

Steve Sawyer
Secretary General
Global Wind Energy Council

COP 16 Cancun
9 December 2010



C0 Members



C2 Members



Associations

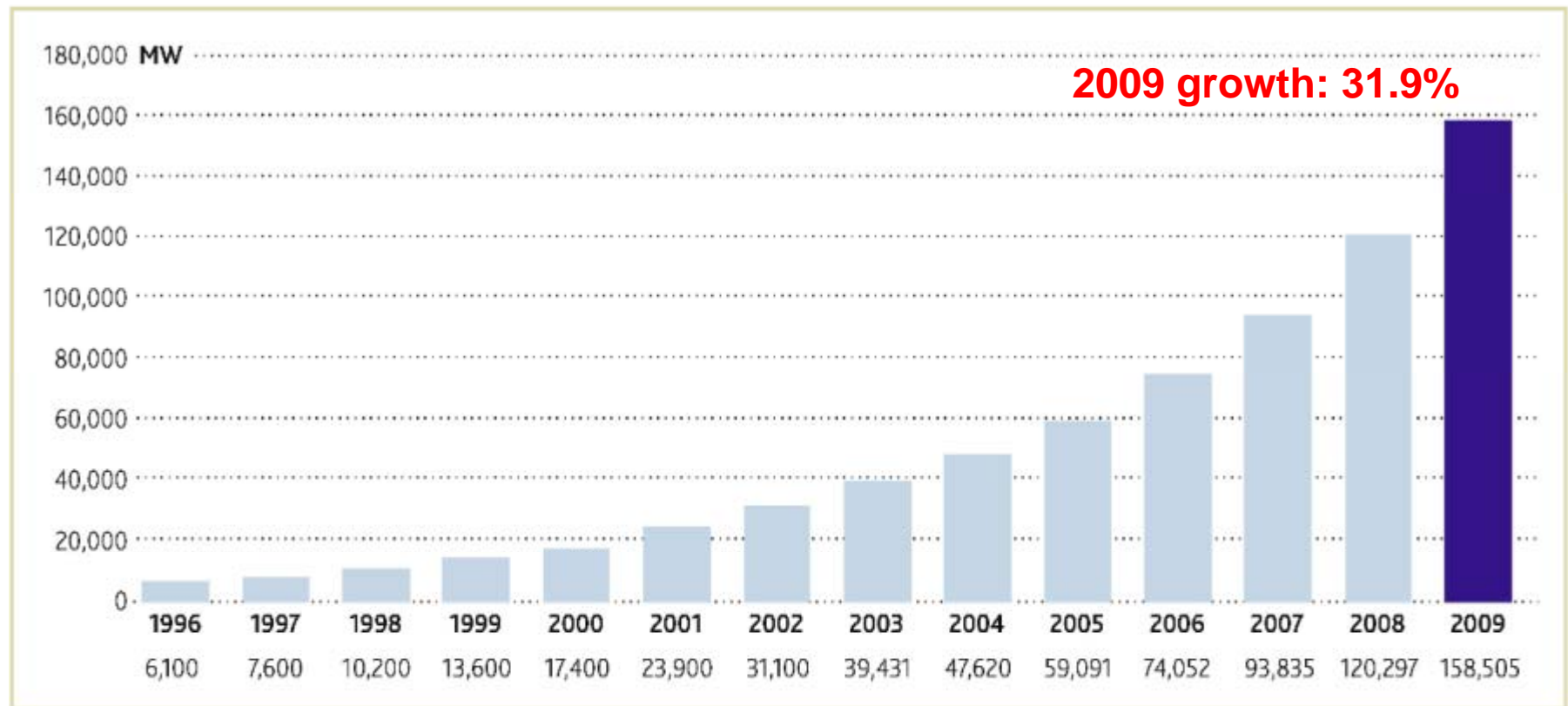


GWEC - Uniting the global wind industry and its representative associations

1. Global market status
2. Projections 2010-2014
3. Global Wind Energy Outlook 2010 in the context of a possible global power supply until 2050
4. Wind, Mitigation and Carbon markets
5. Looking Ahead
6. Conclusions

Cumulative Installed Capacity

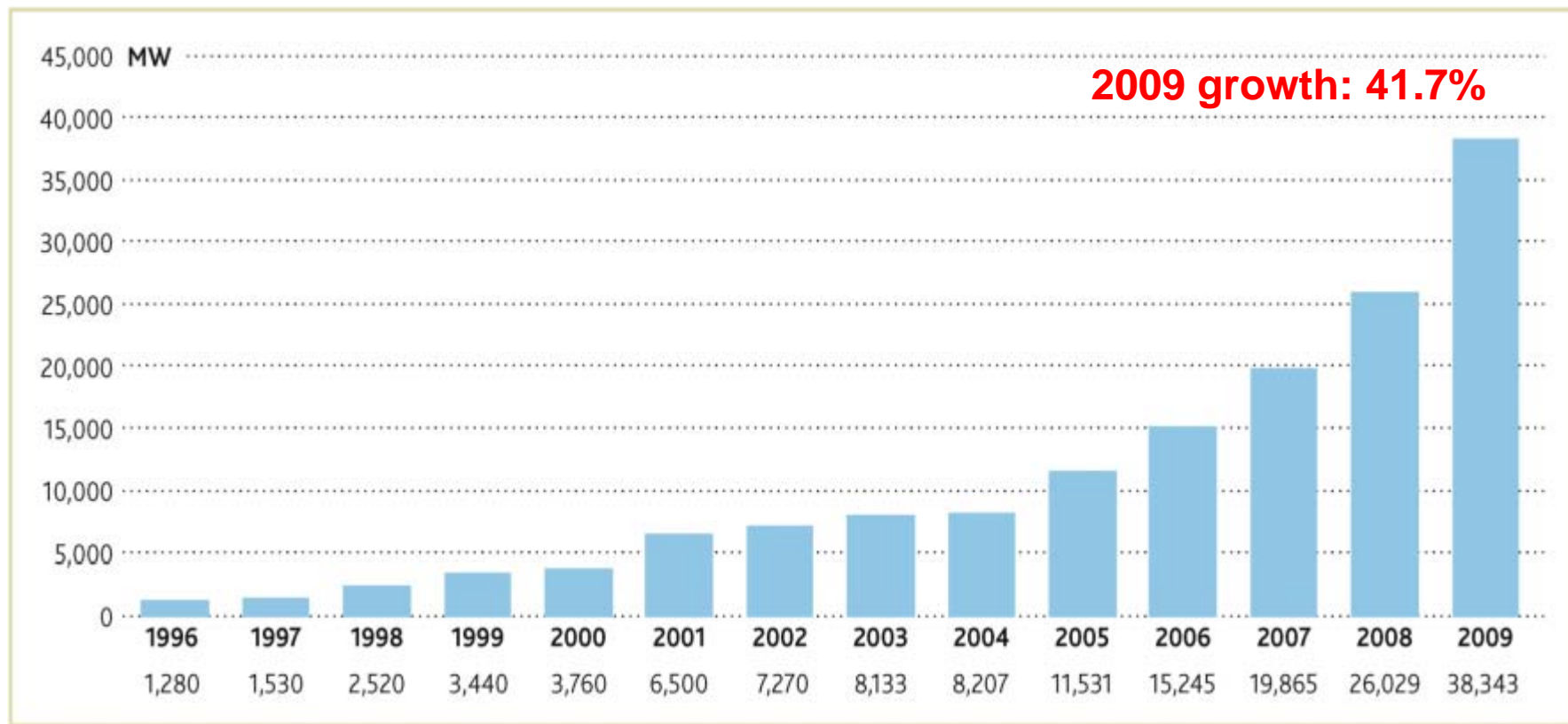
GLOBAL CUMULATIVE INSTALLED CAPACITY 1996-2009



13 yr avg growth: 28.6%

Annual Installed Capacity

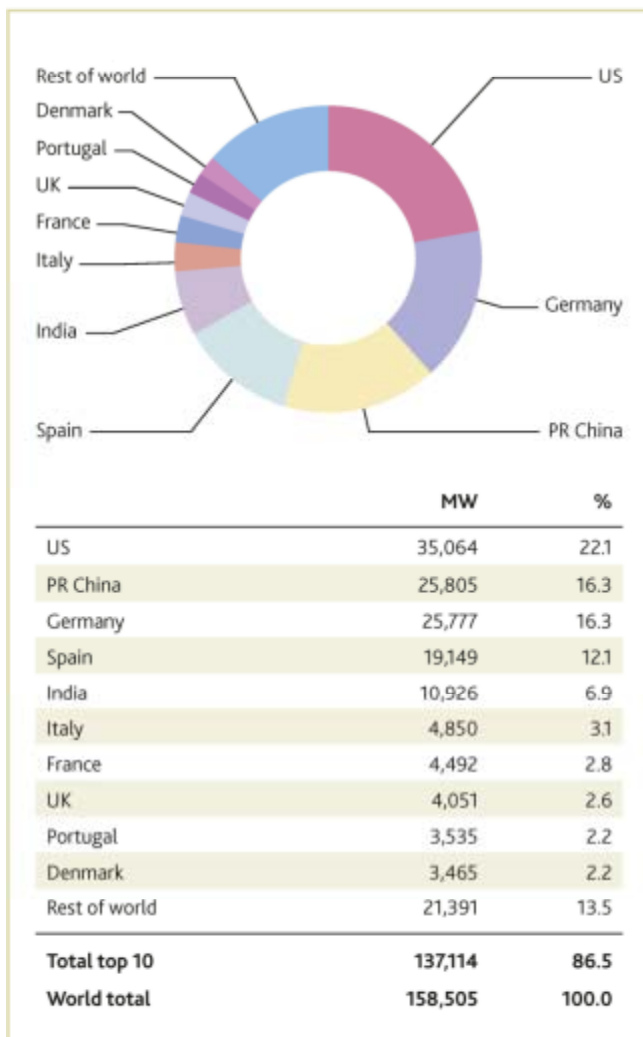
GLOBAL ANNUAL INSTALLED CAPACITY 1996-2009



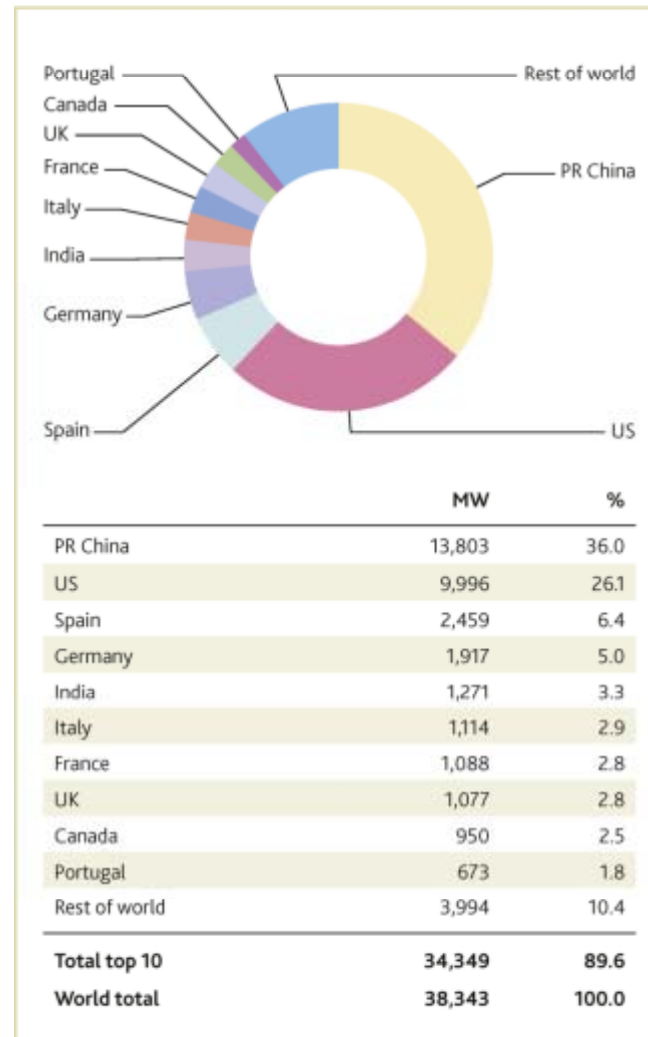
13 yr avg growth: 31.4%

2009 Market Leaders

TOP 10 CUMULATIVE INSTALLED CAPACITY 2010

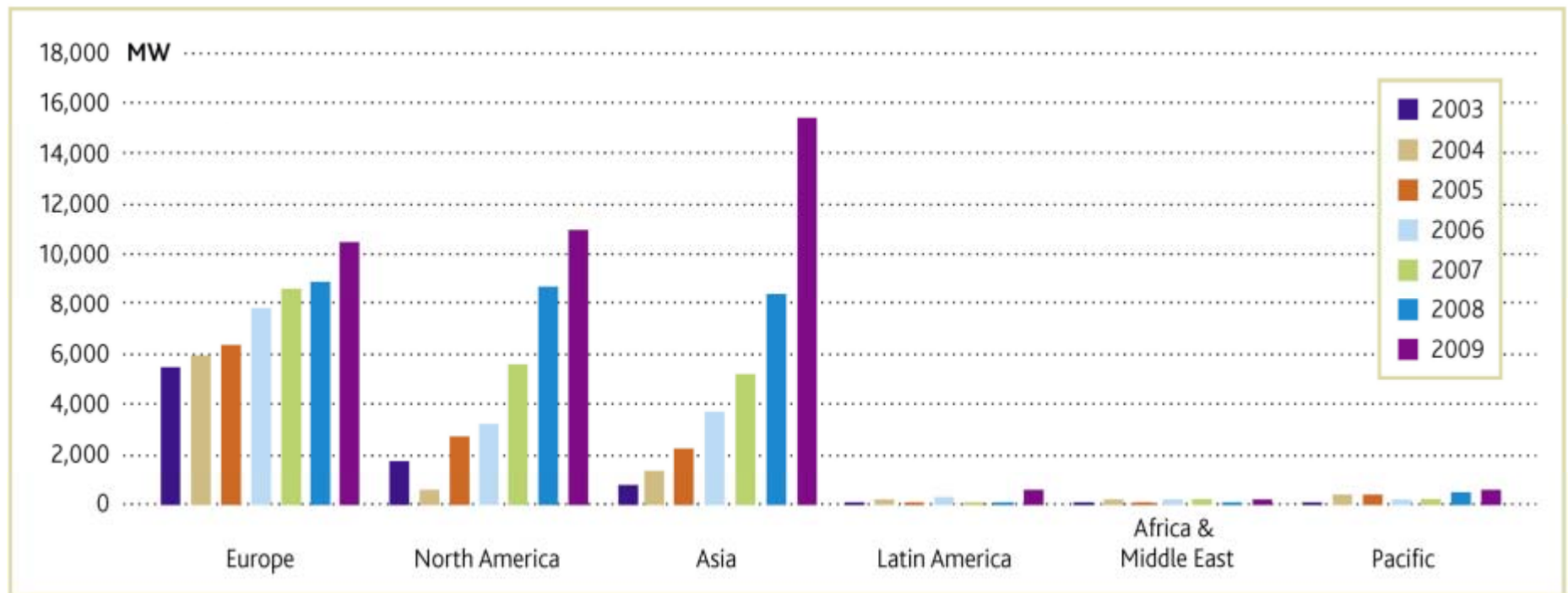


TOP 10 NEW INSTALLED CAPACITY 2010



Regional Breakdown

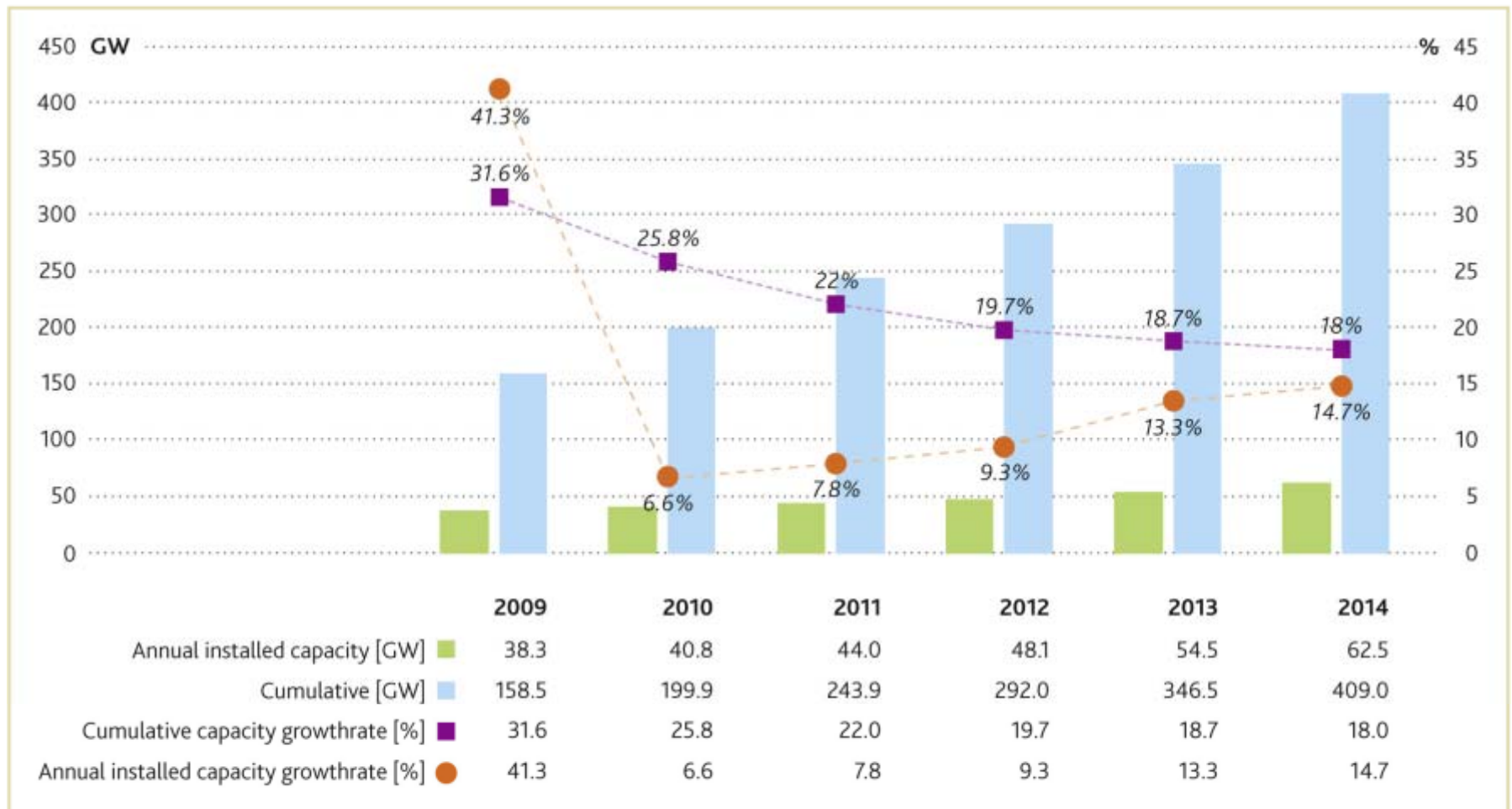
ANNUAL INSTALLED CAPACITY BY REGION 2003-2009



- 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 by the end of this year or early next;
- European market continues to broaden – new boom with offshore getting underway
- Latin America, Africa and the Pacific continue ‘on the verge of take-off’

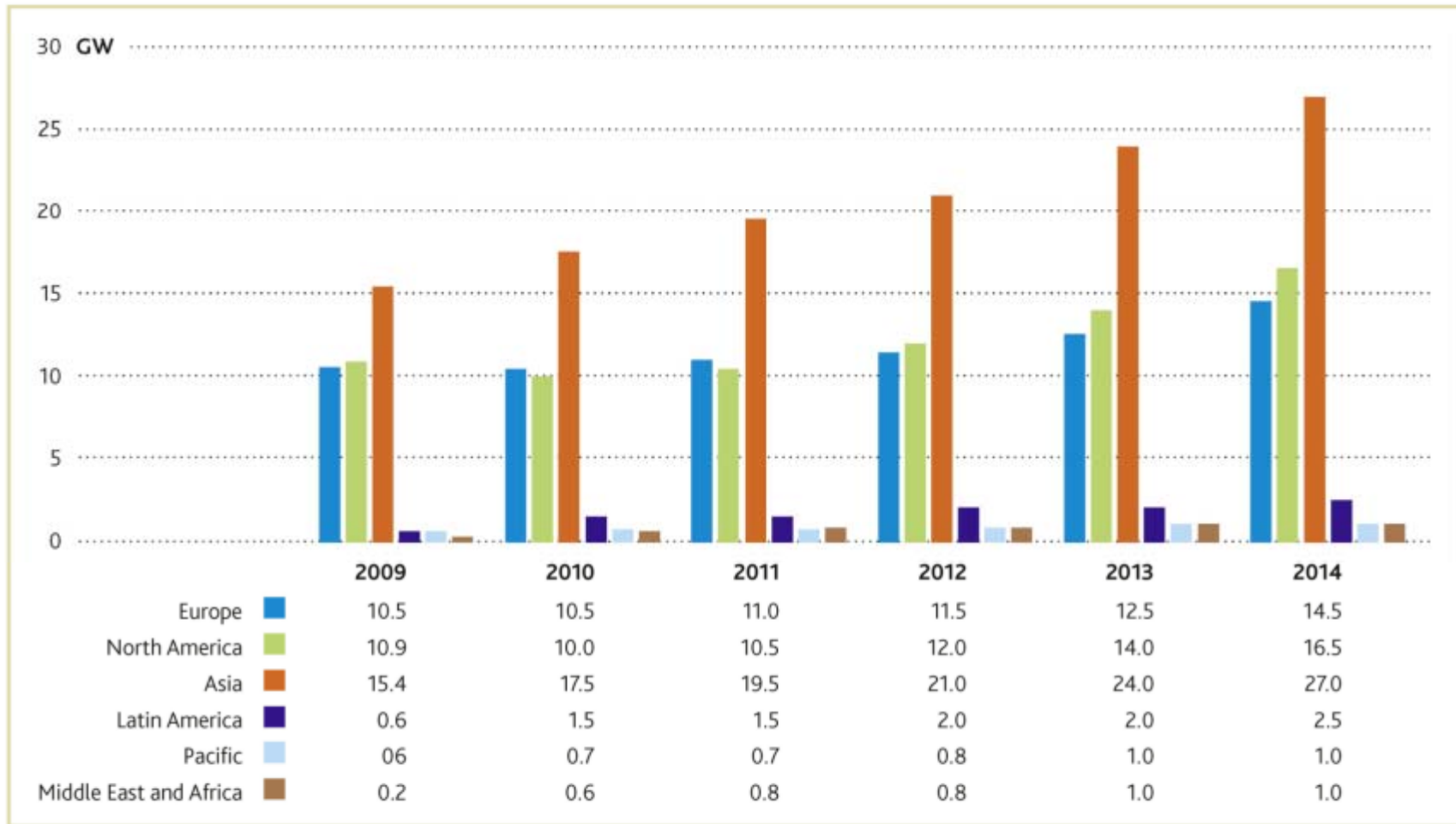
Projections to 2014

MARKET FORECAST 2010-2014



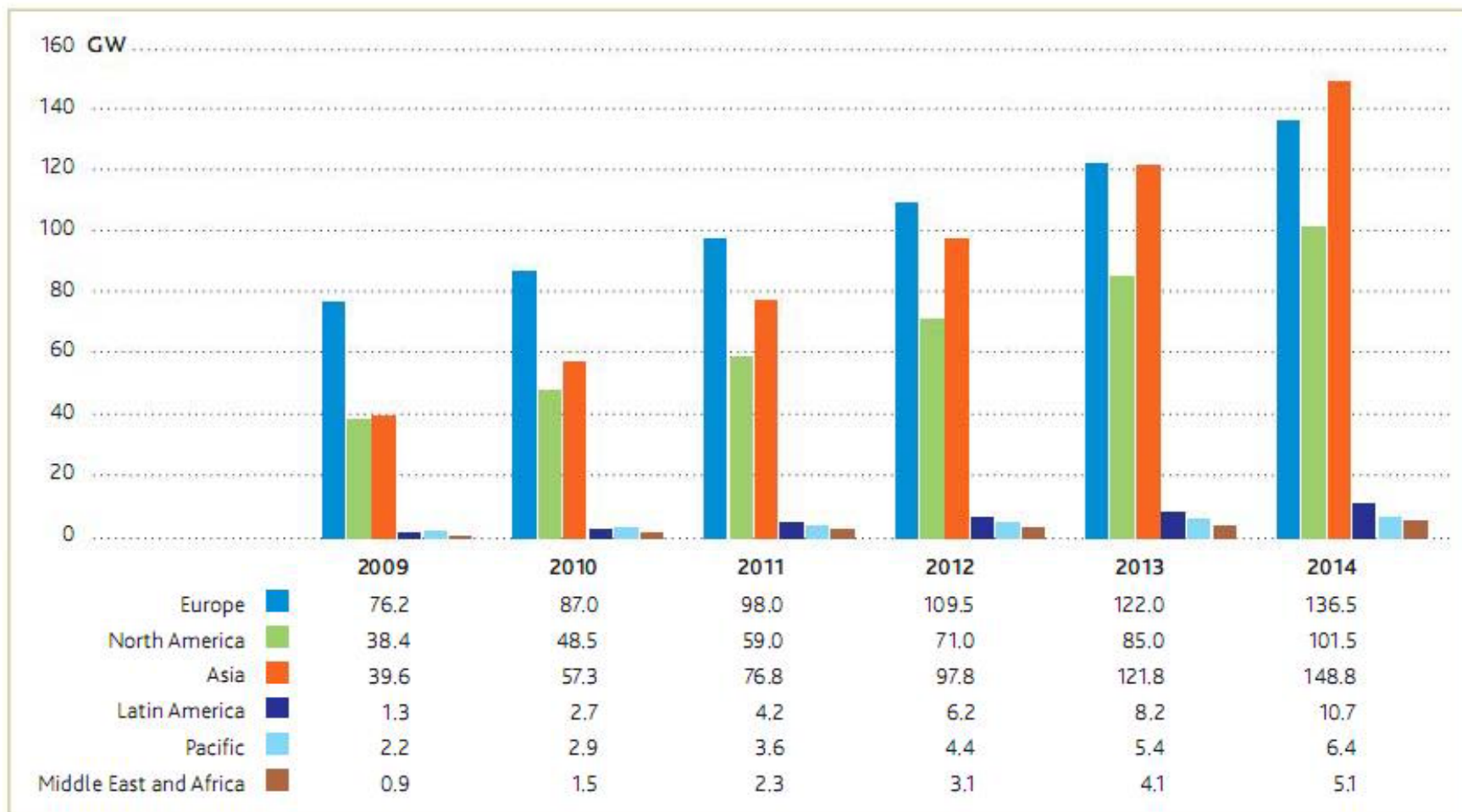
Annual market to 2014 by region

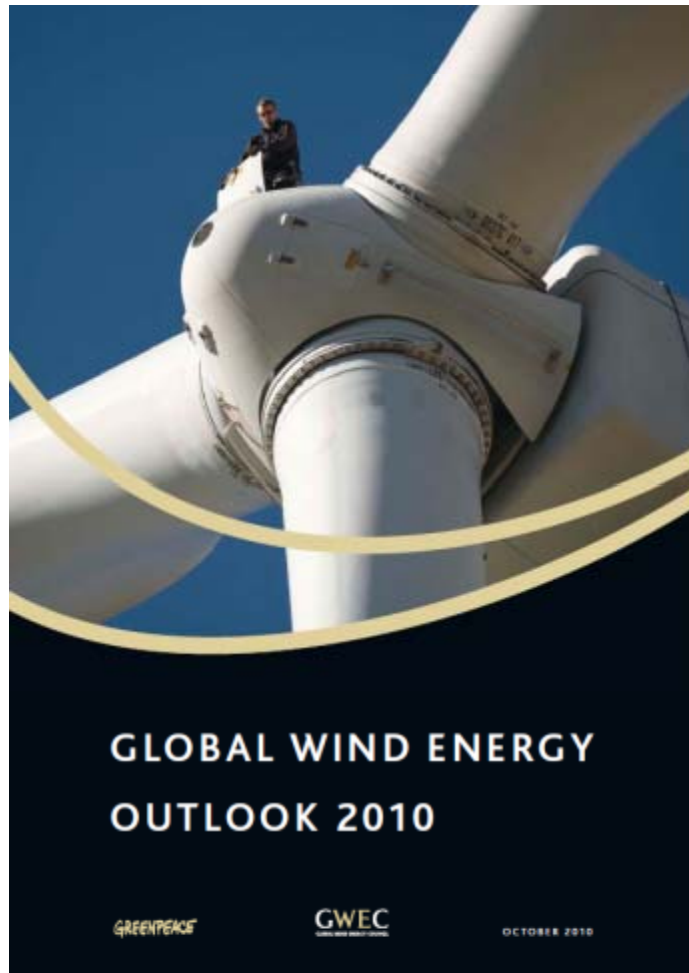
ANNUAL MARKET FORECAST BY REGION 2009-2013



Cumulative by Region 2009-2013

CUMULATIVE MARKET FORECAST BY REGION 2009-2013





Global Wind Energy Outlook 2010

Key findings:

- 2008 and 2009 markets ahead of Advanced scenario
- 2010-2015 growth updated to reflect actual development
- IEA Reference scenario more positive: up from 231 GW to 415 GW for 2020; and from 415 GW to 573 for 2030
- Reflects increasing credibility of wind power with key international bodies
- Even stronger than predicted growth in Asia, mainly in China
- Emerging markets: Latin America, Non-OECD Asia, Africa, promising signs in each

The Scenarios – Main Assumptions

“Reference” scenario:

- most conservative scenario, based on International Energy Agency (IEA) 2009 World Energy Outlook
- IEA assessment has then been extended up to 2050 using input from DLR

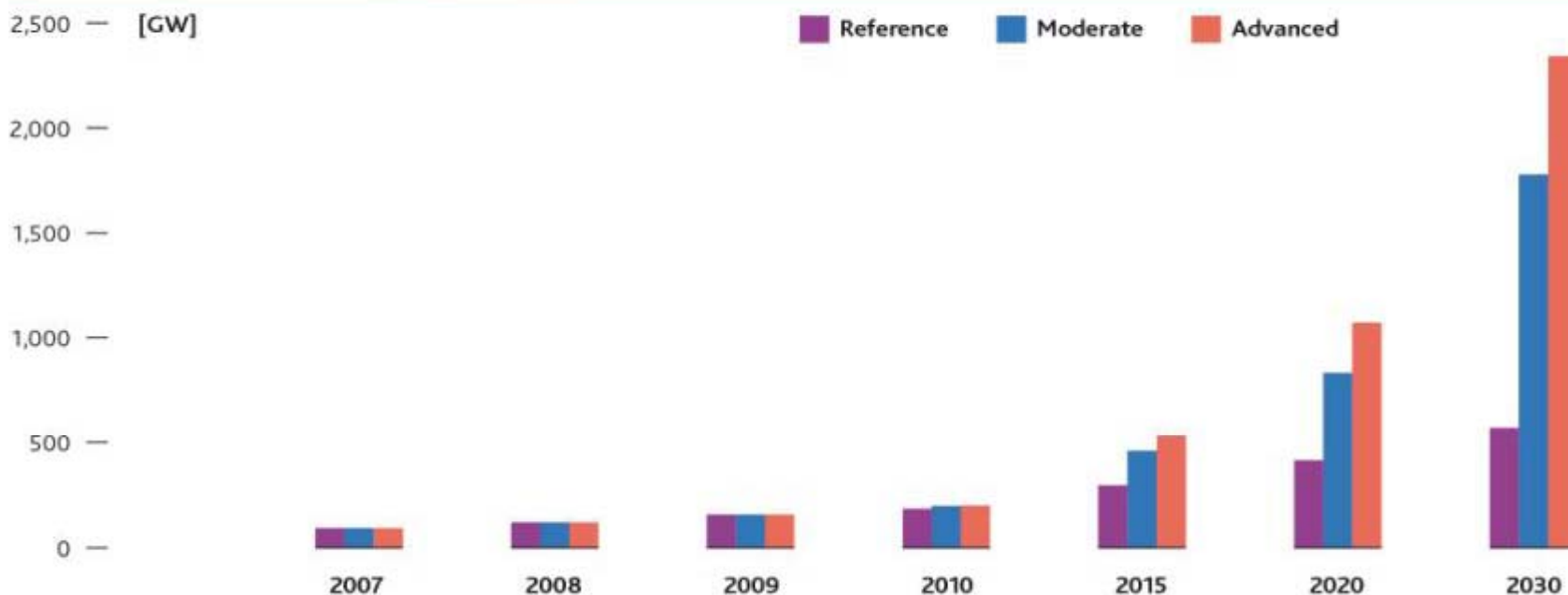
“Moderate” scenario:

- takes into account all policy measures to support renewable energy either under way or planned around the world
- assumes that renewables or wind targets set by many countries are successfully implemented

“Advanced” scenario:

- assumption is that all policy options in favour of renewable energy are selected and the political will is there to carry them out

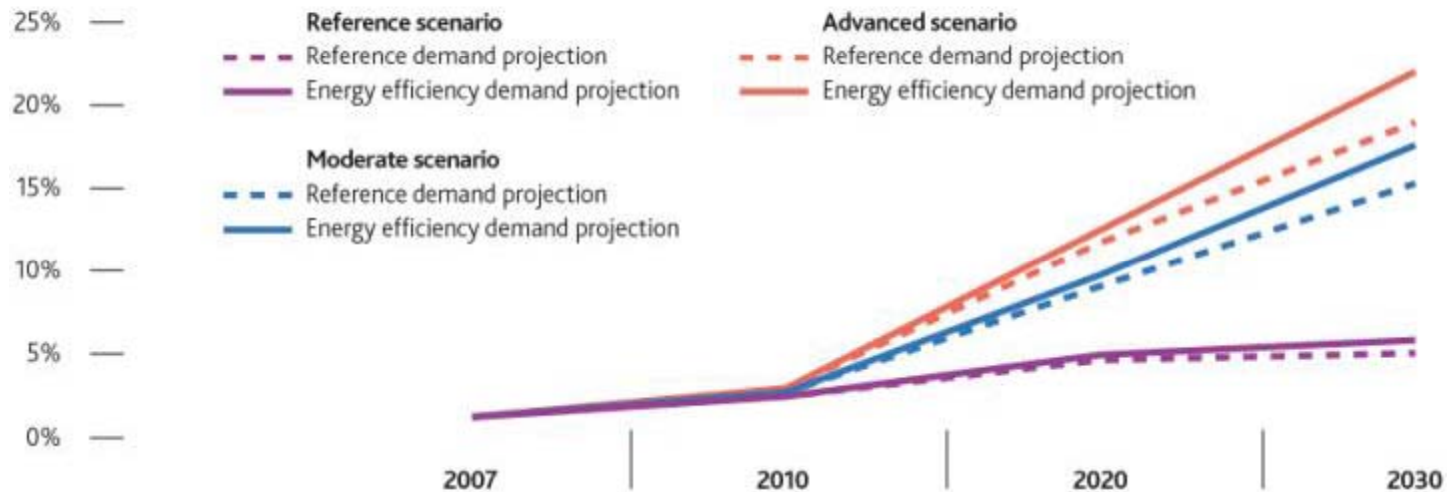
GLOBAL CUMULATIVE WIND POWER CAPACITY



	2007	2008	2009	2010	2015	2020	2030
Reference [MW]	93,864	120,297	158,505	185,258	295,783	415,433	572,733
[TWh]	206	263	347	406	725	1,019	1,405
Moderate [MW]	93,864	120,297	158,505	198,717	460,364	832,251	1,777,550
[TWh]	206	263	347	435	1,129	2,041	4,360
Advanced [MW]	93,864	120,297	158,505	201,657	533,233	1,071,415	2,341,984
[TWh]	206	263	347	442	1,308	2,628	5,429

% of global electricity supply

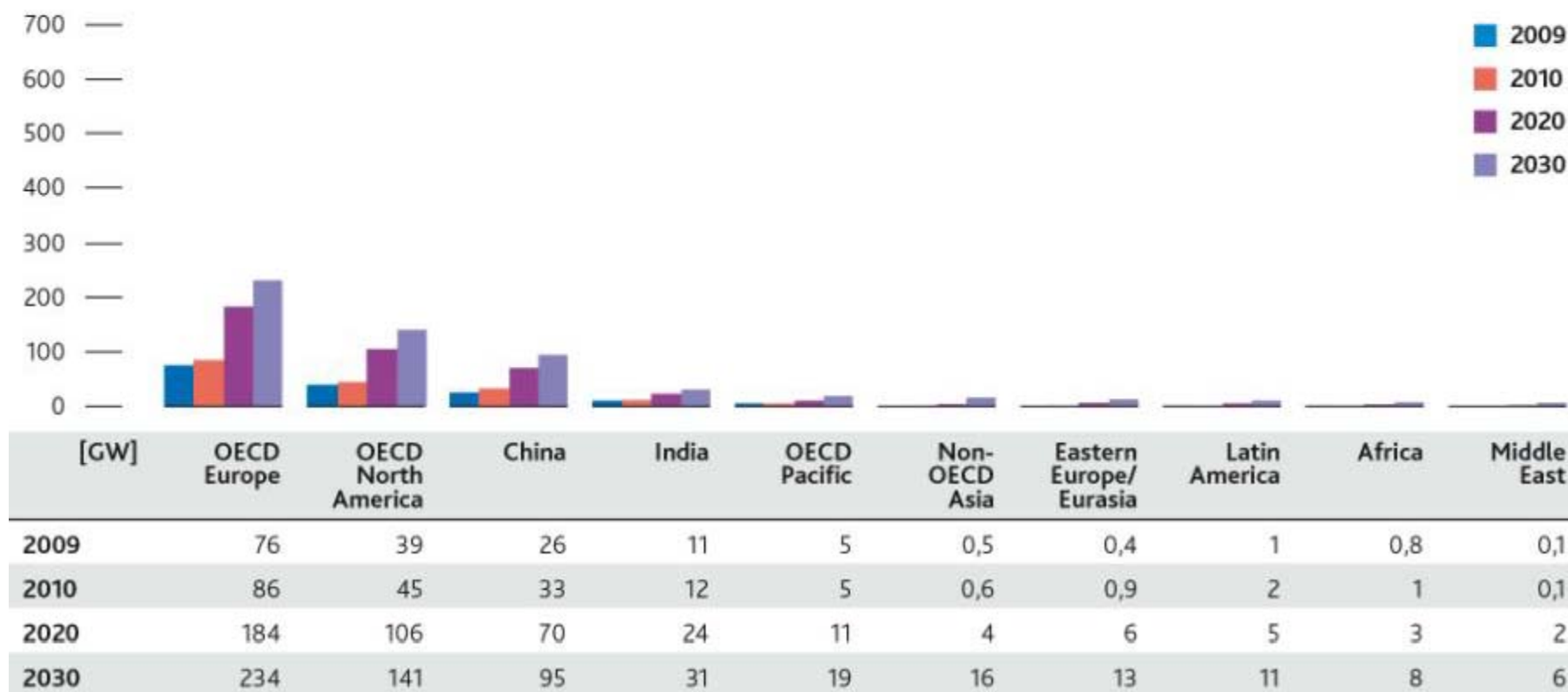
WIND POWER SHARE OF GLOBAL ELECTRICITY DEMAND



	2007	2010	2020	2030
Reference scenario				
Reference demand projection	1.1%	2.3%	4.5%	4.9%
Energy efficiency demand projection	1.1%	2.3%	4.8%	5.6%
Moderate scenario				
Reference demand projection	1.1%	2.4%	8.9%	15.1%
Energy efficiency demand projection	1.1%	2.5%	9.5%	17.5%
Advanced scenario				
Reference demand projection	1.1%	2.5%	11.5%	18.8%
Energy efficiency demand projection	1.1%	2.5%	12.3%	21.8%

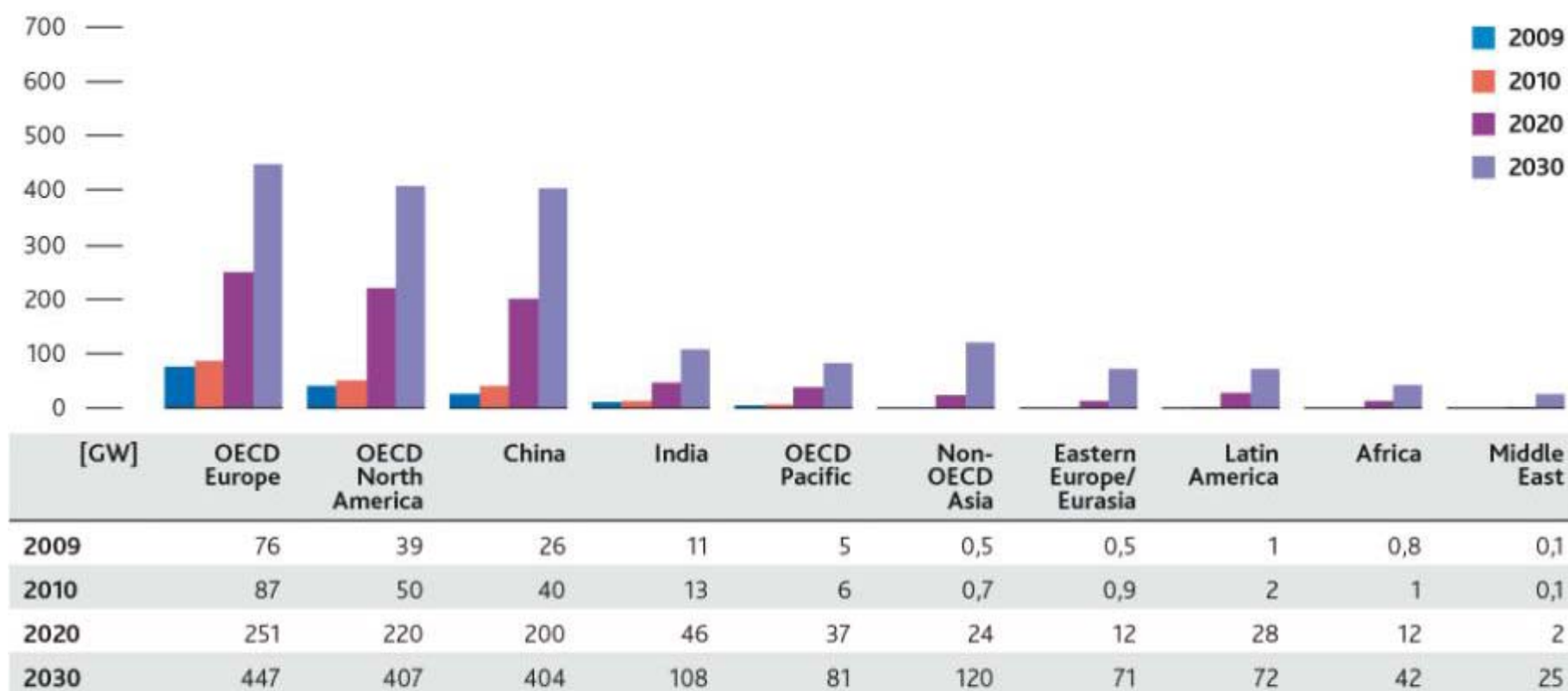
Reference Scenario

REGIONAL BREAKDOWN: REFERENCE SCENARIO

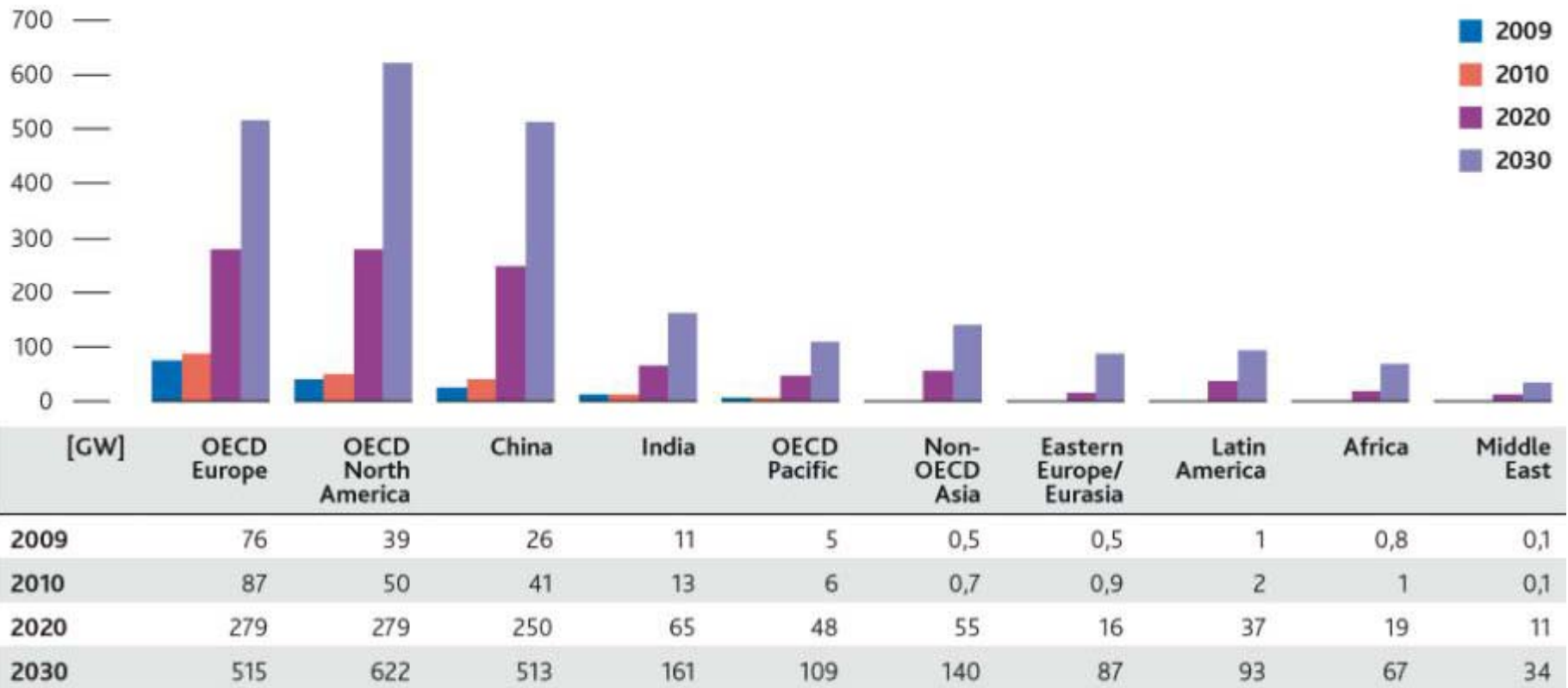


Moderate Scenario

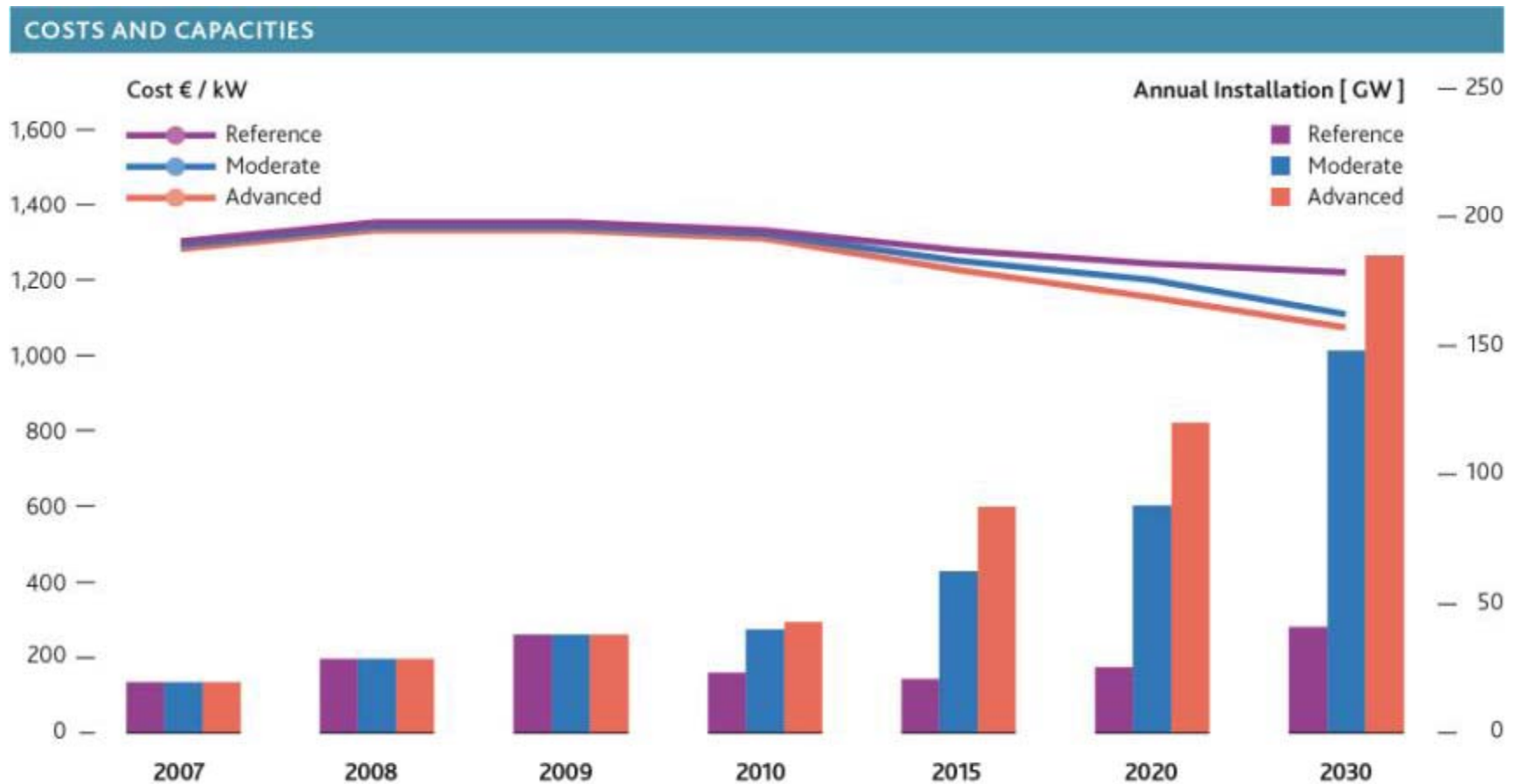
REGIONAL BREAKDOWN: MODERATE SCENARIO



REGIONAL BREAKDOWN: ADVANCED SCENARIO

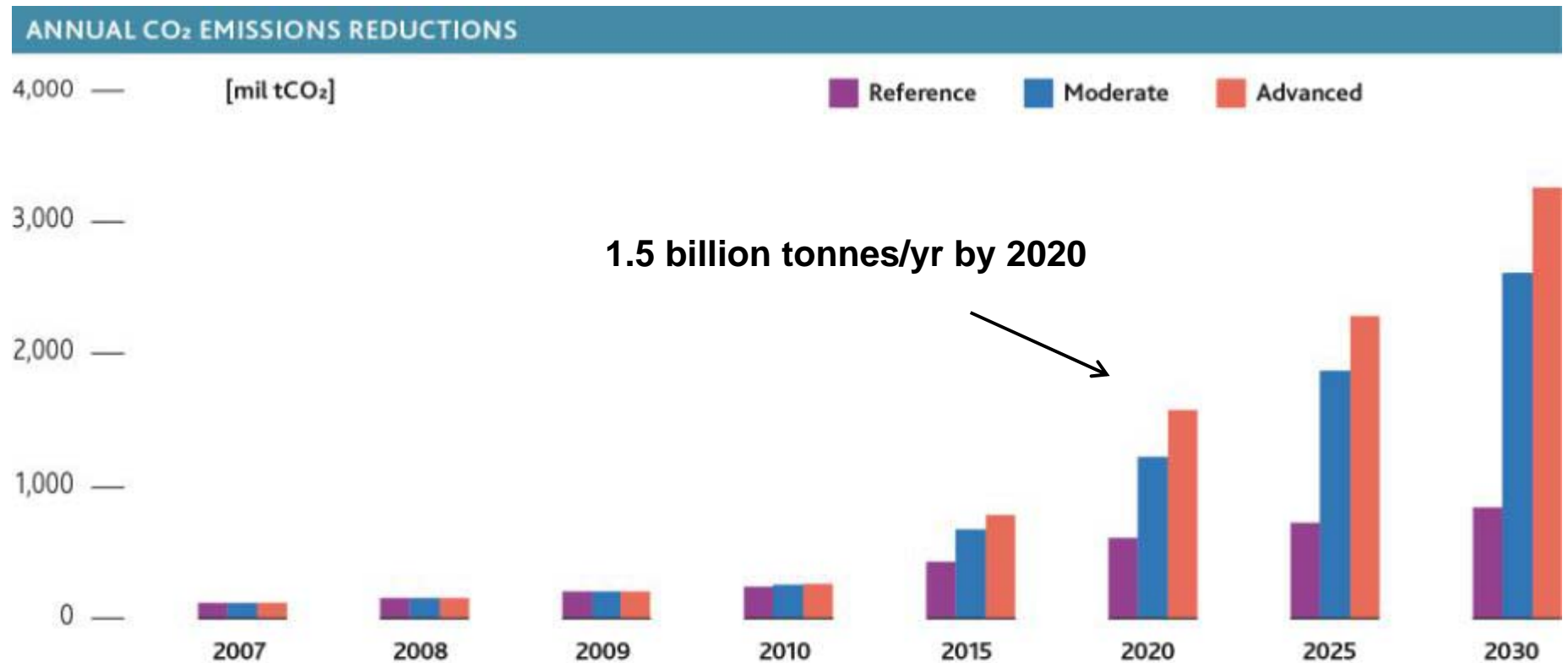


Development of Costs



Investment and Employment

INVESTMENT AND EMPLOYMENT							
	2007	2008	2009	2010	2015	2020	2030
Reference							
Annual Installation [MW]	19,865	28,700	38,343	26,735	20,887	25,712	41,219
Cost [€ / kW]	1,300	1,350	1,350	1,327	1,276	1,240	1,216
Investment [€ million /year]	25,824	38,745	51,763	35,507	26,649	31,894	50,136
Employment [job year]	329,232	470,559	627,927	462,982	411,801	524,027	809,006
Moderate							
Annual Installation [MW]	19,865	28,700	38,343	40,212	62,887	88,133	148,416
Cost [€ / kW]	1,300	1,350	1,350	1,329	1,258	1,208	1,116
Investment [€ million /year]	25,824	38,745	51,763	53,459	79,109	106,504	165,691
Employment [job year]	329,232	470,559	627,927	629,137	1,033,721	1,422,874	2,372,911
Advanced							
Annual Installation [MW]	19,865	28,700	38,343	43,263	87,641	120,135	185,350
Cost [€ / kW]	1,300	1,350	1,350	1,328	1,245	1,172	1,093
Investment [€ million /year]	25,824	38,745	51,763	57,450	109,072	140,762	202,600
Employment [job year]	329,232	470,559	627,927	672,827	1,404,546	1,918,530	3,004,081



- 1 - Imperative for global emissions peak prior to 2020;
- 2 - Power sector is largest source of emissions - 38% of CO₂, and about 25% of overall emissions;
- 3 - In practical terms, there are 3 options for making major emissions reductions in the power sector out to 2020: Efficiency; Fuel switching from coal to gas; and renewables, mostly windpower and hydro;
- 4 - Wind energy is the most cost-effective and timely option on the supply side out to 2020: 2600 Twh/year and 1.5 billion tonnes/year by 2020.
- 5 - Post 2012 carbon market design will have major impact – carbon market **necessary but not sufficient condition** to achieve rigorous climate protection objectives

Down Side

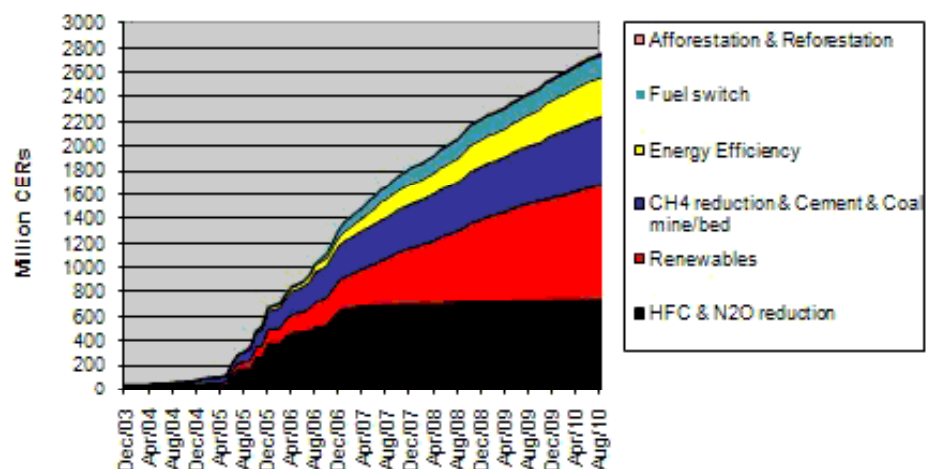
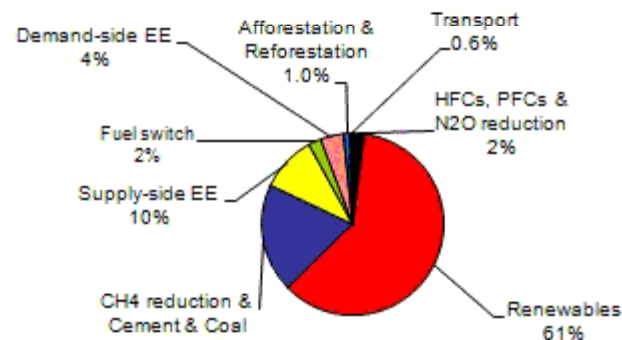
- No prospect of a more robust or more global carbon price any time soon; market uncertainty increases;
- Aggregate Annex I pledges woefully inadequate; commits us to $>3^{\circ}$ C warming; no substantial new carbon market demand;
- Europe and some developing countries moving forward, but most other major emitters in 'stall' mode;
- No clarity on financing

Bright Side

- Agreed goal of $<2^{\circ}$ C warming
- Agreement in principle for financing and technology mechanisms
- Significant steps towards CDM reform

Wind CDM projects		
Country	Projects	MW
India	457	7140
China	568	32978
Mexico	20	2303
South Korea	12	351
Brazil	13	794
Chile	7	274
Morocco	7	584
Cyprus	6	261
Egypt	4	406
Uruguay	3	74
Costa Rica	2	69
Nicaragua	2	63
Israel	2	34
Philippines	2	113
Dominican Republic	4	129
Panama	1	81
Mongolia	1	50
Jamaica	1	21
Colombia	1	20
Tunisia	1	34
Argentina	1	11
Vietnam	1	30
Kenya	1	310
Sri Lanka	1	10
Cape Verde	1	28
Thailand	1	3
Ecuador	1	2
Total	1121	46172

Number (%) of CDM projects in each category



Mexico:

- lowered expectations, most looking for a deal in South Africa in 2011 at the earliest
- focus will be on finance
- US legislation key (now virtually dead)

Targets:

- A1 cannot stay at such low levels – will EU ‘blink’?
- New possibility of G-77 leadership? From elsewhere?

Possible Deal :

- 2nd CP Kyoto
- Back door for the US
- Carbon markets *and* significant public finance necessary
- UNFCCC **will** be the place the deal is agreed

Fundamental Problem:

In the present dynamic, the negotiations can't move any further without significant movement by the US, which is highly unlikely until after 2012 at the earliest.

Strategic Options:

1. Wait for the US and hope for the best – risk Doha-izing the UNFCCC
2. Lead by example, and reap the economic benefits – EU to 30%
3. Lead by example and fight the US
4. Build a coalition that will move ahead without the US

While a global climate agreement will be fundamental to the long term success of the wind industry, for the short term:

Uncertainty:

- in international political landscape
- in the future of the carbon markets
- in 'new' climate-related funds

Focus on national/regional legislation and markets

Government stimulus to continue to play role for the next few years

Market conditions:

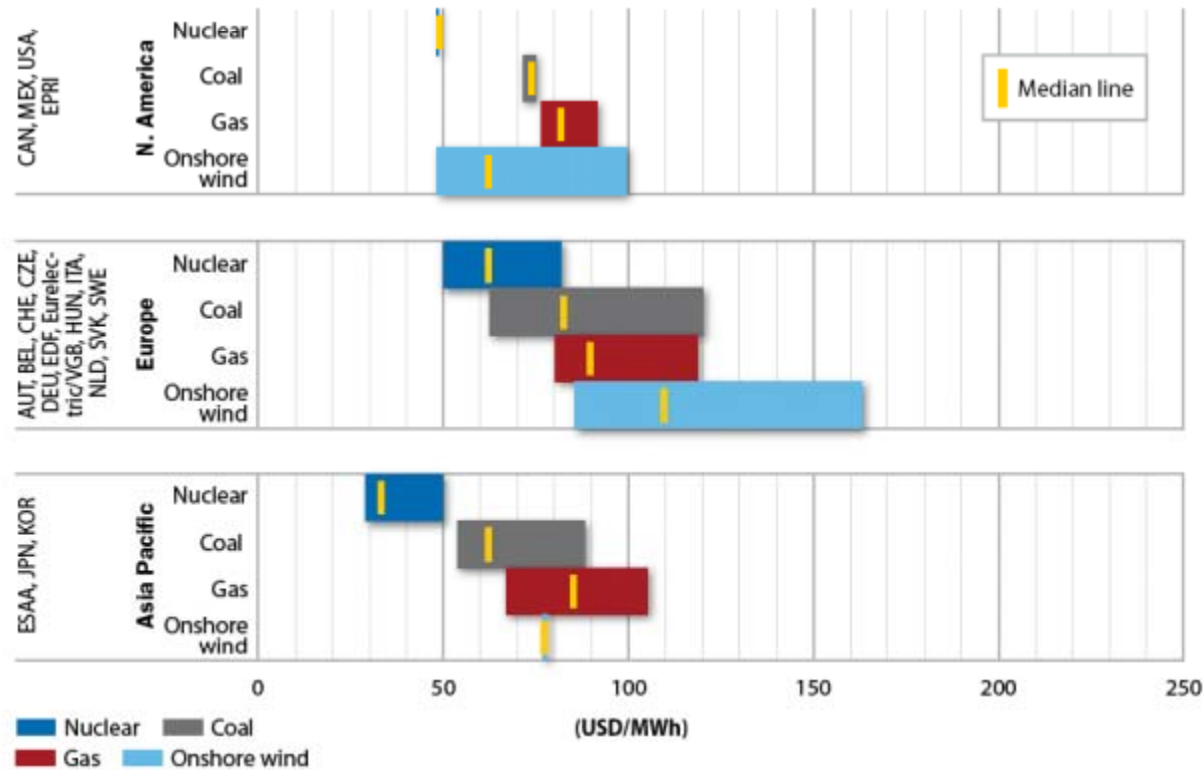
- Asian market driving global growth
- European market solid and steady
- North America uncertain
- Hopeful signs in Latin America, Africa
- Downward price pressure continues
- International commodity price volatility returns with economic recovery

Market drivers all still in place, and increasingly prominent:

energy security; cost stability; macroeconomic security; local economic development and job creation; local environment and climate

The Mainstream

Figure ES.1: Regional ranges of LCOE for nuclear, coal, gas and onshore wind power plants
(at 5% discount rate)



“If *Projected Costs of Generating Electricity* is any indication, the future is likely to see healthy competition between these different technologies... Environmental policy will also play an increasingly important role that is likely to significantly influence fossil fuel costs in the future and the relative competitiveness of various generation technologies...” – IEA, Mar 2010

Thank you

GWEC
GLOBAL WIND ENERGY COUNCIL

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

For more information:
Steve Sawyer
steve.sawyer@gwec.net
www.gwec.net