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Global Wind Power

Steve Sawyer
UNFCCC Side Event
7 October 2010

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Uniting the Global Wind Industry

C0 Members

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acciona Energia
LM WIND POWER
NORDEX We've got the power.
Vestas®
GE Energy
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res power for good
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Smart solutions. Strong relationships.
MAINSTREAM RENEWABLE POWER
Shermco industries
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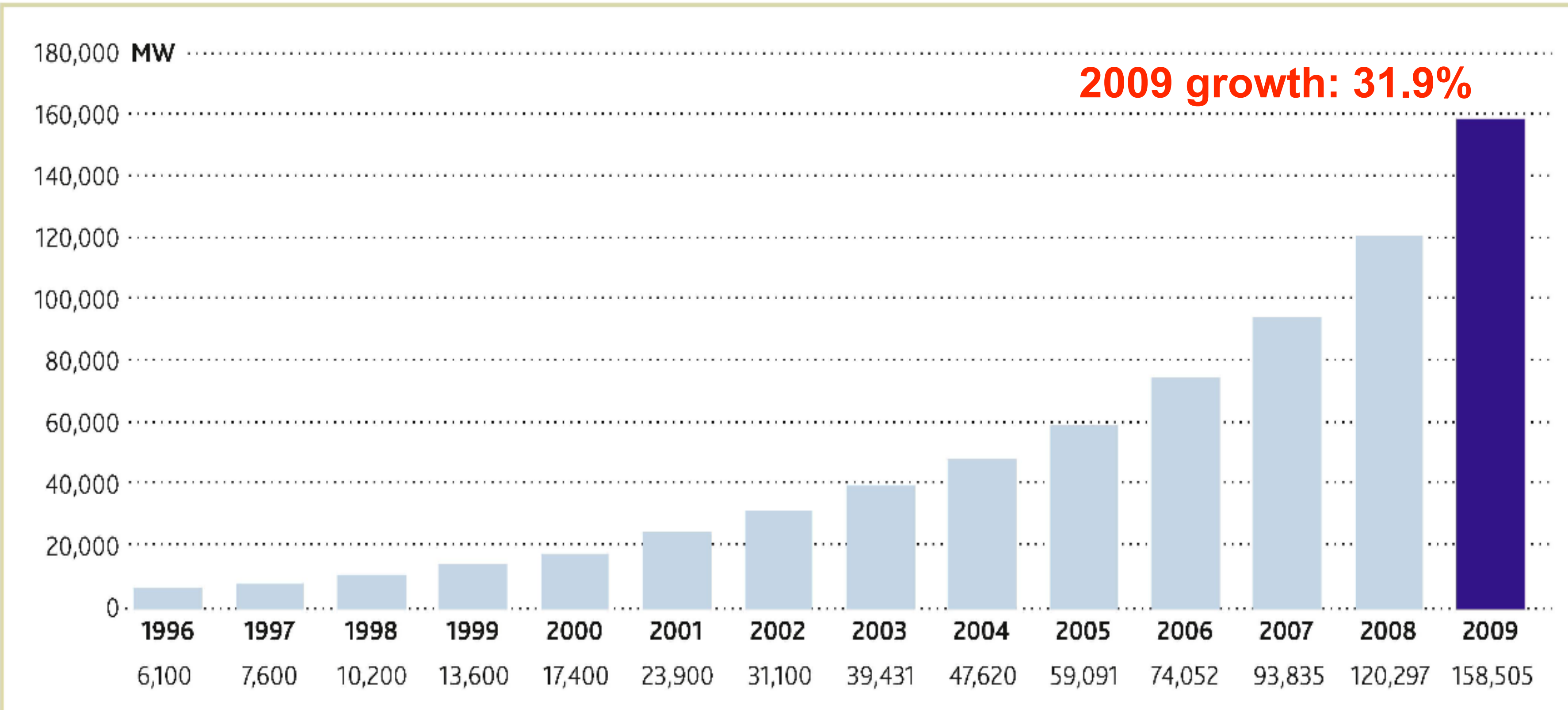
Associations

aee Asociación Empresarial Eólica
EWEA THE EUROPEAN WIND ENERGY ASSOCIATION
ABEEólica Associação Brasileira de Energia Eólica
anev
Clean Energy Council
IWTMA
Bundesverband WindEnergie e.V.
CREIA
AWEA AMERICAN WIND ENERGY ASSOCIATION
JWPA
amdee
canwea

GWEC - Uniting the global wind industry and its representative associations

Cumulative Installed Capacity

GLOBAL CUMULATIVE INSTALLED CAPACITY 1996-2009



13 yr avg growth: 28.6%

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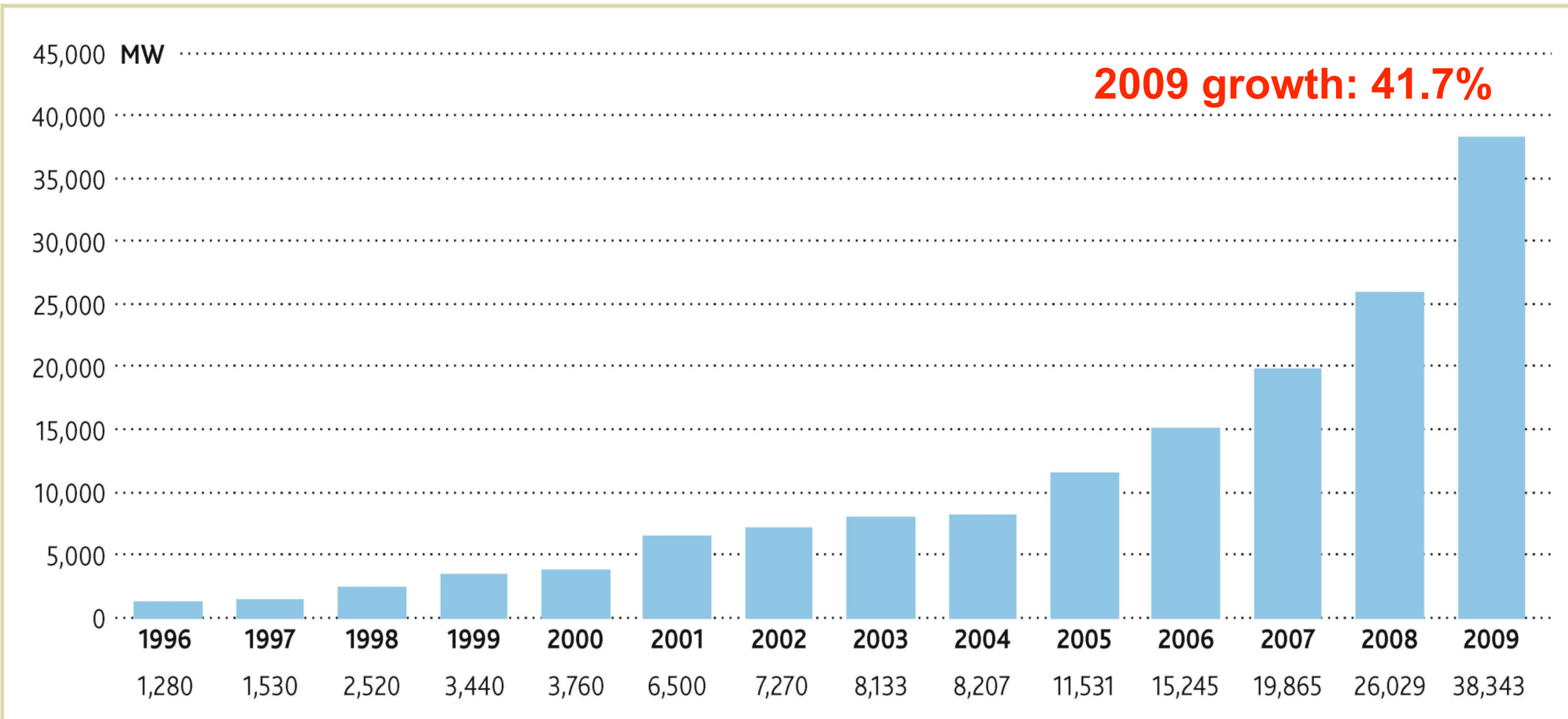
Annual Installed Capacity

GLOBAL ANNUAL INSTALLED CAPACITY 1996-2009



13 yr avg growth: 31.4%

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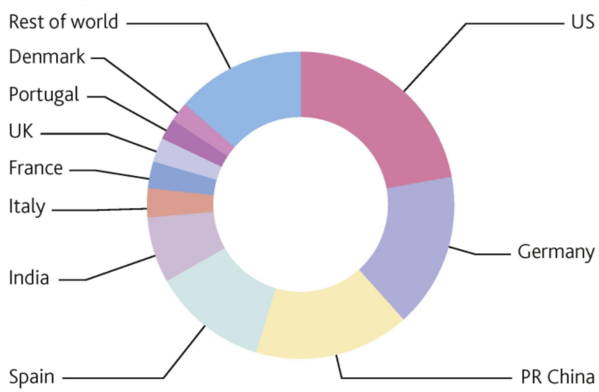
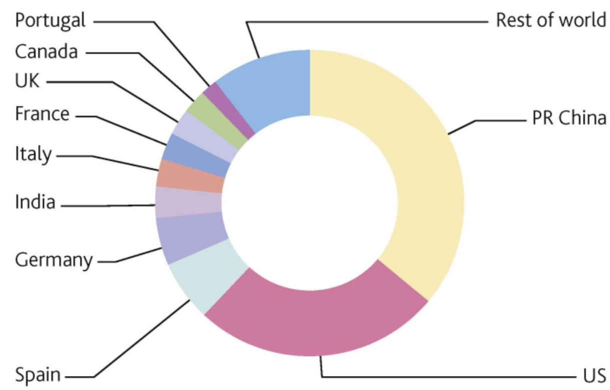
2009 Market Leaders

TOP 10 CUMULATIVE INSTALLED CAPACITY 2010



	MW	%
US	35,064	22.1
PR China	25,805	16.3
Germany	25,777	16.3
Spain	19,149	12.1
India	10,926	6.9
Italy	4,850	3.1
France	4,492	2.8
UK	4,051	2.6
Portugal	3,535	2.2
Denmark	3,465	2.2
Rest of world	21,391	13.5
Total top 10	**137,114**	**86.5**
World total	**158,505**	**100.0**

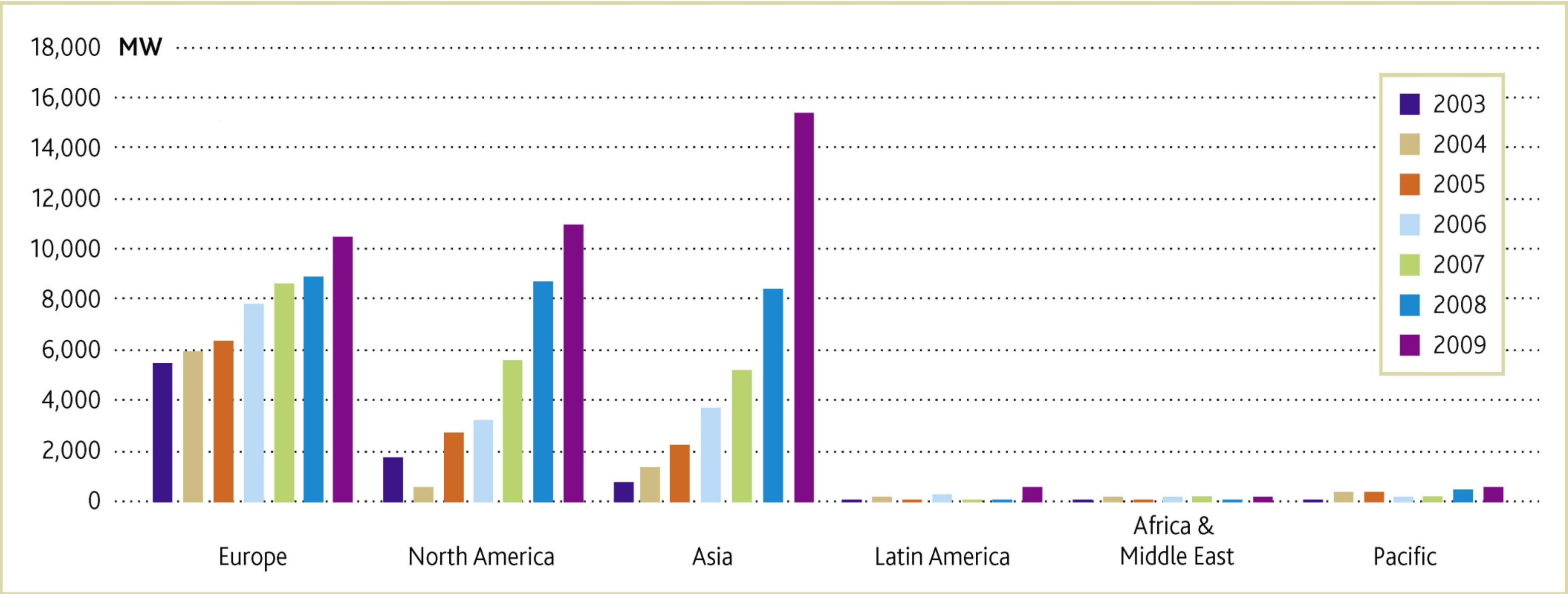
TOP 10 NEW INSTALLED CAPACITY 2010



	MW	%
PR China	13,803	36.0
US	9,996	26.1
Spain	2,459	6.4
Germany	1,917	5.0
India	1,271	3.3
Italy	1,114	2.9
France	1,088	2.8
UK	1,077	2.8
Canada	950	2.5
Portugal	673	1.8
Rest of world	3,994	10.4
Total top 10	**34,349**	**89.6**
World total	**38,343**	**100.0**

Regional Breakdown

ANNUAL INSTALLED CAPACITY BY REGION 2003-2009



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Summary Status

- Three main markets: Europe, North America and Asia – strong political commitment and framework in EU and China; US and Canada uncertain

- China now home to largest manufacturing industry – #1 market in 2009, and #1 overall early in the next decade

- European market continues to broaden – new boom with offshore getting underway

- Latin America, Africa and the Pacific continue ‘on the verge of take-off’

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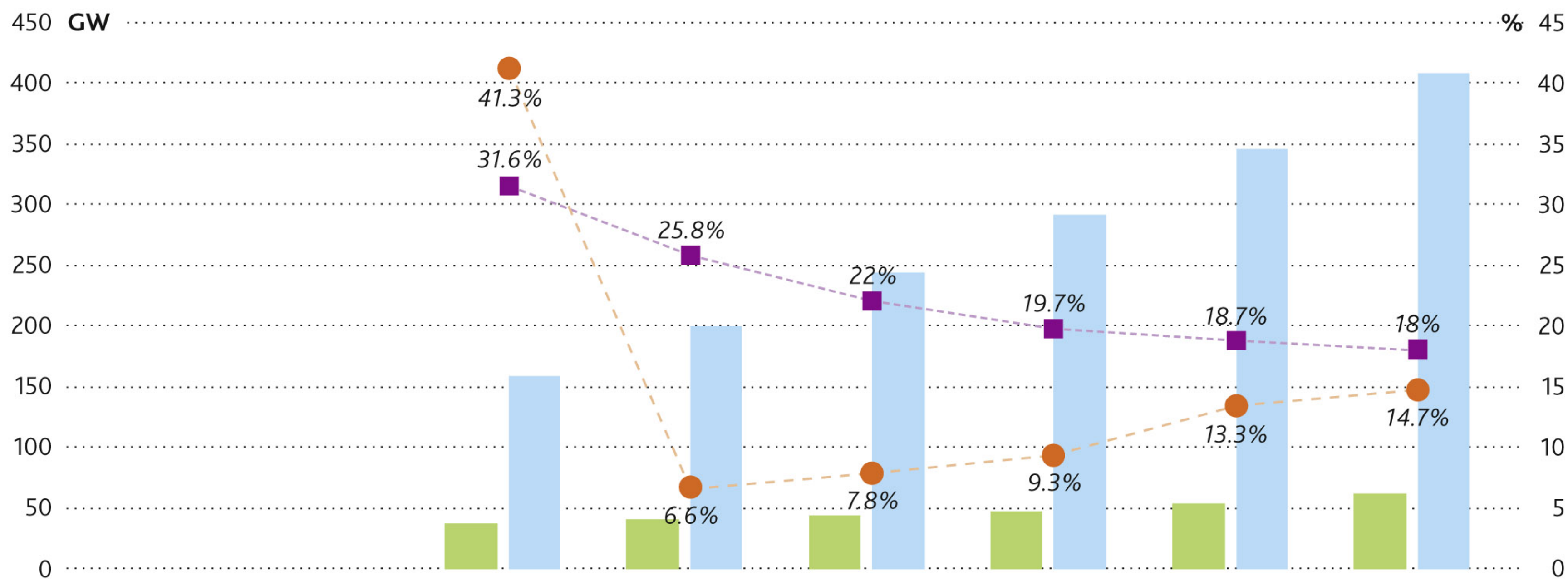
Projections to 2014

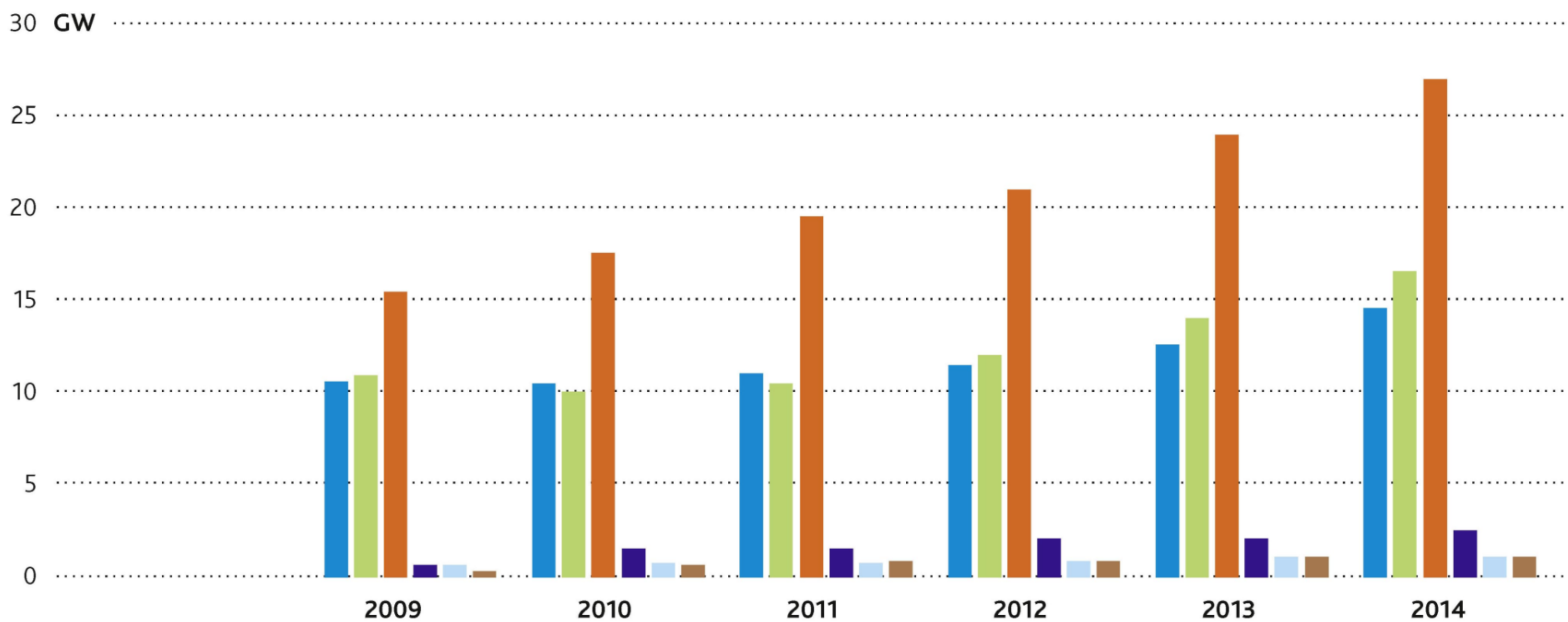
MARKET FORECAST 2010-2014



	2009	2010	2011	2012	2013	2014
Annual installed capacity [GW]	38.3	40.8	44.0	48.1	54.5	62.5
Cumulative [GW]	158.5	199.9	243.9	292.0	346.5	409.0
Cumulative capacity growthrate [%]	31.6	25.8	22.0	19.7	18.7	18.0
Annual installed capacity growthrate [%]	41.3	6.6	7.8	9.3	13.3	14.7

Annual market to 2014 by region

ANNUAL MARKET FORECAST BY REGION 2009-2013



	2009	2010	2011	2012	2013	2014
Europe	10.5	10.5	11.0	11.5	12.5	14.5
North America	10.9	10.0	10.5	12.0	14.0	16.5
Asia	15.4	17.5	19.5	21.0	24.0	27.0
Latin America	0.6	1.5	1.5	2.0	2.0	2.5
Pacific	06	0.7	0.7	0.8	1.0	1.0
Middle East and Africa	0.2	0.6	0.8	0.8	1.0	1.0

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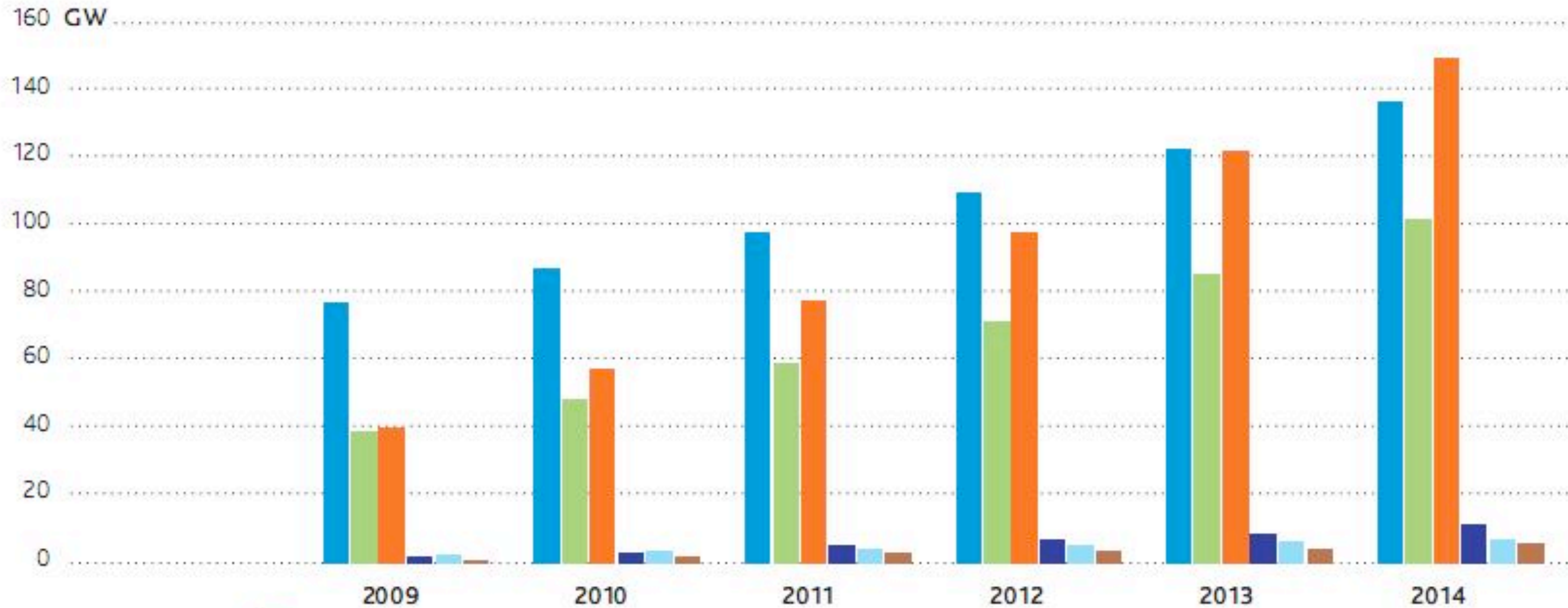
Cumulative by Region 2010-2014

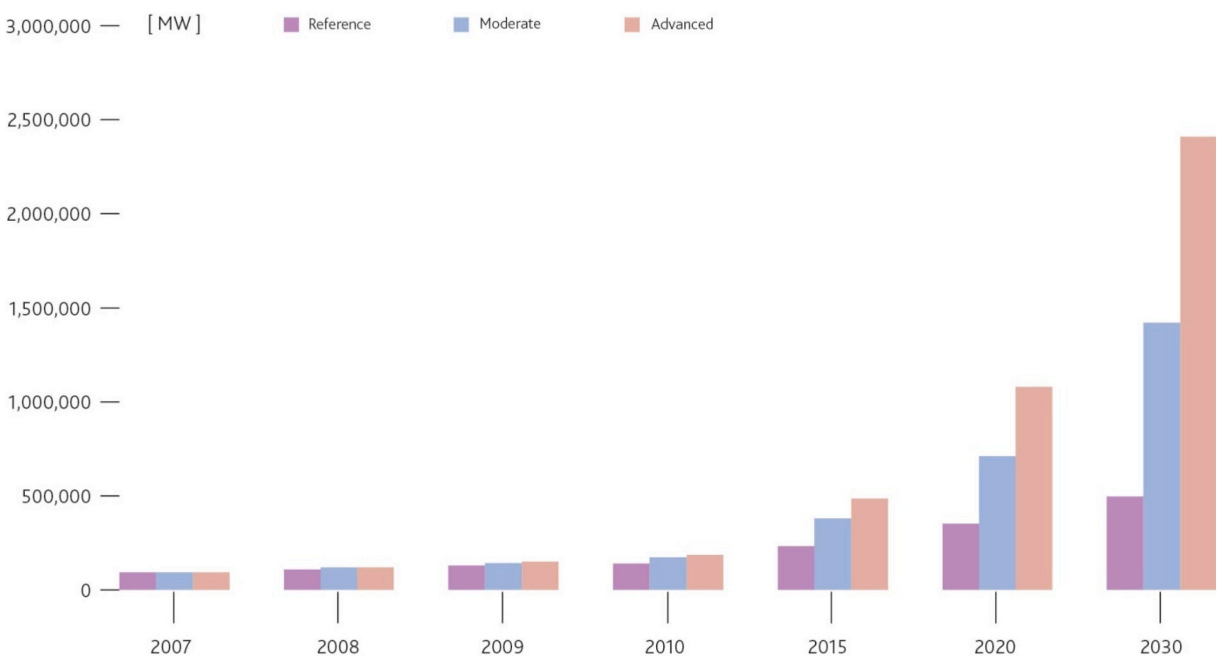
CUMULATIVE MARKET FORECAST BY REGION 2009-2013



	2009	2010	2011	2012	2013	2014
Europe	76.2	87.0	98.0	109.5	122.0	136.5
North America	38.4	48.5	59.0	71.0	85.0	101.5
Asia	39.6	57.3	76.8	97.8	121.8	148.8
Latin America	1.3	2.7	4.2	6.2	8.2	10.7
Pacific	2.2	2.9	3.6	4.4	5.4	6.4
Middle East and Africa	0.9	1.5	2.3	3.1	4.1	5.1

GWEO 2008 - Production

GLOBAL CUMMULATIVE NEW WIND CAPACITY



GLOBAL CUMULATIVE CAPACITY [MW] AND ELECTRICITY GENERATION [TWh]

Year		2007	2008	2009	2010	2015	2020	2030
Reference	[MW]	93,864	109,739	128,046	139,000	232,956	352,300	496,730
	[TWh]	206	240	280	304	571	864	1,218
Moderate	[MW]	93,864	117,735	143,376	172,280	378,954	709,332	1,420,436
	[TWh]	206	258	314	377	929	1,740	3,484
Advanced	[MW]	93,864	119,837	149,841	186,309	485,834	1,080,886	2,375,374
	[TWh]	206	262	328	408	1,192	2,651	5,939

% of global electricity supply

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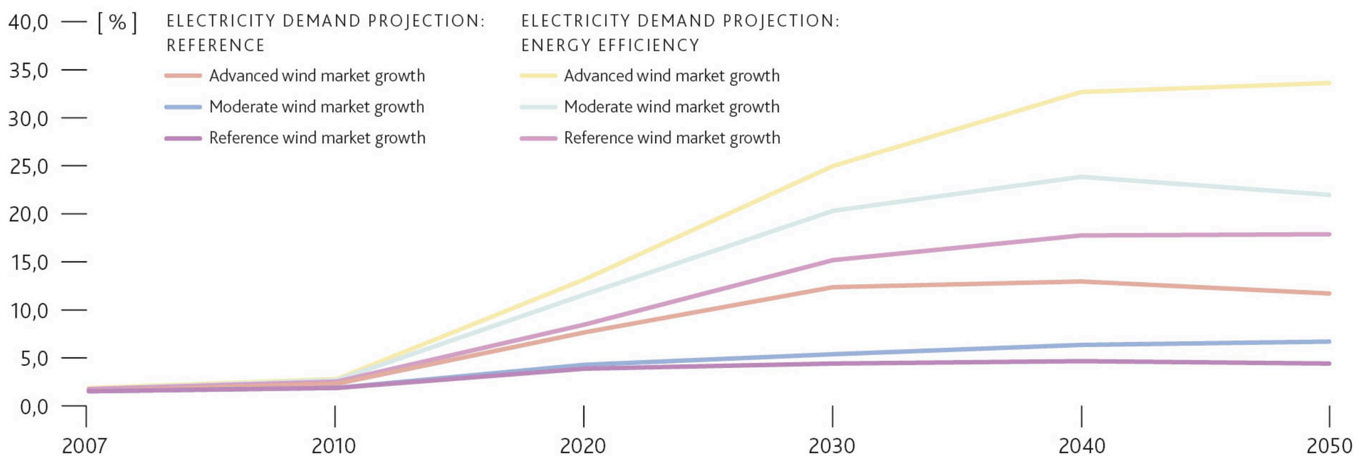
WIND POWER PENETRATION OF WORLDS ELECTRICITY SUPPLY



3 DIFFERENT WIND MARKET DEVELOPMENT SCENARIOS - WITH DIFFERENT WORLD ELECTRICITY DEMAND DEVELOPMENTS

		2007	2010	2020	2030	2040	2050
REFERENCE WIND MARKET GROWTH – IEA PROJECTION							
Wind power penetration of world's electricity in % – Reference (IEA Demand Projection)	%	1.4	1.7	3.6	4.2	4.4	4.2
Wind power penetration of world's electricity in % – Energy Efficiency	%	1.4	1.7	4.1	5.1	5.8	5.8
MODERATE WIND MARKET GROWTH							
Wind power penetration of world's electricity in % – Reference	%	1.4	2.1	7.3	11.9	12.5	11.2
Wind power penetration of world's electricity in % – Energy Efficiency	%	1.4	2.1	8.2	14.6	16.4	15.6
ADVANCED WIND MARKET GROWTH							
Wind power penetration of worlds electricity in % – Reference	%	1.4	2.3	11.2	19.7	23.1	21.2
Wind power penetration of world's electricity in % – Energy Efficiency	%	1.4	2.3	12.6	24.0	30.3	29.5

At global level - Wind's contribution to pledges for Copenhagen

Current UNFCCC pledges

\+ USA climate bill:

-17% of 2005 emissions

= aggregated Annex I pledges

➔ 12%-19% of 1990 emissions

Versus Global Wind in 2020

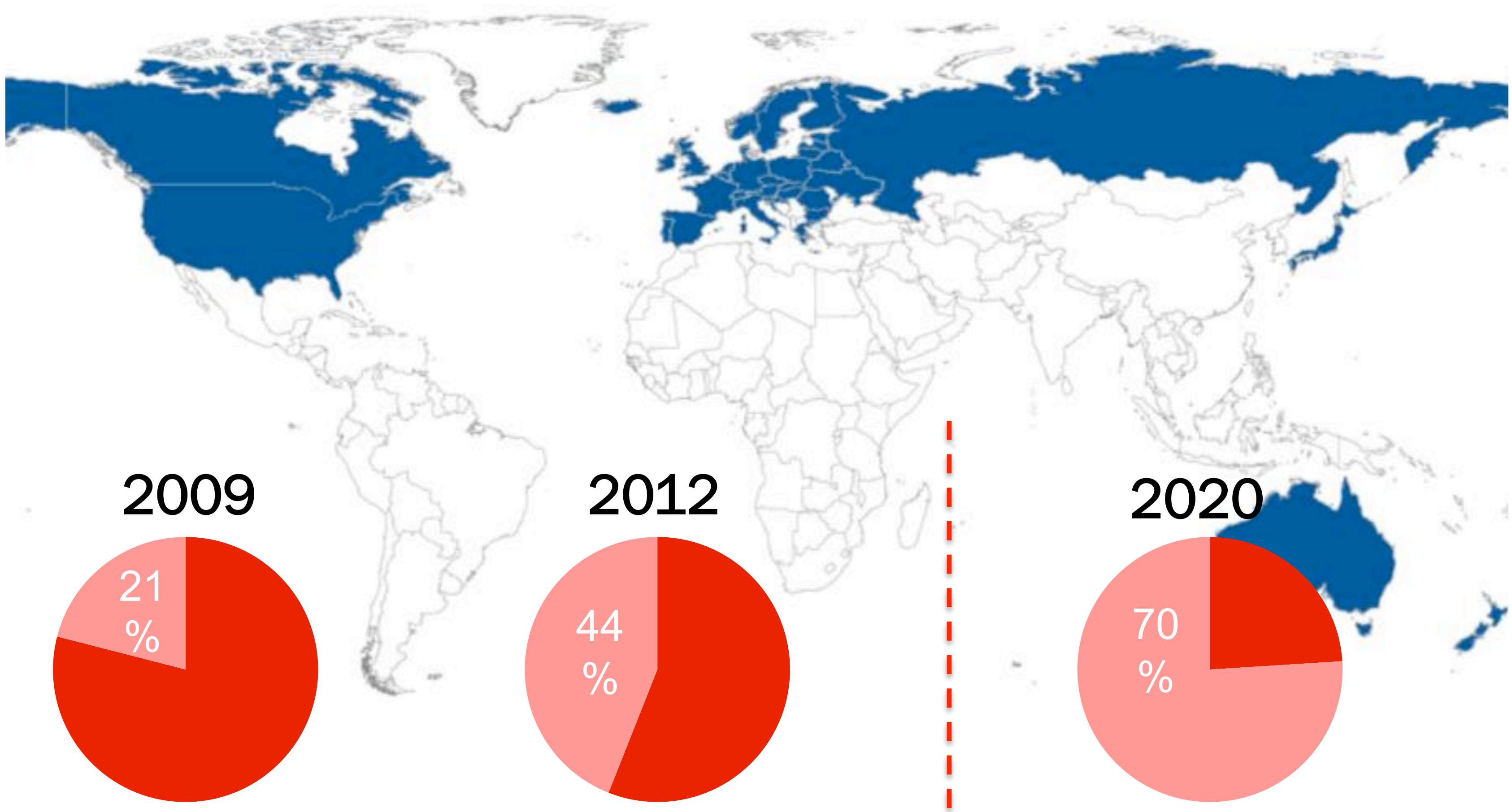
- 1081 GW installed capacity
- 2650 TWh produced

➔ 1591 Mt CO_2 avoided

Party	Information relating to possible QELROs		Status of possible QELROs	Inclusion of LULUCF[a]
	Range or single value by 2020	Reference year		
Australia	–5 to –15%; or –25%	2000	Officially announced	Yes
Belarus	–5 to –10%, or –15%	1990	Under consideration	Only the upper value of –15% contains contributions from LULUCF of 5%
Canada	–20%	2006	Officially announced	Preliminary range of –2 to 2% of total 2006 emissions
Croatia[b]	+6%	1990	Under consideration	Yes
European Community (EU-27[c])	–20 to –30%	1990	Adopted by legislation	No for –20%; Preliminary range of –3 to 3% of 1990 emissions for –30%
Iceland	–15%	1990	Officially announced	Substantial contribution
Japan	–25%	1990	Officially announced	TBD
Liechtenstein	–20 to –30%	1990	Officially announced	No
Monaco	–20%	1990	Officially announced	No
New Zealand	–10 to –20%	1990	Officially announced	Yes
Norway	–30 to –40%	1990	Officially announced	Around 6% (3 Mt CO_2 eq)
Russian Federation	–10 to –15%	1990	Officially announced	TBD
Switzerland	–20 to –30%	1990	Officially announced	Yes
Ukraine	–20%	1990	Under consideration	TBD

Source: WRI and UNFCCC Secretariat

Annex I - Global Wind in 2020 will avoid…

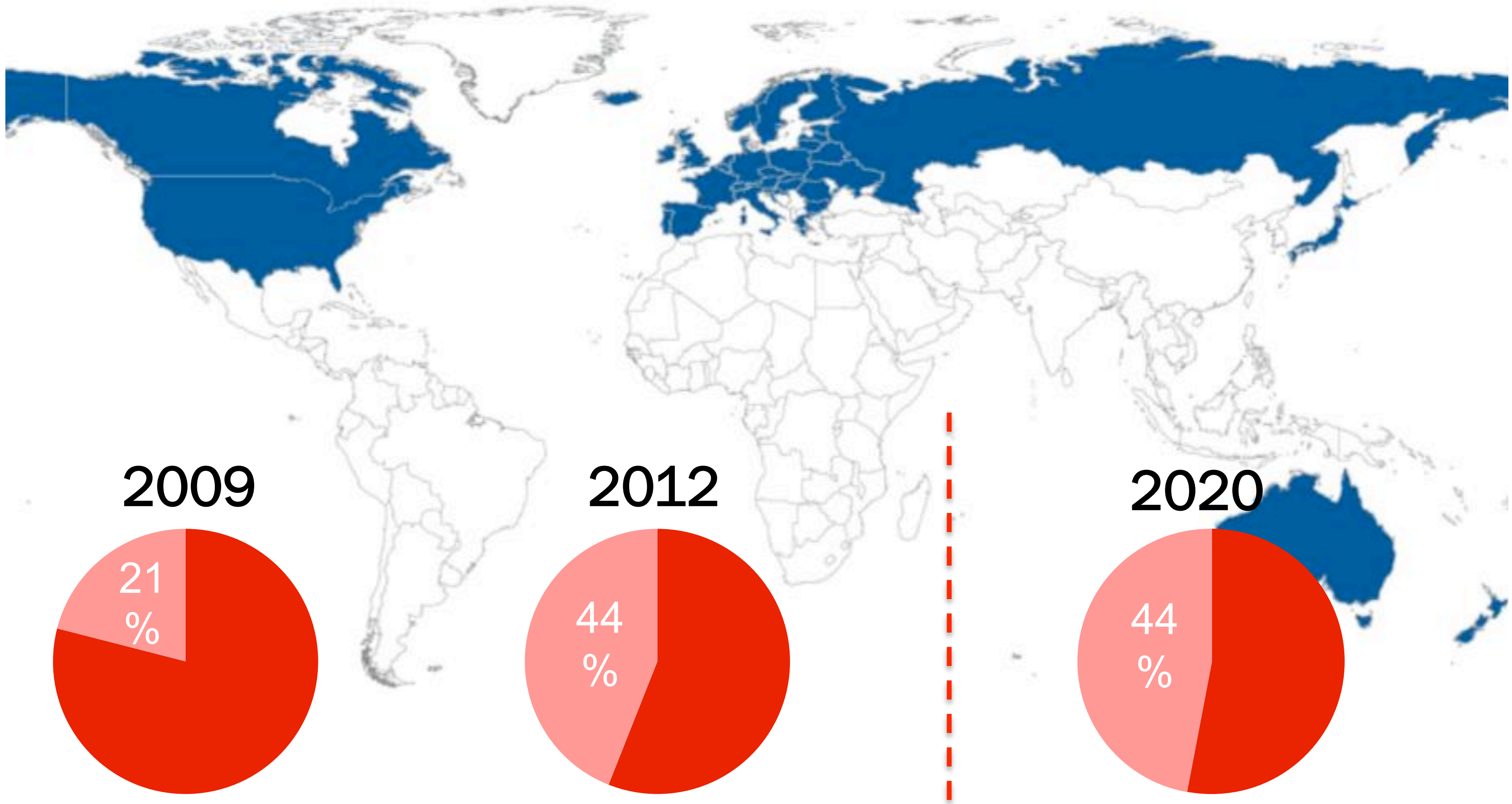


21% of Annex I 2009 Kyoto target

44% of Annex I 2012 Kyoto target

70% of Annex I 2020 pledges (12%)

Annex I countries – Global Wind will avoid…



21% of Annex I
2009 Kyoto target

44% of Annex I
2012 Kyoto target

44% of Annex I
2020 pledges (19%)

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Example: Chinese wind sector

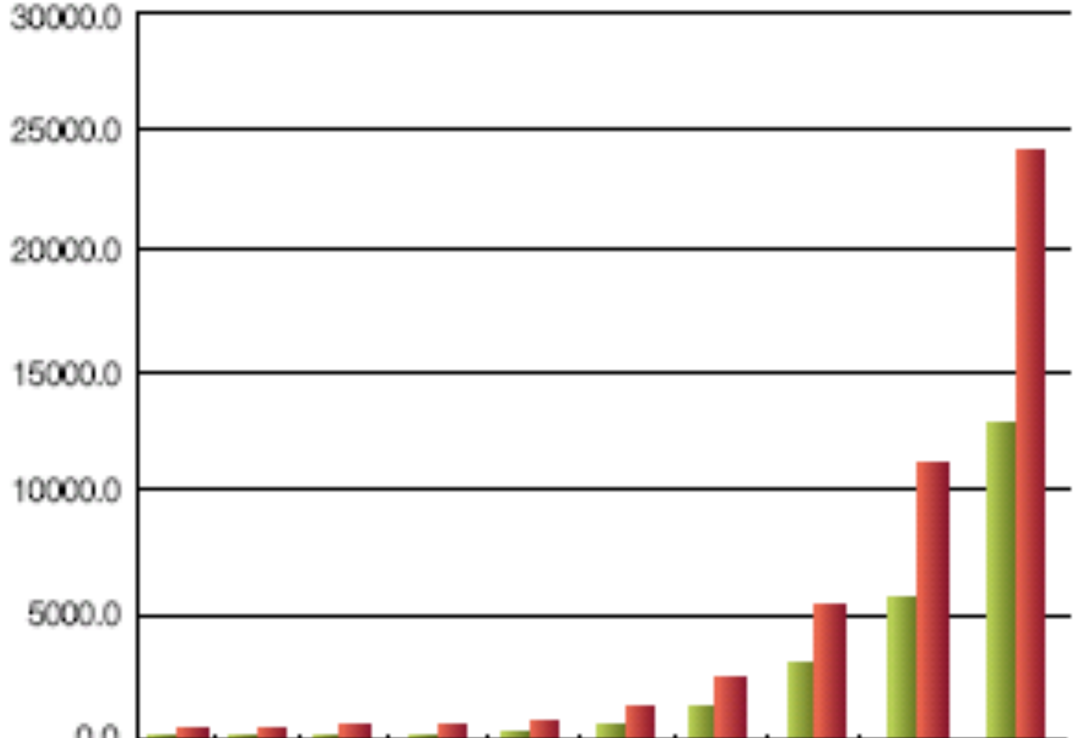
Early 2005:

- only one significant Chinese manufacturer
- < 1000 MW total installed capacity
- three fourths of equipment imported
- no clear national policy, no clear pricing support

End 2009:

- 3 Chinese manufacturers in global top 10, 5 in top 15
- largest annual market in the world
- largest turbine manufacturing industry in the world

Doubling every year since 2005



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Cumulative Installed Capacity (MW)	341.6	403.5	469.8	568.1	764.9	1271.8	2559.4	5870.7	12024.4	25827.7
Newly Installed Capacity (MW)	73.3	52.7	66.3	98.3	196.8	506.9	1287.6	3311.3	6153.7	13803.3

Figure 9 Growth of Wind Power in China

Source: Global Wind Power Report 2009

Chinese wind market development

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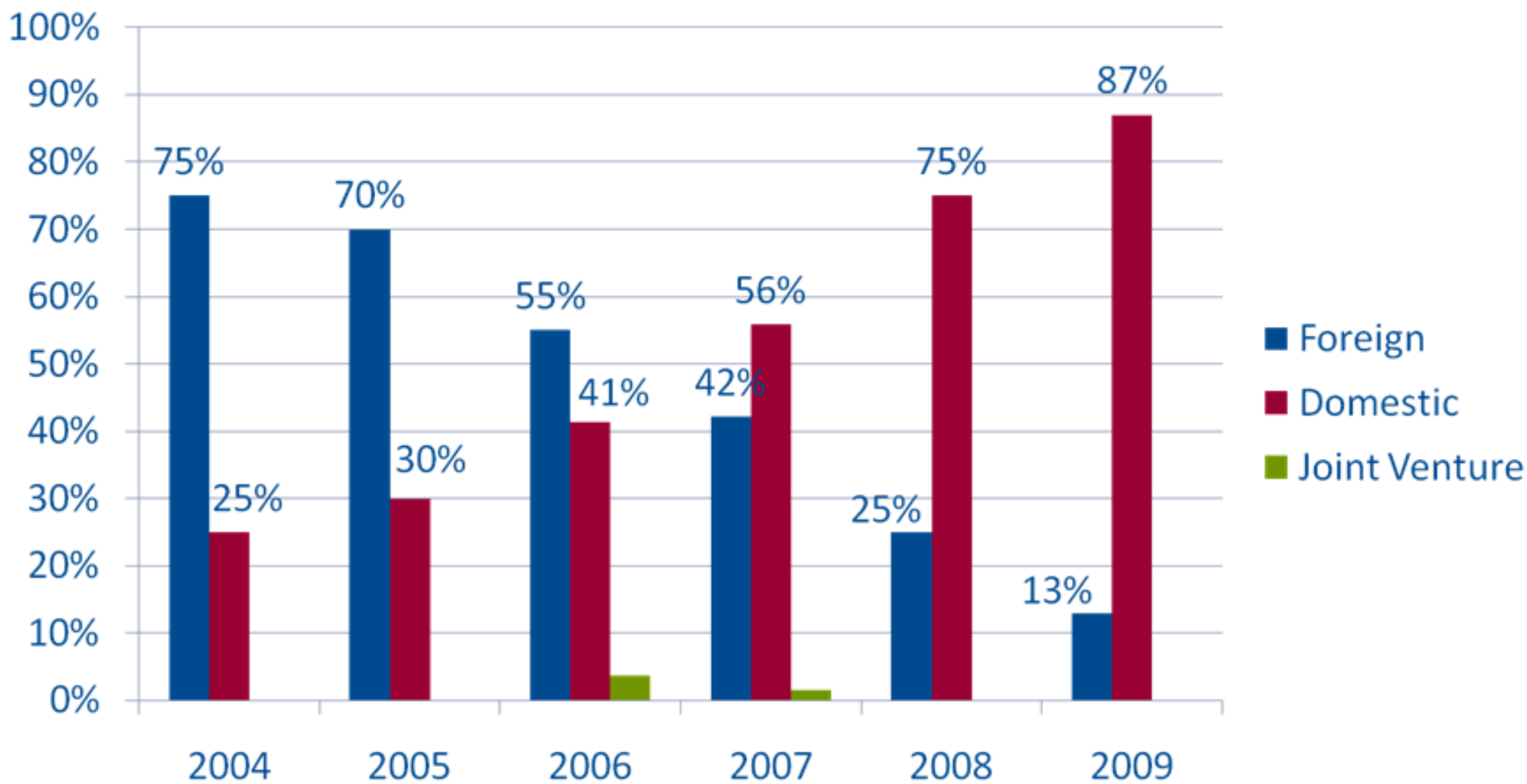
Annual Installed capacity in China – Foreign vs Domestic



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What happened?

- Government target created a domestic market: opportunity for investment
- RE Law enacted: enabling environment, tax and fiscal policies designed to help wind manufacturers; tariffs for wind established
- Active DNA: CDM played a significant role in scaling up wind development in China

- Growing domestic manufacturing industry creating its own IPR
- Huge investment into R&D
- Joint development projects with companies from Europe, US, Asia
- Purchasing of the design/engineering companies in Europe; exploring export markets.

Thank you

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"WHAT NATURE DELIVERS TO US IS NEVER STALE.
BECAUSE WHAT NATURE CREATES HAS ETERNITY IN IT."

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