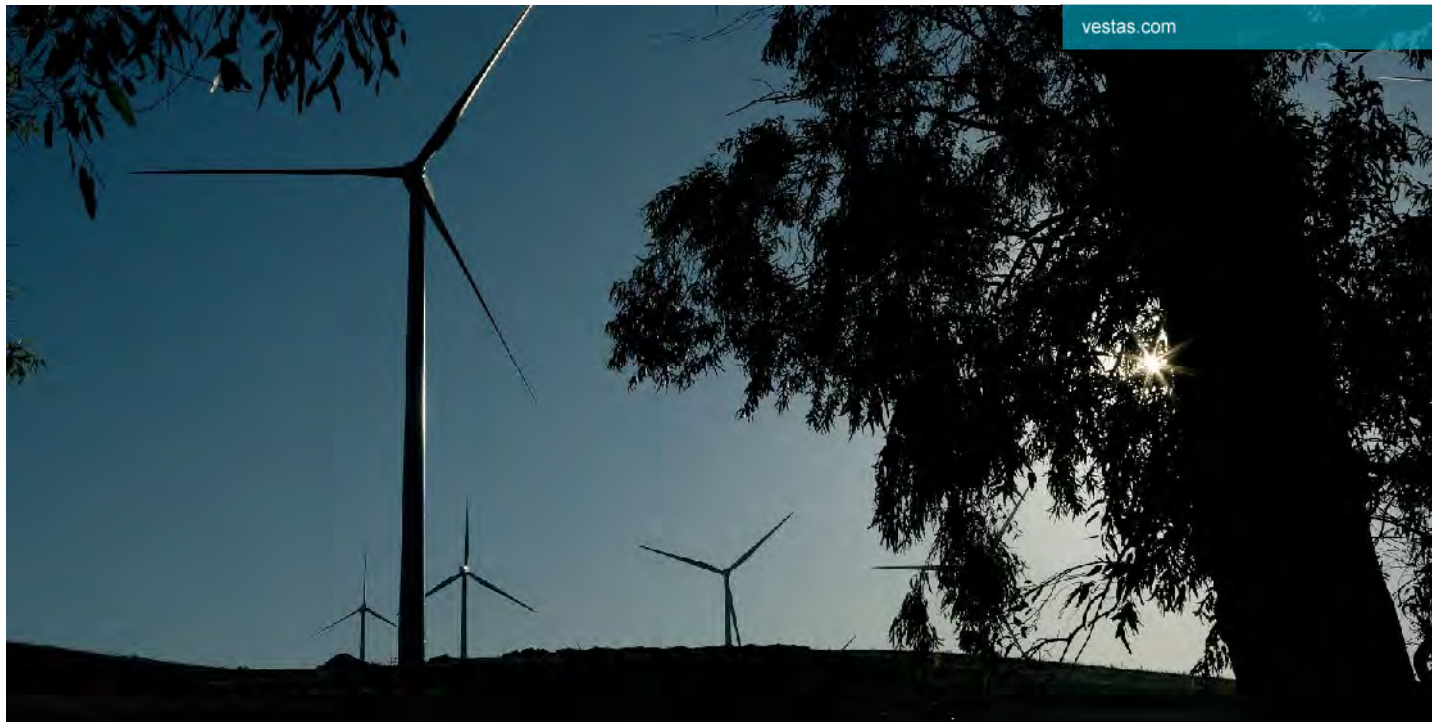


No. 1 in Modern Energy



IENE

12 November 2009



Vestas®

- 1. Global Wind Perspective**
- 2. Wind Turbines and Vestas**
- 3. Vestas in Greece**

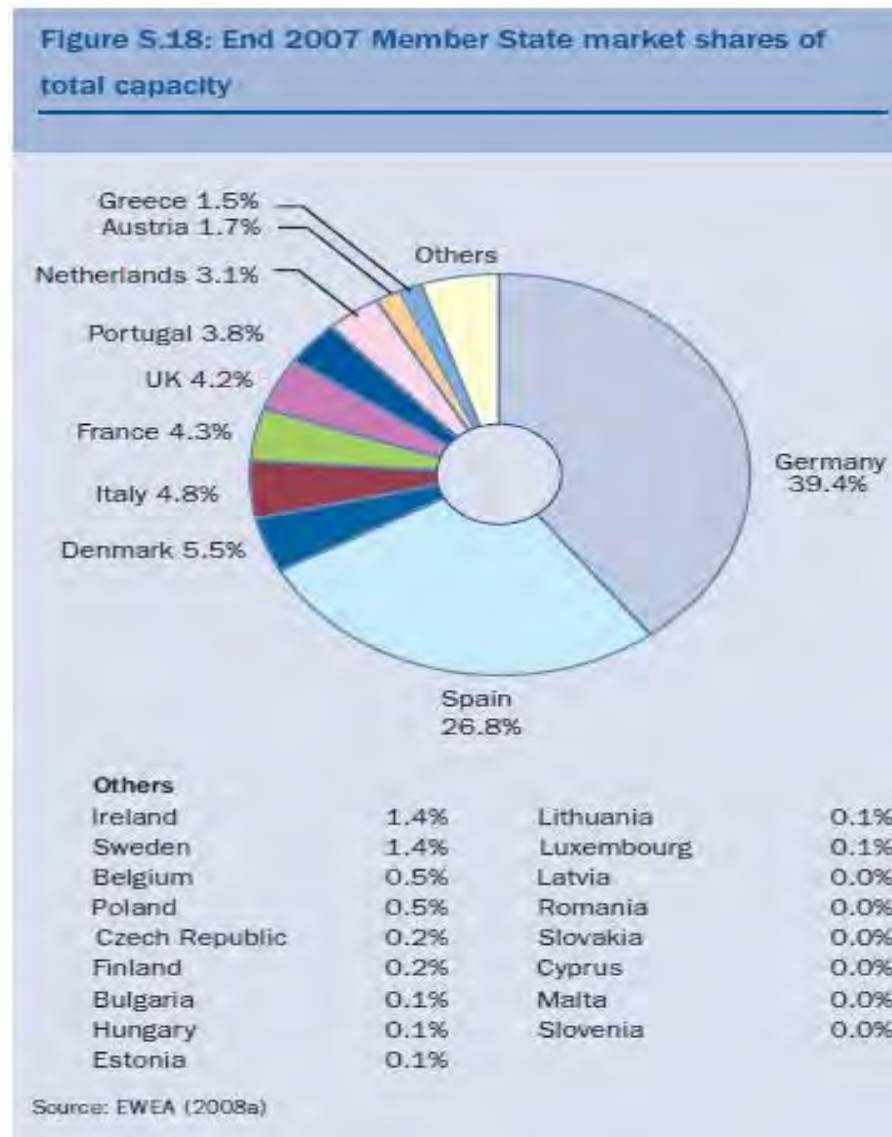
Global wind power capacity has now reached 100 GW

Figure S.1: Global cumulative wind power capacity, 1990–2007 (in MW)



Source: GWEC/EWEA (2008)

Germany and Spain are leading the way in Europe



Germany and Spain are leading the way in Europe

Table 5.4: Cumulative installations of wind power in the EU and projections for 2010 (in MW)

Country	Cumulative Installations								
	2000	2001	2002	2003	2004	2005	2006	2007	2010
Austria	77	94	140	415	606	819	965	982	1200
Belgium	13	32	35	68	96	167	194	287	800
Bulgaria					10	10	36	70	200
Cyprus			0	0	0	0	0	0	0
Czech Republic			3	9	17	28	54	116	250
Denmark	2417	2489	2889	3116	3118	3128	3136	3125	4150
Estonia			2	2	6	32	32	58	150
Finland	39	39	43	52	82	82	86	110	220
France	66	93	148	257	390	757	1567	2454	5300
Germany	6113	8754	11,994	14,609	16,629	18,415	20,622	22,247	25,624
Greece	189	272	297	383	473	573	746	871	1500
Hungary			3	3	3	17	61	65	150
Ireland	118	124	137	190	339	496	746	805	1326
Italy	427	682	788	905	1266	1718	2123	2726	4500
Latvia			24	27	27	27	27	27	100
Lithuania			0	0	6	6	48	50	100
Luxembourg	10	15	17	22	35	35	35	35	50
Malta			0	0	0	0	0	0	0
Netherlands	446	486	693	910	1079	1219	1558	1746	3000
Poland			27	63	63	83	153	276	1000
Portugal	100	131	195	296	522	1022	1736	2150	3500
Romania			1	1	1	2	3	8	50
Slovakia			0	3	5	5	5	5	25
Slovenia			0	0	0	0	0	0	25
Spain	2235	3337	4825	6203	8264	10,028	11,623	15,145	20,000
Sweden	231	293	345	399	442	510	571	788	1665
UK	406	474	552	667	904	1332	1962	2389	5115
EU accumulated*	12,887	17,315	23,098	28,491	34,372	40,500	48,031	56,535	80,000

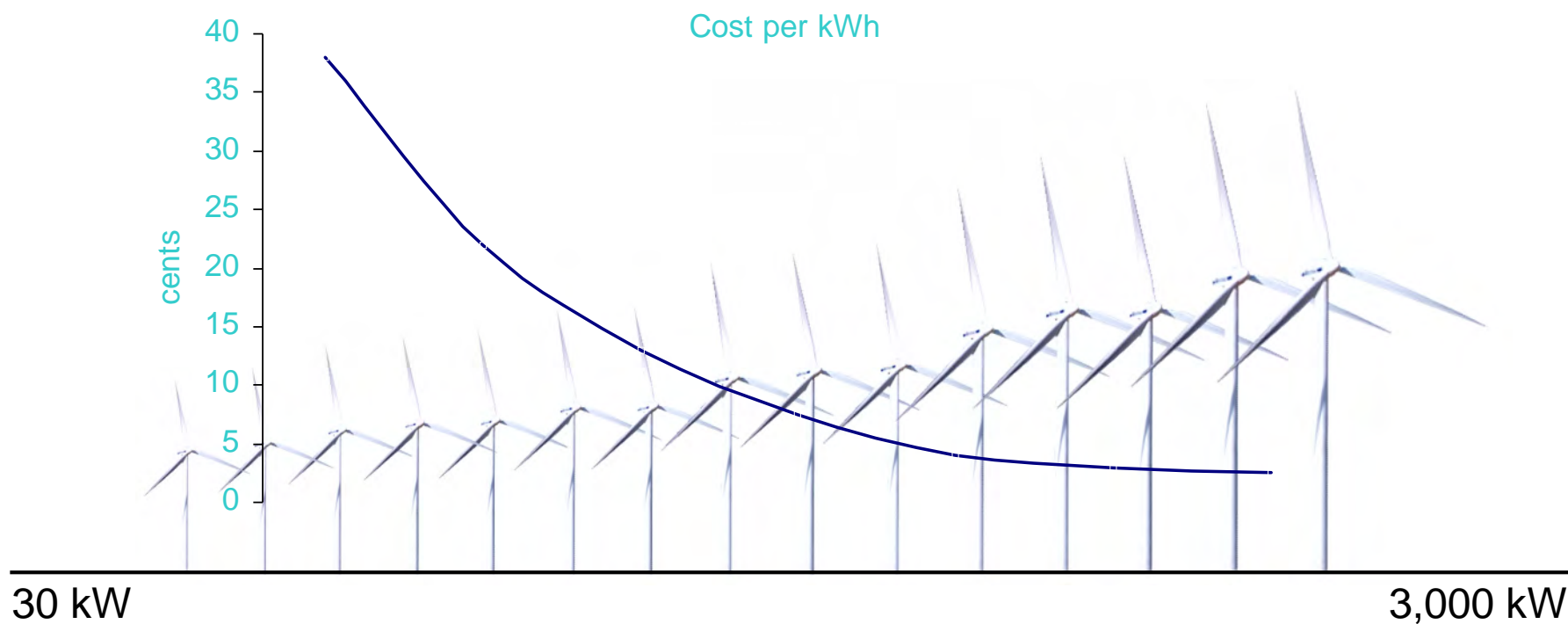
Note: * from 2004 EU-25; from 2007 EU-27.
Source: EWEA (2008a)

25624

1500

20000

Over the last 25 years, the output of a typical Turbine has increased by 100, whereas costs have decreased by 10



Typical Wind Economics

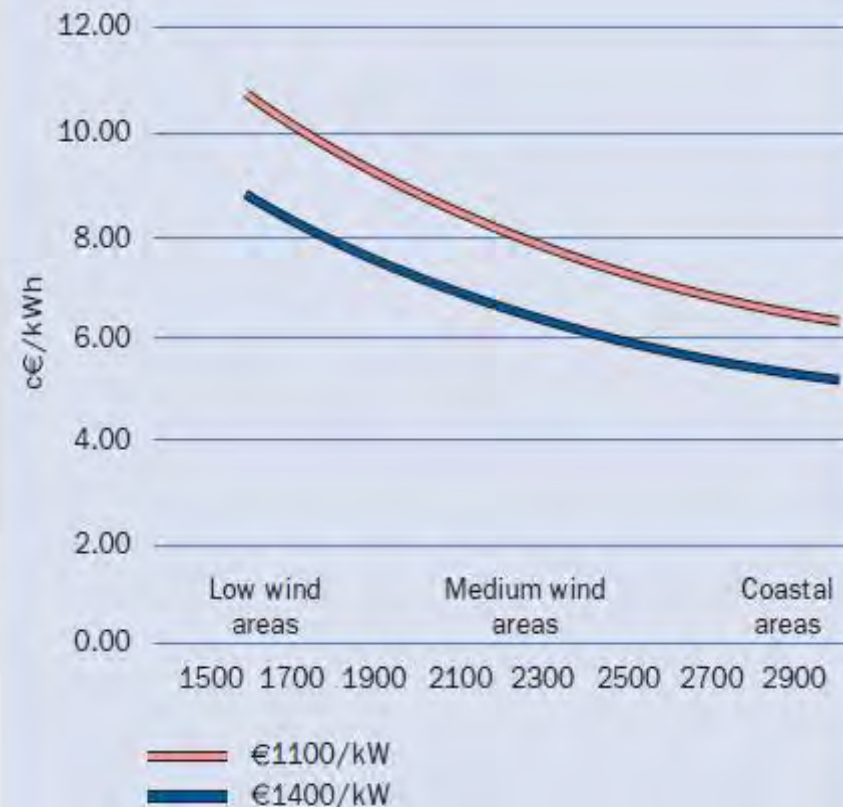
Table S.2: Cost structure of a typical 2 MW wind turbine installed in Europe (2006-€)

	Investment (€1000/MW)	Share (%)
Turbine (ex-works)	928	75.6
Foundations	80	6.5
Electric installation	18	1.5
Grid connection	109	8.9
Control systems	4	0.3
Consultancy	15	1.2
Land	48	3.9
Financial costs	15	1.2
Road	11	0.9
Total	1227	100

Note: Calculated by the author based on selected data for European wind turbine installations.

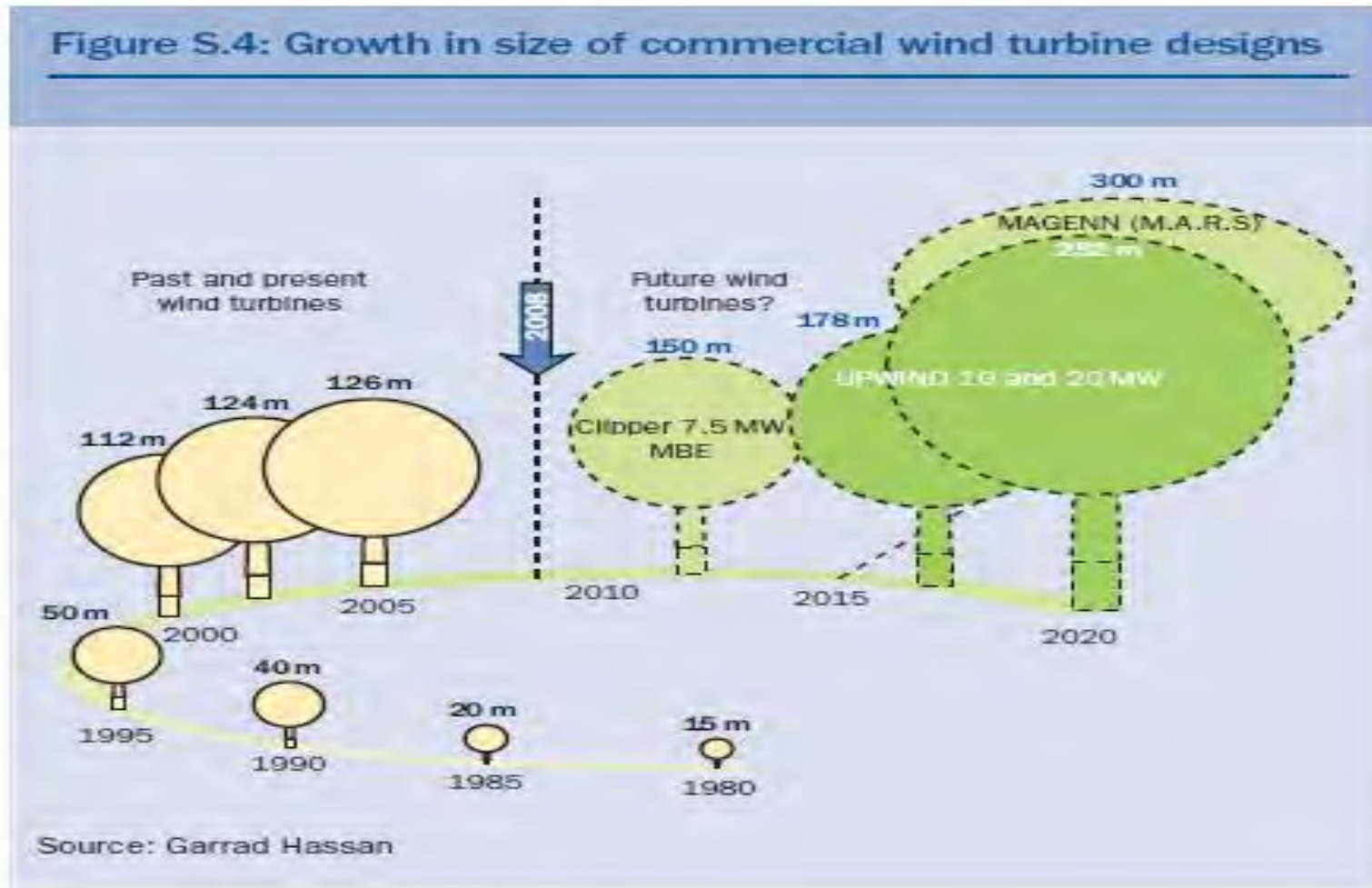
Source: Risø DTU

Figure S.11: Calculated costs per kWh of wind generated power as a function of the wind regime at the chosen site (number of full load hours)

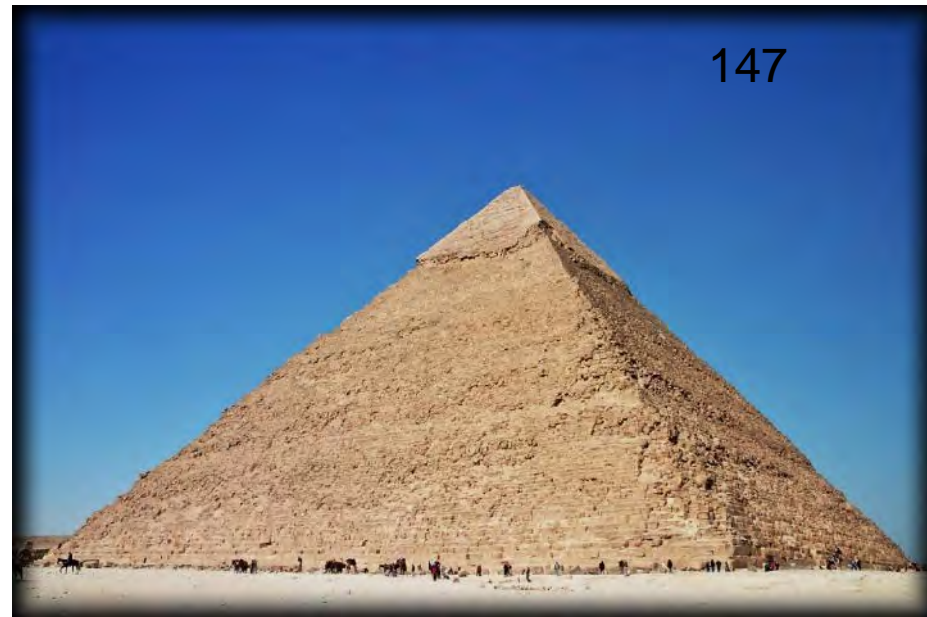
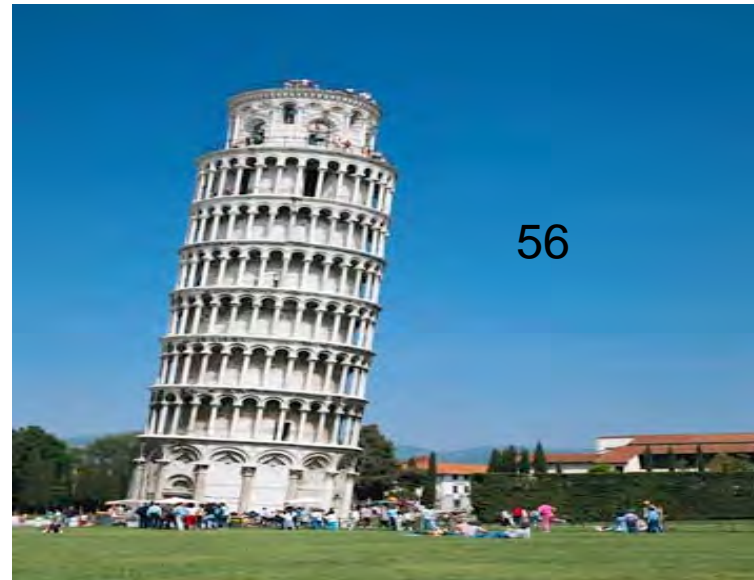


Source: Risø DTU

Evolution of Wind Turbines over the years



Height comparison

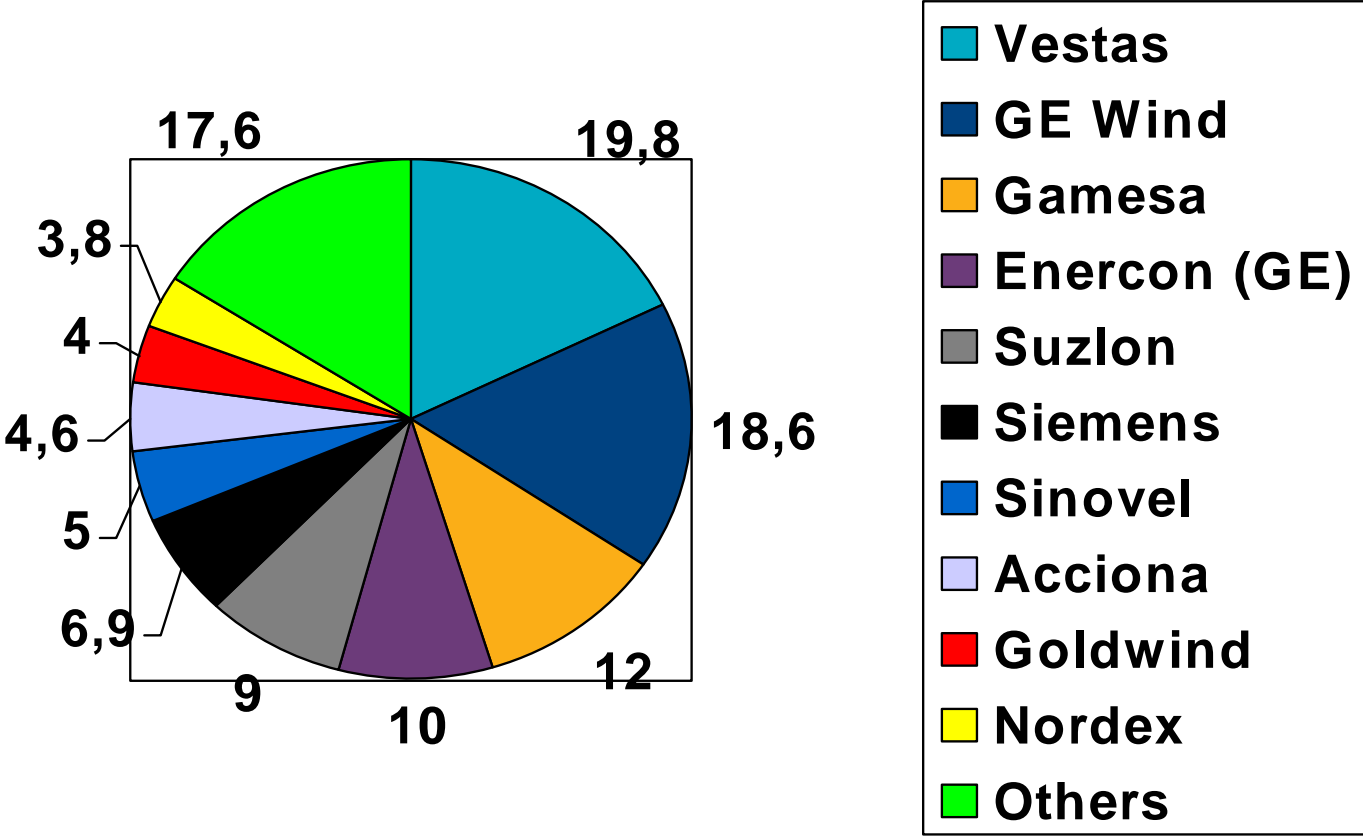




Vestas' newest Turbine: V112 – 3MW

- High power production
- 55% larger swept area than the V90
- Most efficient turbine in its class – high ratio of swept area to generator size
- Reliable and robust design
- Low noise
- Tower crane
- Will target the offshore sector

In 2008, 28190 MWs were installed in the world. Vestas delivered WTGs for 5580 of them, 24% more than 2007



*Source BTM Consult ApS, March 2009



Leading suppliers in the Top-10 Markets in 2008



Top-10 markets	Position of supplier 2008		
	First	Second	Third
US	GE Wind	Vestas	Gamesa
CHINA	Sinovel	Goldwind	Dongfang
INDIA	Suzlon	Vestas	Vestas RRB
SPAIN	Gamesa	Vestas	Acciona
GERMANY	Enercon	Vestas	Repower
FRANCE	Enercon	Vestas	Repower
ITALY	Vestas	Enercon	Nordex
UK	Siemens	Nordex	Vestas
PORTUGAL	Enercon	Gamesa	Repower
AUSTRALIA	Suzlon	Vestas	Acciona

*Source BTM Consult ApS, March 2009

An overview of Vestas

Vestas Nacelles A/S
Vestas Blades A/S
Vestas Spare Parts A/S

Vestas Towers A/S
Vestas Control Systems A/S

Vestas People & Culture
Vestas Technology R&D



■ Vestas Americas ■ Vestas Northern Europe ■ Vestas Mediterranean ■ Vestas Central Europe ■ Vestas Asia Pacific ■ Vestas Offshore
Vestas China

#1 in Modern Energy

A supply chain focused 100% on Wind Energy

Producing turbines that use wind energy to generate electricity



The world's widest serial-produced turbine range

V52-850 kW	V82-1.65 MW	V80-2.0 MW	V90-2.0 MW	V112-3.0 MW
V60-850 kW	V80-1.8 MW	V90-1.8 MW	V90-3.0 MW	

We produce nacelles in 15 locations around the world

Machine parts

Denmark
China

Casting hub, etc.

Norway
Sweden
Germany
China

Generators

Germany
China

Assembly

USA
Denmark
India
Italy
Spain
China



A large white wind turbine blade is positioned vertically in a cleanroom. A technician in a white protective suit is working on the blade. The blade is supported by a large, dark, circular metal structure. The cleanroom has a high ceiling with industrial lighting and a concrete floor.

We craft blades in 8 different locations

Denmark
England
Italy
Germany
Australia
China
USA
Spain

A large, dark, circular tunnel with a person silhouetted against a bright opening at the end. The tunnel's interior is dark and textured, with a person standing near the bright opening at the far end, creating a strong silhouette effect. The overall color palette is dark blue and black.

...produce towers in 4 locations

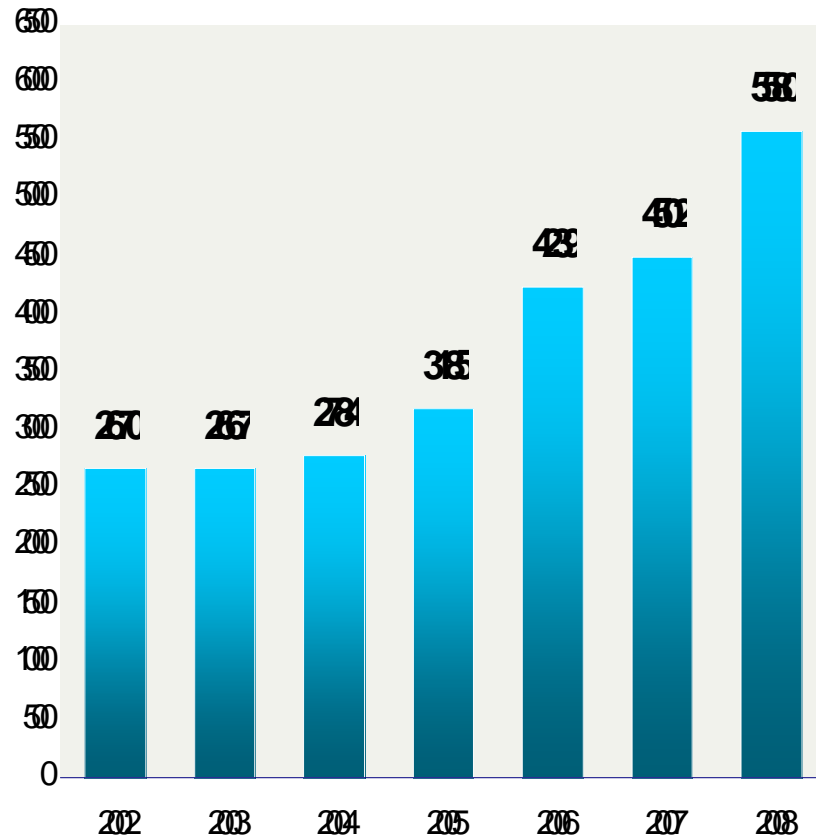


Denmark
China
Spain

**...and deliver our controllers from
5 locations in Spain, China and
Denmark**

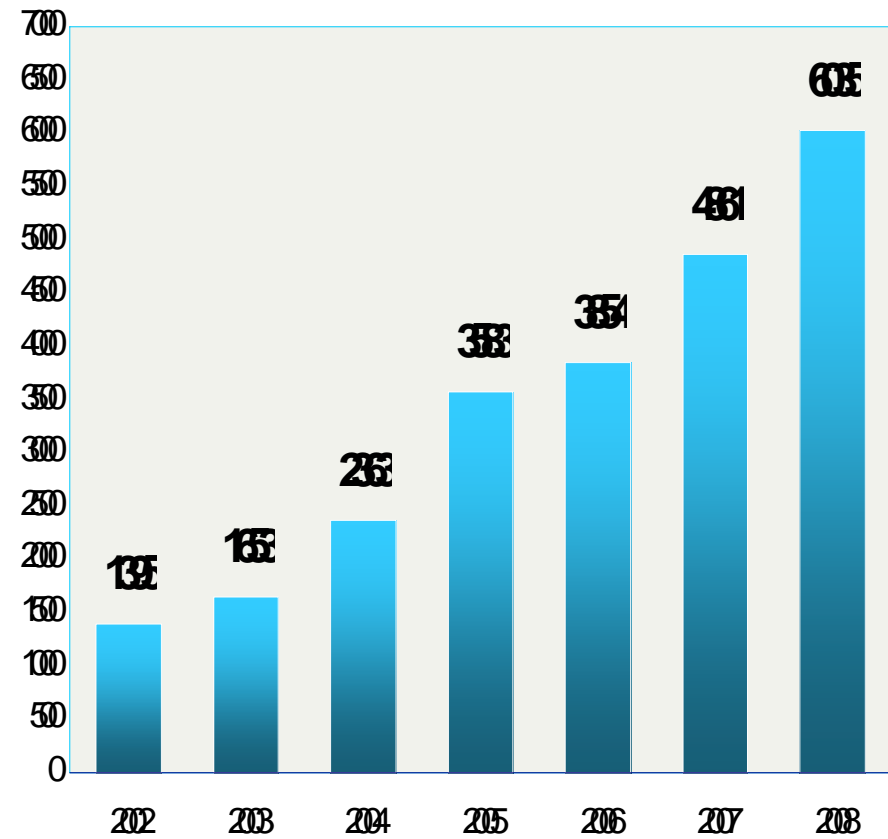
Achieving 25% growth year-on-year

Sales



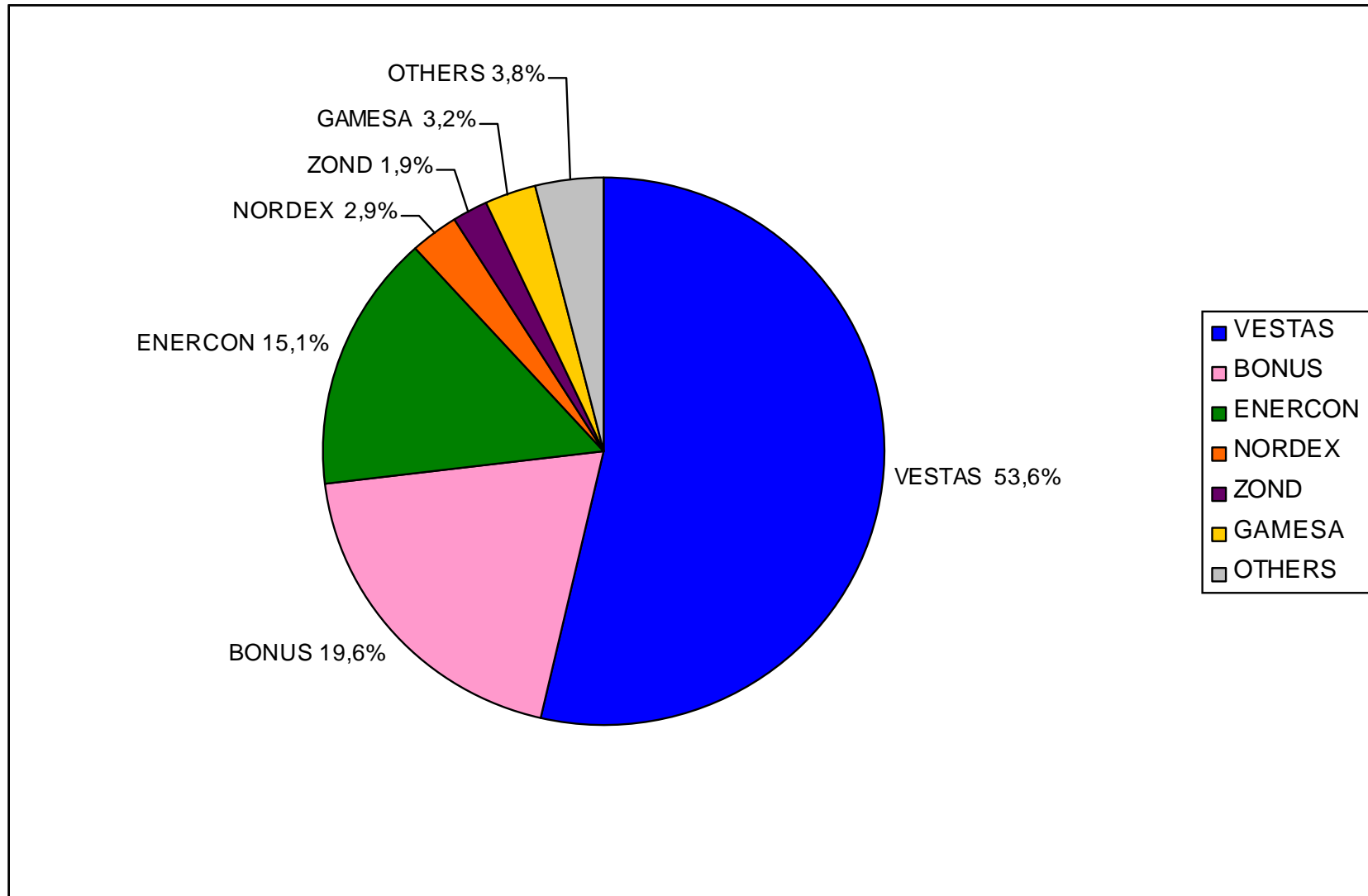
MW

Revenue



MILLION EURO

Vestas is also the market Leader in Greece



Source: Hellenic Energy Wind Association

Profile

- ✓ **Headquarter: Athens**
- ✓ **Established: in 2000**
- ✓ **Service offices: 11 covering all of Greece**
- ✓ **Employees: 130**

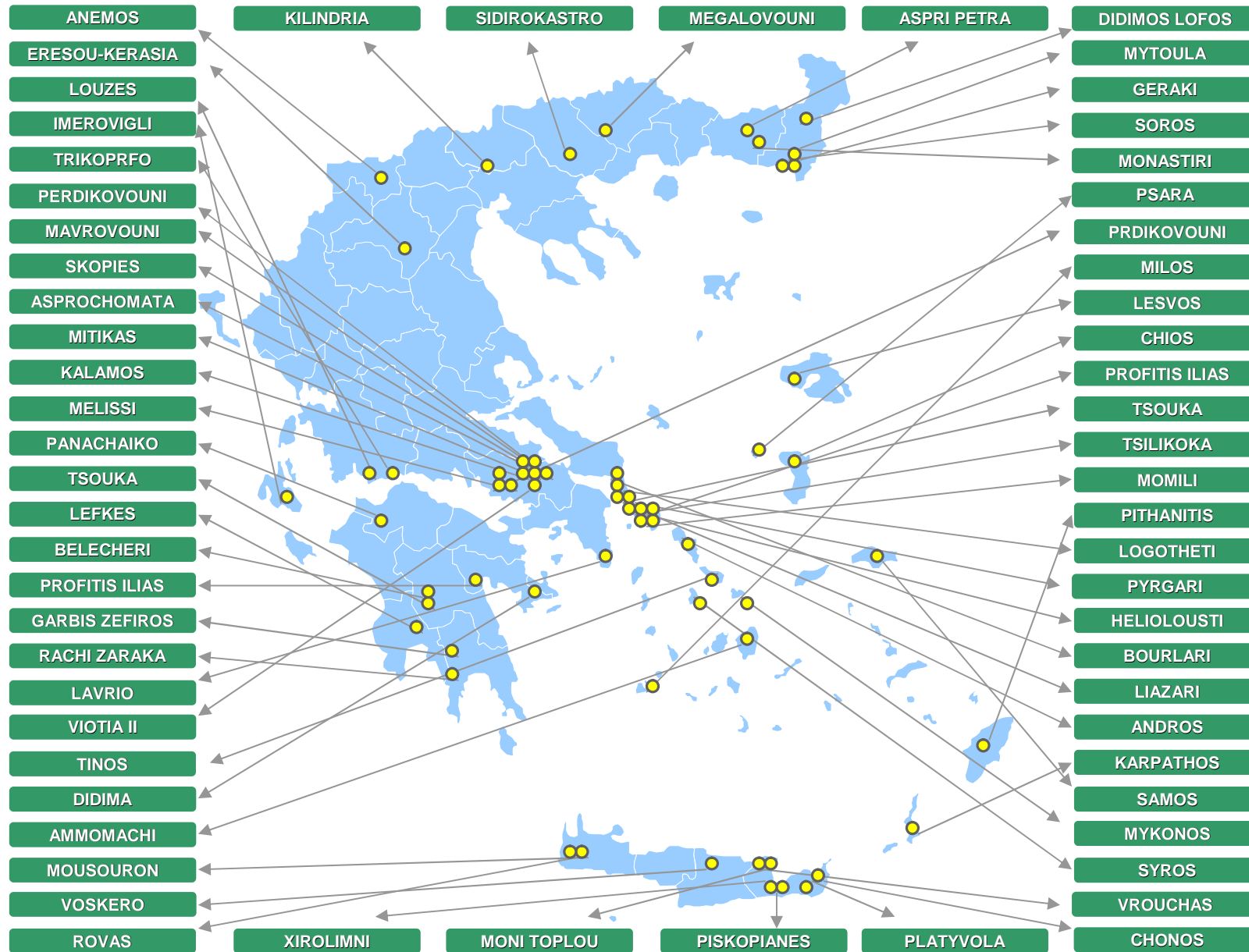


Vestas Installed MW & WTGs in Greece

- Installed MW as of 30 June '09: **682.62**
- Installed WTGs as of 30 June '09: **574**



OUR WIND FARMS ALL AROUND GREECE



No. 1 in Modern Energy



Thank you for your attention

Marios Zangas
marza@vestas.com

The Vestas logo, consisting of the word 'Vestas' in a bold, blue, sans-serif font with a registered trademark symbol (®) to its upper right.



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During this presentation, Vestas Wind Turbines have produced

0 0 0, 0 0 0, 0 0 0 kWh

Calculate