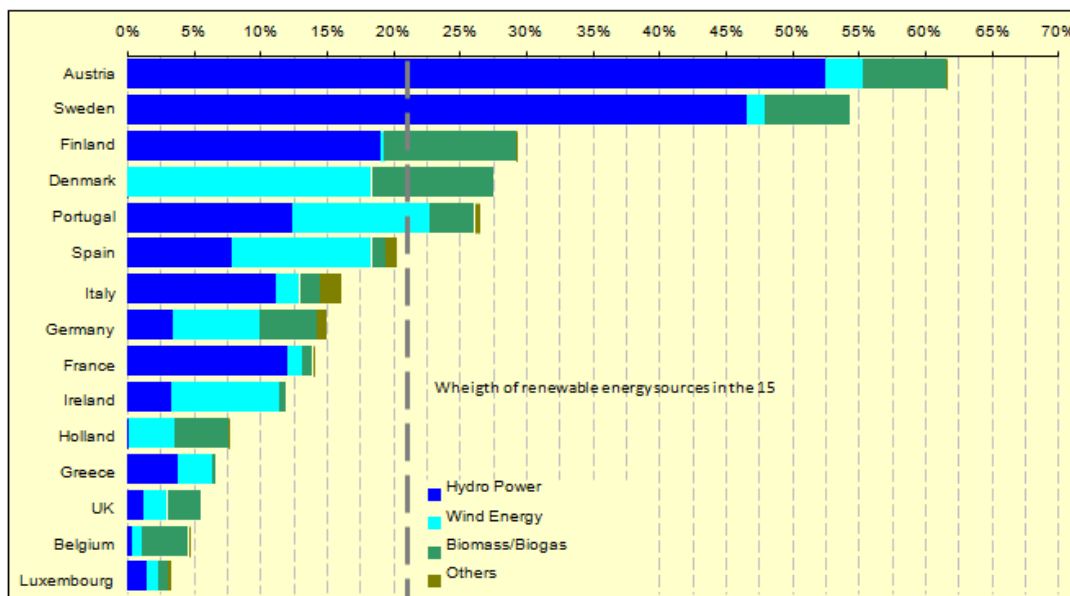


Chart - Weight of electricity generation from renewable energy in gross production + import balance in 2008 (3)

Table - International comparison among OECD countries (3)

	Total 2008 TWh	RES 1999 GWh	RES 2008 GWh	% RES 1999	% RES 2008	Weight (%) in 2008				Δ% RES 08/99
						Hydro	Wind	Biomass + Biogas	Others	
Austria	71.7	43 823	44 179	74.9	61.6	85.3	4.5	10.2	0.0	0.8
Sweden	147.7	74 953	80 296	50.8	54.4	85.7	2.5	11.9	0.0	7.1
Finland	89.9	21 525	26 339	26.7	29.3	65.0	1.0	34.0	0.0	22.4
Denmark	37.8	4 860	10 422	13.3	27.6	0.2	66.5	33.3	0.0	114.4
Portugal	55.2	8 860	14 649	21.4	26.5	46.6	39.1	12.6	1.6	65.3
Spain	298.1	30 660	60 537	14.3	20.3	38.5	52.0	5.3	4.1	97.4
Italy	357.5	58 423	57 537	19.0	16.1	69.5	11.2	9.4	9.9	-1.5
Germany	613.2	37 211	91 607	6.7	14.9	22.8	44.1	28.7	4.4	146.2
France	526.5	80 827	74 019	17.5	14.1	86.2	7.7	5.3	0.7	-8.4
Ireland	29.4	1 368	3 507	6.1	11.9	27.6	68.7	3.6	0.0	156.4
Holland	123.4	4 873	9 483	4.6	7.7	1.1	44.9	53.6	0.4	94.6
Greece	65.0	5 187	4 341	10.4	6.7	57.4	38.3	4.2	0.1	-16.3
UK	401.3	13 076	22 023	3.4	5.5	22.8	32.3	44.8	0.1	68.4
Belgium	95.1	2 703	4 436	3.2	4.7	9.2	14.0	75.8	0.9	64.1
Luxembourg	7.9	816	265	12.6	3.4	45.7	23.0	23.8	7.5	-67.5
Total EU 15	2 920	389 165	503 640	15.2	17.2	57.1	23.2	17.0	2.6	29.4
New Zealand	43.8	26 747	28 124	70.2	64.2	79.3	3.8	2.0	14.9	5.1
Canada	600.2	353 538	384 410	64.5	64.0	96.9	0.8	2.3	0.0	8.7
Mexico	257.2	38 955	49 248	20.2	19.1	79.0	0.5	6.2	14.3	26.4
Turkey	198.3	34 930	34 330	29.5	17.3	97.0	2.3	0.4	0.3	-1.7
USA	4 387.4	389 079	431 206	9.8	9.8	70.1	12.2	13.8	4.0	10.8
Japan	1 085.2	121 972	95 906	11.4	8.8	77.4	3.0	16.7	2.9	-21.4
Australia	265.7	18 118	18 468	8.9	7.0	65.5	17.8	16.7	0.1	1.9
Korea	443.0	6 470	4 379	2.4	1.0	70.1	8.7	15.2	6.0	-32.3

Notes: In this comparison it is excluded the production pumping water and solid waste (Solid Urban Residues) considered non-renewable. The 2008 refers to the total gross output of electricity + import balance. Other includes geothermal, solar, waves and tides.

2.1.3.1.4 HYDRO POWER (INSTALLED WITH POWER PLANTS > 30MW)

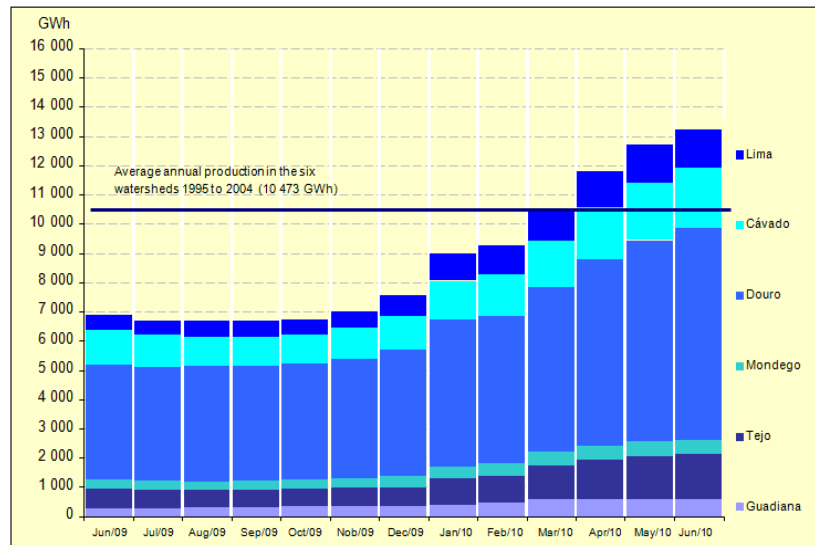


Chart - Electric power production by basin - Current Year (GWh) Mainland Portugal (3)

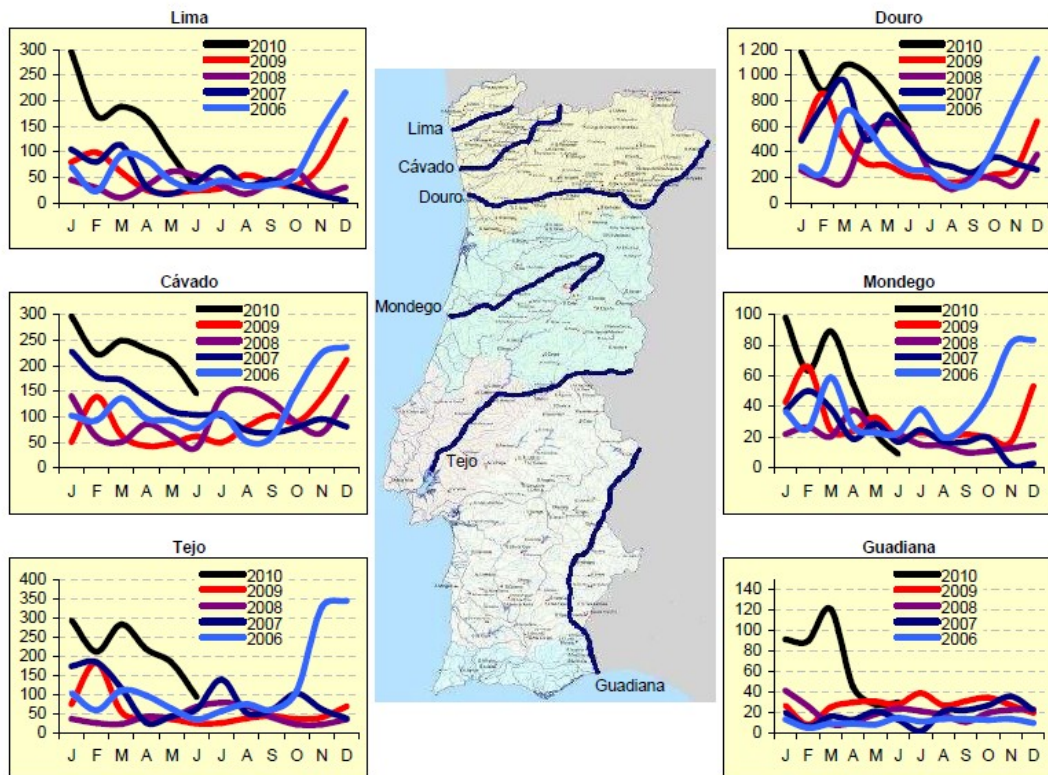


Chart - Monthly production of electricity by basin (GWh) (3)

2.1.3.1.5 THE NATIONAL WIND SECTOR

Chart - Evolution of installed Wind power in Portugal (MW) (3)

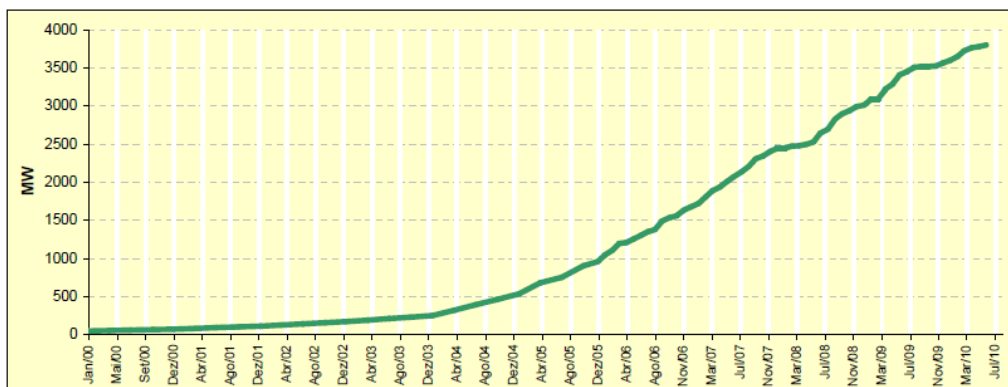


Table - Characterization of installed wind power in Continental Portugal (3)

	2002	2003	2004	2005	2006	2007	2008	2009	June 2010	TCMA
Installed power (MW)	175	253	537	1 047	1 681	2 446	3 012	3 566	3 802	46.9%
Number farms installed	24	42	71	103	139	152	174	195	205	30.8%
Number of turbines installed	213	276	441	702	1 003	1 137	1 609	1 879	1 996	32.3%
Average Power (MW)										
Farms	7.3	6.0	7.6	10.2	12.1	16.1	17.3	18.3	18.5	12.4%
The turbines installed	0.8	0.9	1.2	1.5	1.7	2.2	1.9	1.9	1.9	11.1%
The turbines installed in each	0.5	1.2	1.7	2.0	2.1	5.7	1.2	2.1	2.0	19.0%

¹ -AAGR - Average Annual Growth Rate between 2001 and 2009

MW	Nº de Farms					Power (MW)				
	2007	2008	2009	June 2010	% 2010	2007	2008	2009	June 2010	% 2010
Total	13	152	195	205	100%	1 681	2 446	3 012	3 802	100%
≤ 1	22	22	23	23	11%	16	15	15	15	0%
> 1 ≤ 10	62	67	73	75	37%	296	278	311	350	9%
> 10 ≤ 25	47	56	66	72	35%	599	701	842	1 121	29%
> 25 ≤ 50	13	20	19	20	10%	264	440	678	673	18%
> 50	8	9	14	15	7%	506	1 013	1 166	1 643	43%

Table - Characterization of farms per installed power in Continental Portugal (3)

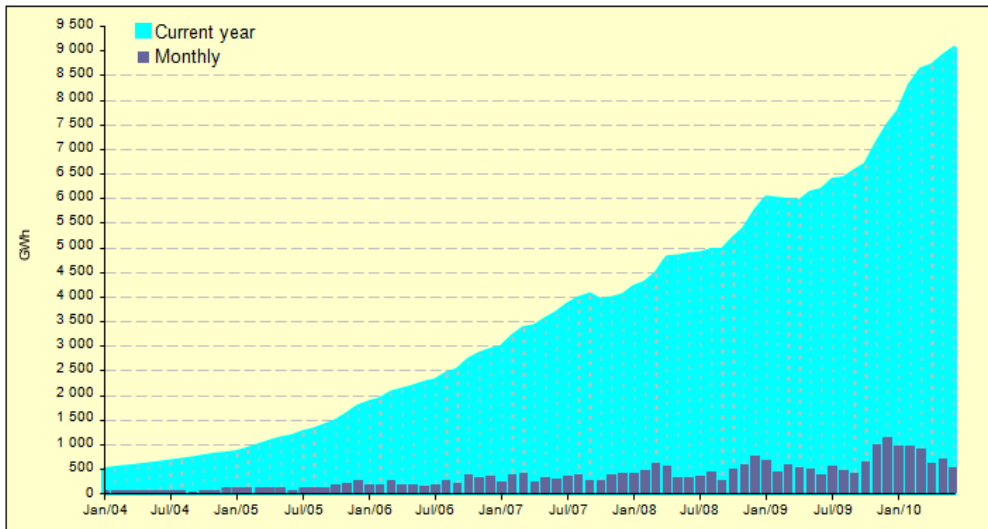


Chart - Evolution of wind production in mainland Portugal (GWh) (3)

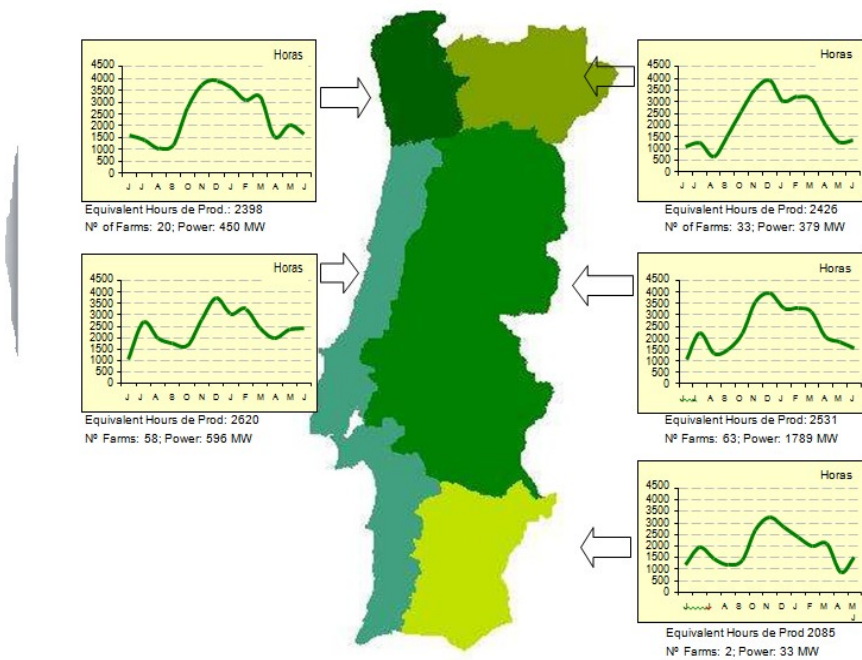


Chart - Distribution of hour's equivalent production (June/2009 to June/2010) (3)

3 BIBLIOGRAPHY

1. INFOPÉDIA. [Online] [Citação: 10 de Setembro de 2010.] [http://www.infopedia.pt/\\$portugal](http://www.infopedia.pt/$portugal).
2. **Statistics Portugal (INE - Instituto Nacional de Estatística)**. [Online] [Citação: 10 de Setembro de 2010.] <http://www.ine.pt>.
3. **Ministério da Economia, da Inovação e Desenvolvimento**. DGEG - Direcção Geral de Energia e Geologia. *Portal do Governo*. [Online] [Citação: 10 de Agosto de 2010.] <http://www.dgge.pt/>.
4. **Água Quente Solar**. [Online] [Citação: 13 de Setembro de 2010.] http://www.aguaquentesolar.com/publicacoes/13/Sintese_Politica_Energetica_2003.pdf.
5. **Portugal Digital - Informação e Comunicação Empresarial Luso-Brasileira**. [Online] [Citação: 10 de Setembro de 2010.] <http://www.portugaldigital.com.br/noticia.kmf?cod=9141523&canal=158>.