



Global Wind Power Outlook

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C0 Members



C1 and C2 Members



Associations

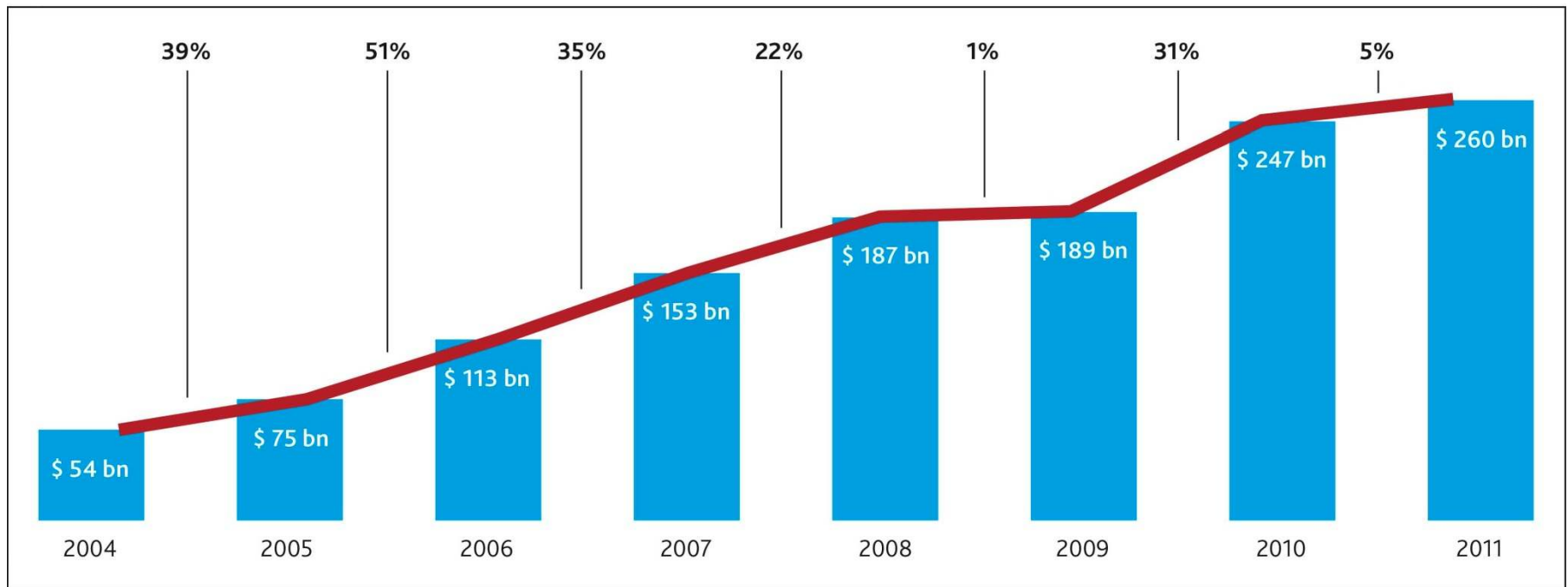


GWEC – Uniting the global wind industry and its representative associations

Outline:

1. Status of global markets
2. Drivers of wind energy development
2. Short term projections
3. Medium term projections
4. Challenges
5. New markets
6. Conclusions and Looking Ahead

Global Total New Investment in Clean Energy 2004-2011 (US\$ Bn)

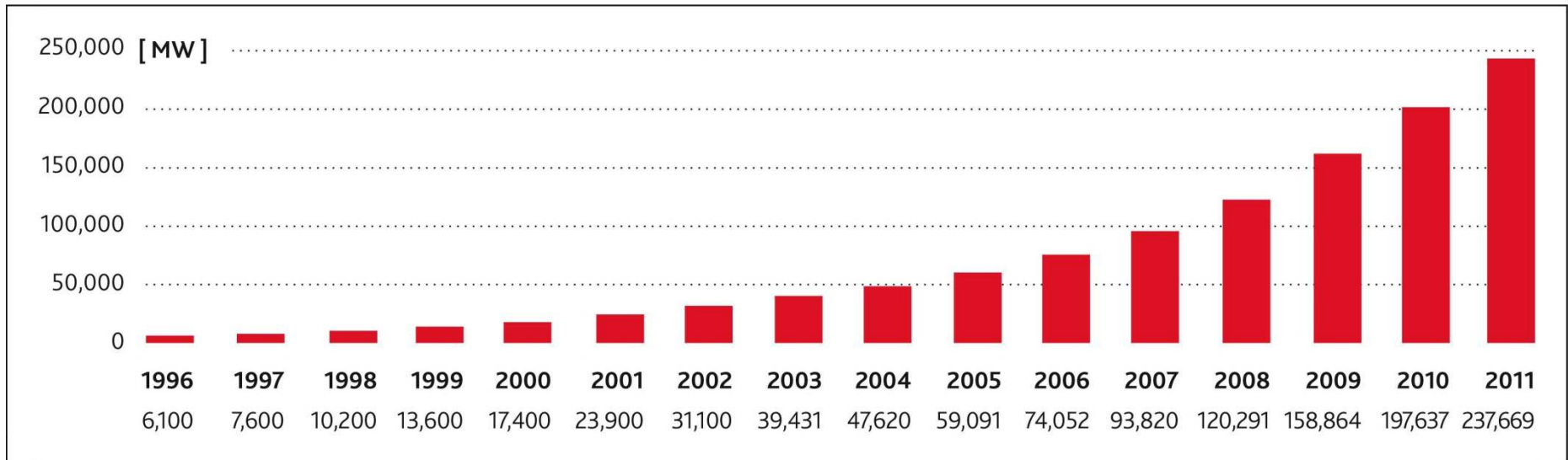


Includes Corporate and Government R&D, and small distributed capacity. Adjusted for re-invested equity. Does not include proceeds from acquisition transactions.

Source: Bloomberg New Energy Finance

2011 growth: 20.3%

Global Cumulative Installed Wind Capacity 1996-2011

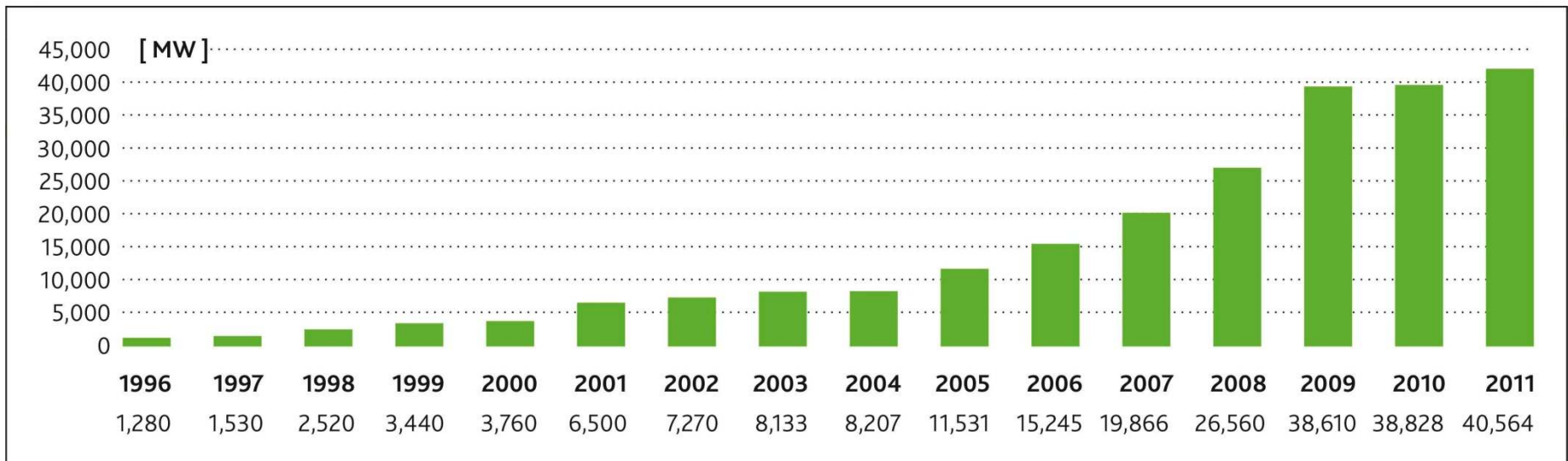


Source: GWEC

15 yr avg growth: 27.7%

2011 growth: 6%

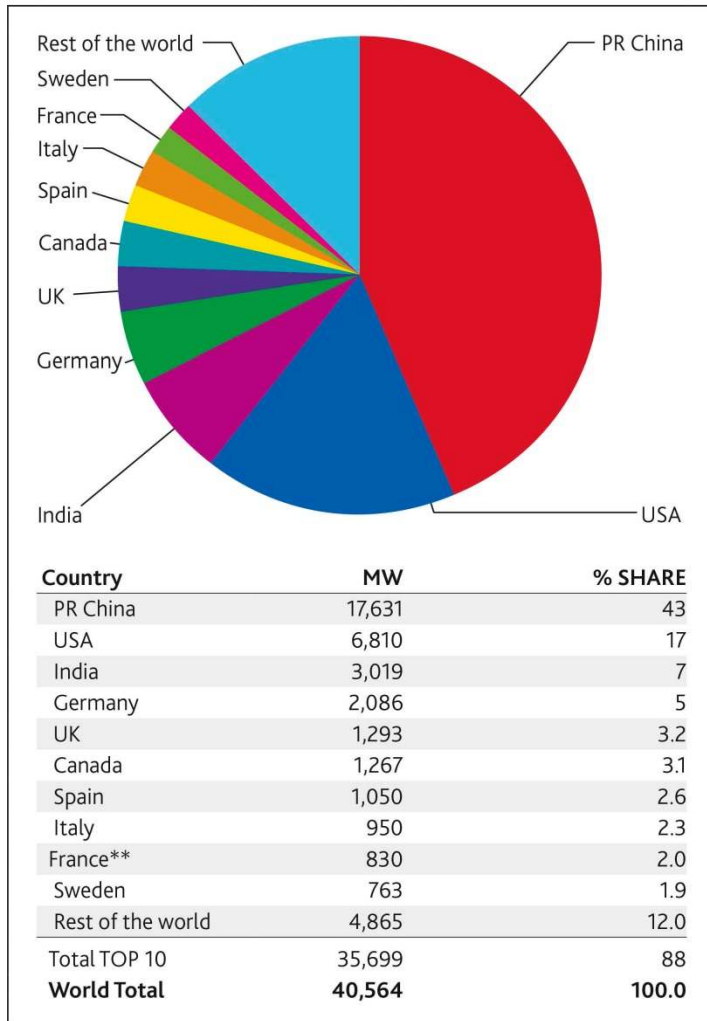
Global Annual Installed Wind Capacity 1996-2011



Source: GWEC

15 yr avg growth: 27.5%

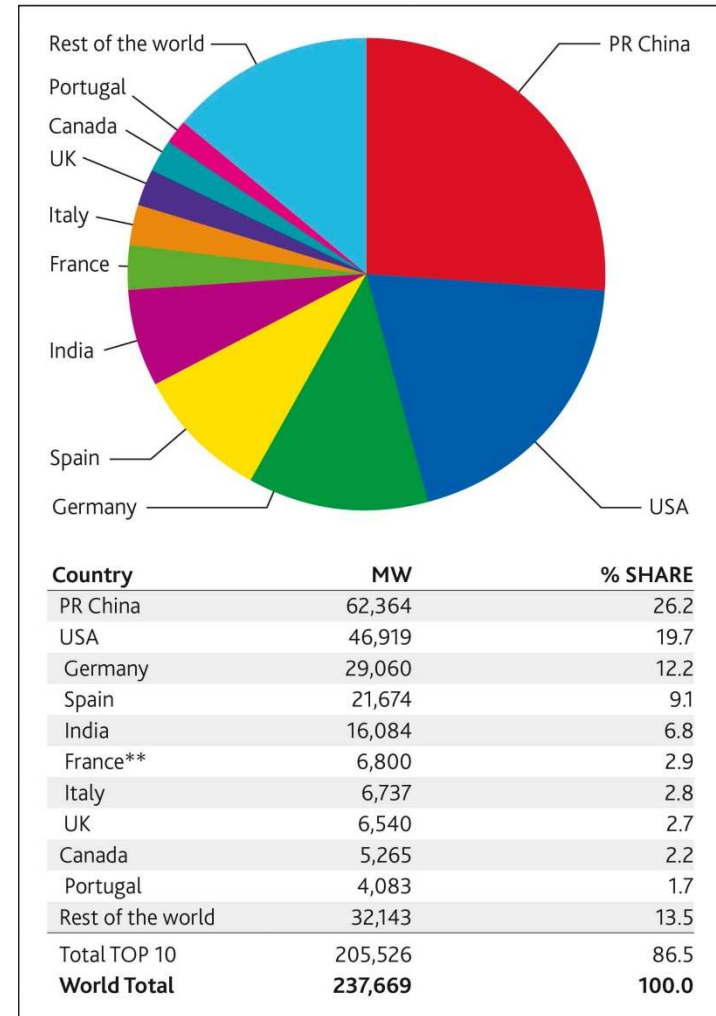
Top 10 new installed capacity Jan-Dec 2011



** Provisional Figure

Source: GWEC

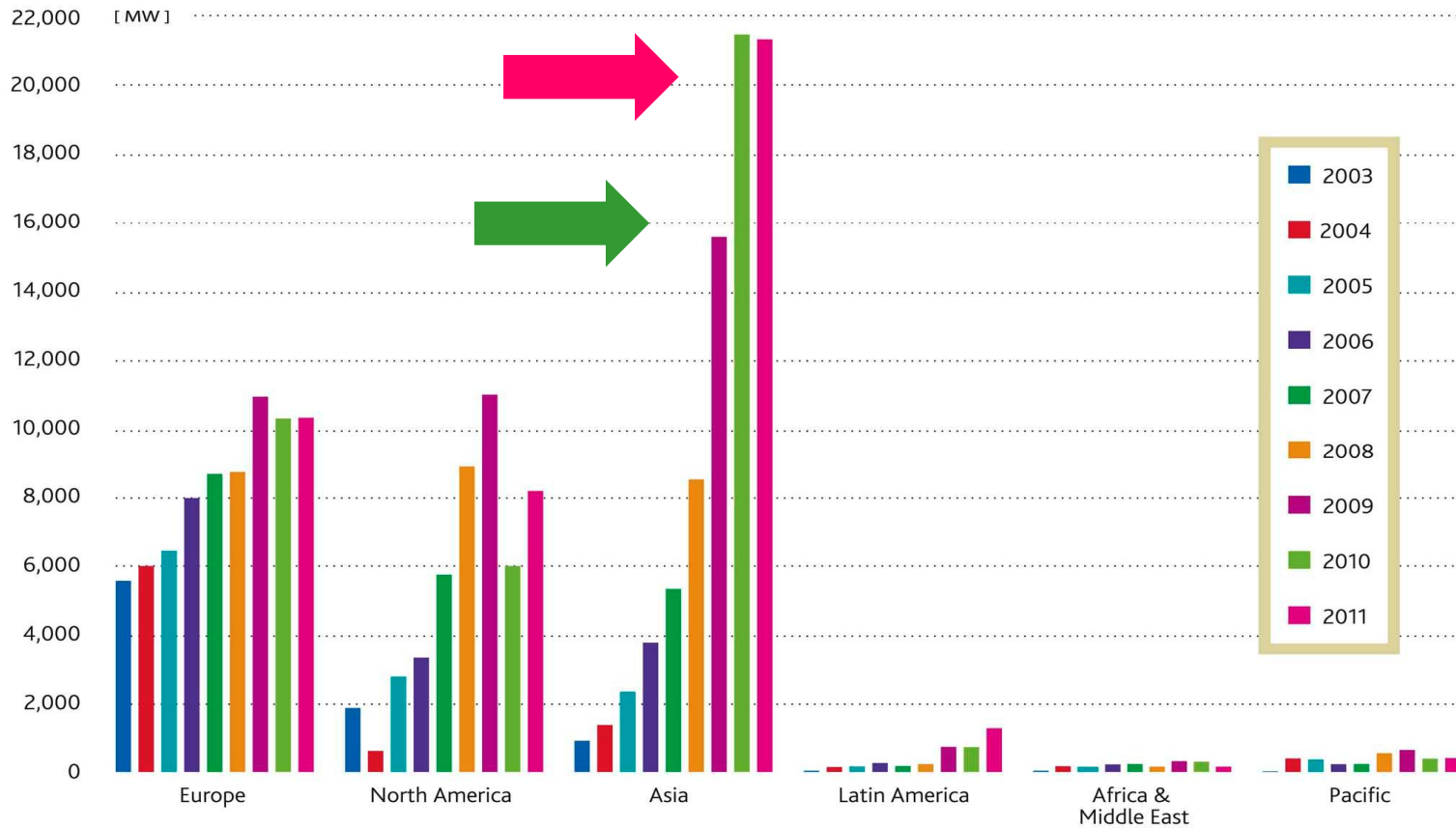
Top 10 cumulative capacity Dec 2011



** Provisional Figure

Source: GWEC

ANNUAL INSTALLED CAPACITY BY REGION 2003-2011



Global offshore 2011 and cumulative installed capacity

Country	2011 [MW]	Cumulative Total [MW]
Belgium	0	195.0
Denmark	3.6	857.28
Finland	0	26.3
Germany	108.3	200.3
Ireland	0	25.2
Netherlands	0	246.8
Norway	0	2.3
Portugal	2.0	2.0
Sweden	0	163.7
UK	752.4	2093.7
China	99.3	258.4
Japan	0	25.0
Total	965.6	4,096

Drivers for Wind Energy Development

1. Oil shocks of the 1970s: energy security
2. Climate (from 1988): emissions reductions
3. Environment (throughout): air pollution reductions – human health, infrastructure damage, crop damage

Drivers for Wind Energy Development (2)

4. Economic security – insulation from price shocks
5. Economic Development, new technology markets – jobs, growth
6. Price stability/cost reductions: merit order effect

Geography

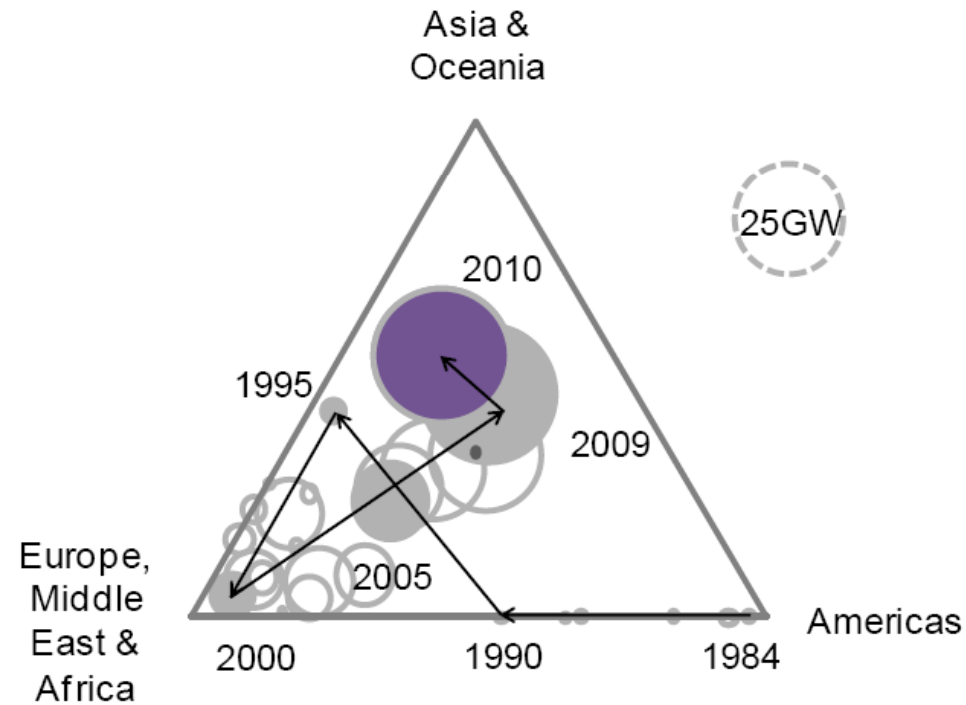
US, Denmark, India & Germany in the 70s, 80s & 90s;

Coming in at the end of the 90s: Japan, Spain and UK;

First half of 2000s, many secondary markets – many/most OECD countries, Morocco, Egypt, Brazil, Mexico, etc.

Second half of decade dominated by China

WIND-GENERATING CAPACITY NET ADDITIONS, 1984–2010 (GW)



Source: Bloomberg New Energy Finance

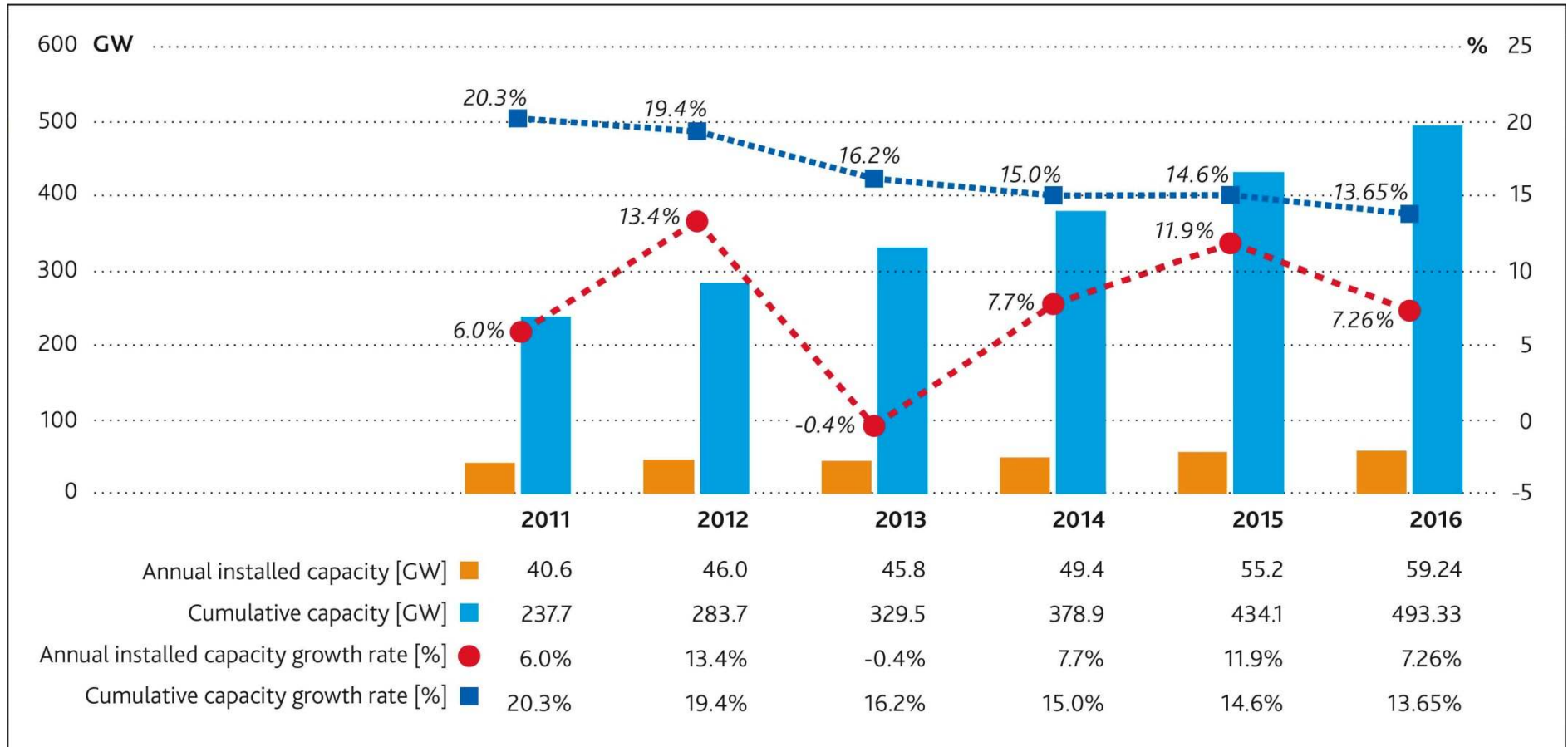
Geography (2)

From 2010 – majority of installations outside OECD

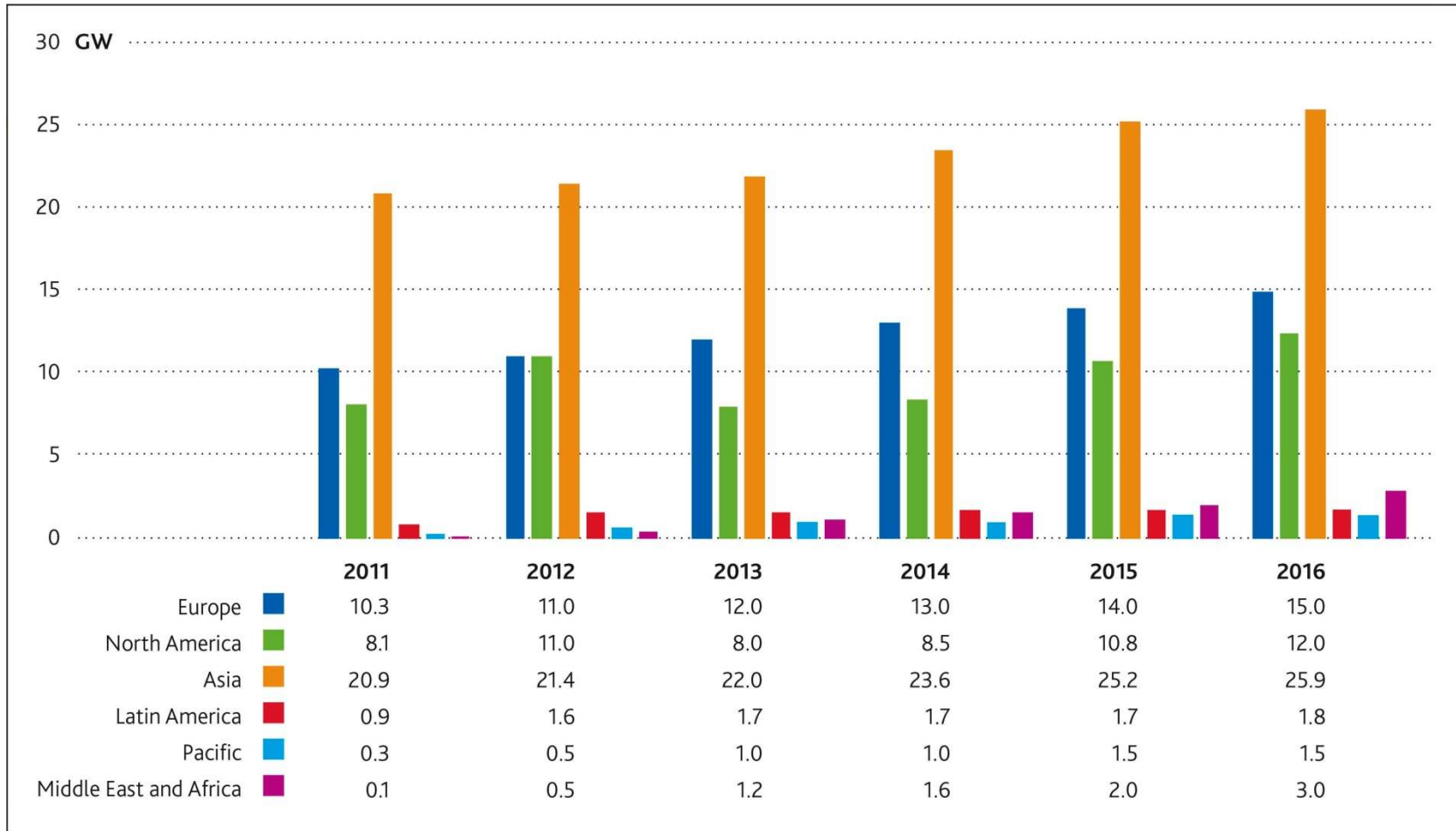
Trend is continuing, with most growth markets in Asia and Latin America, with Africa to follow

Asia passes Europe 2012/2013

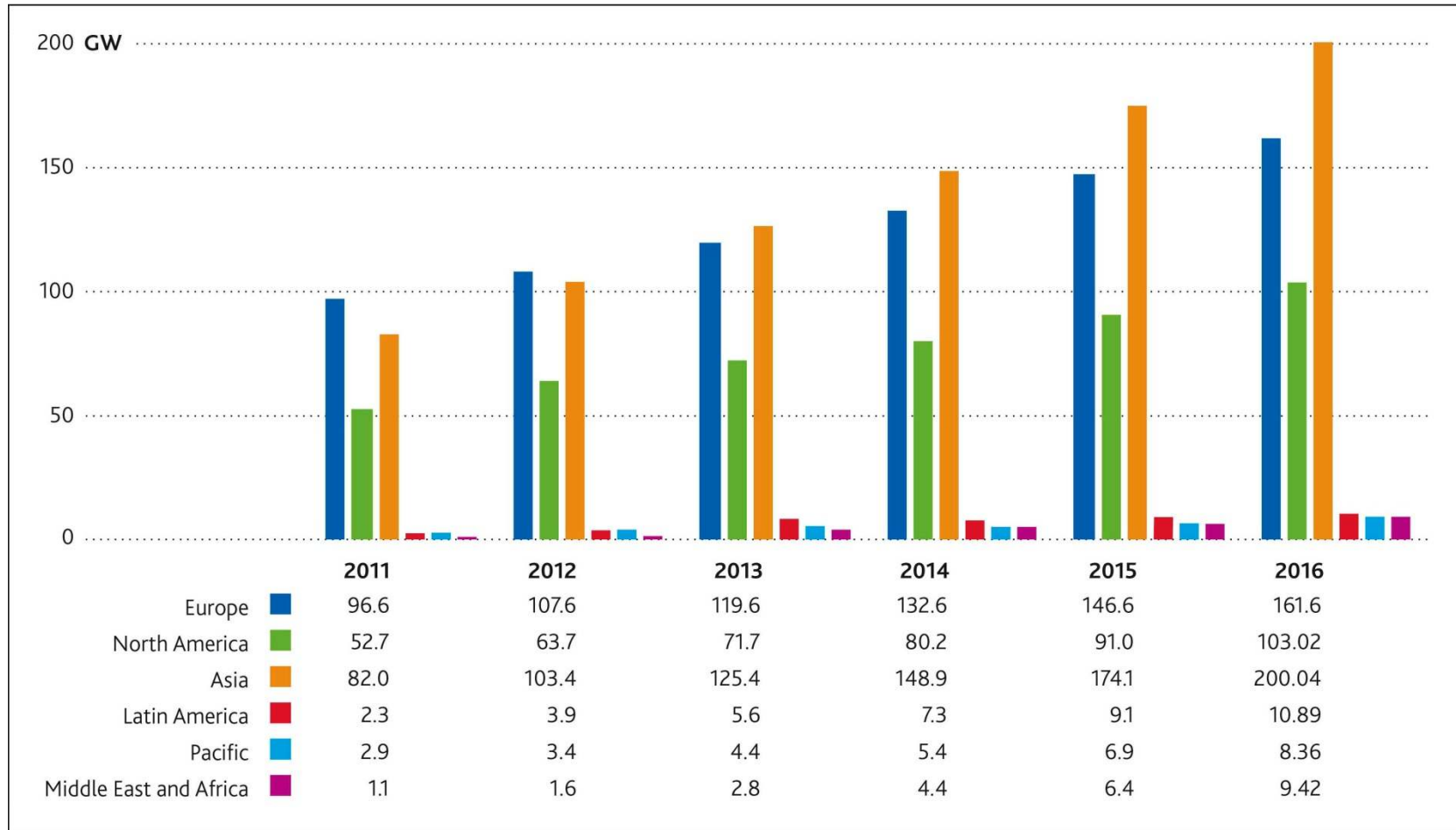
Market Forecast 2012-2016



Annual Market Forecast by Region 2012-2016

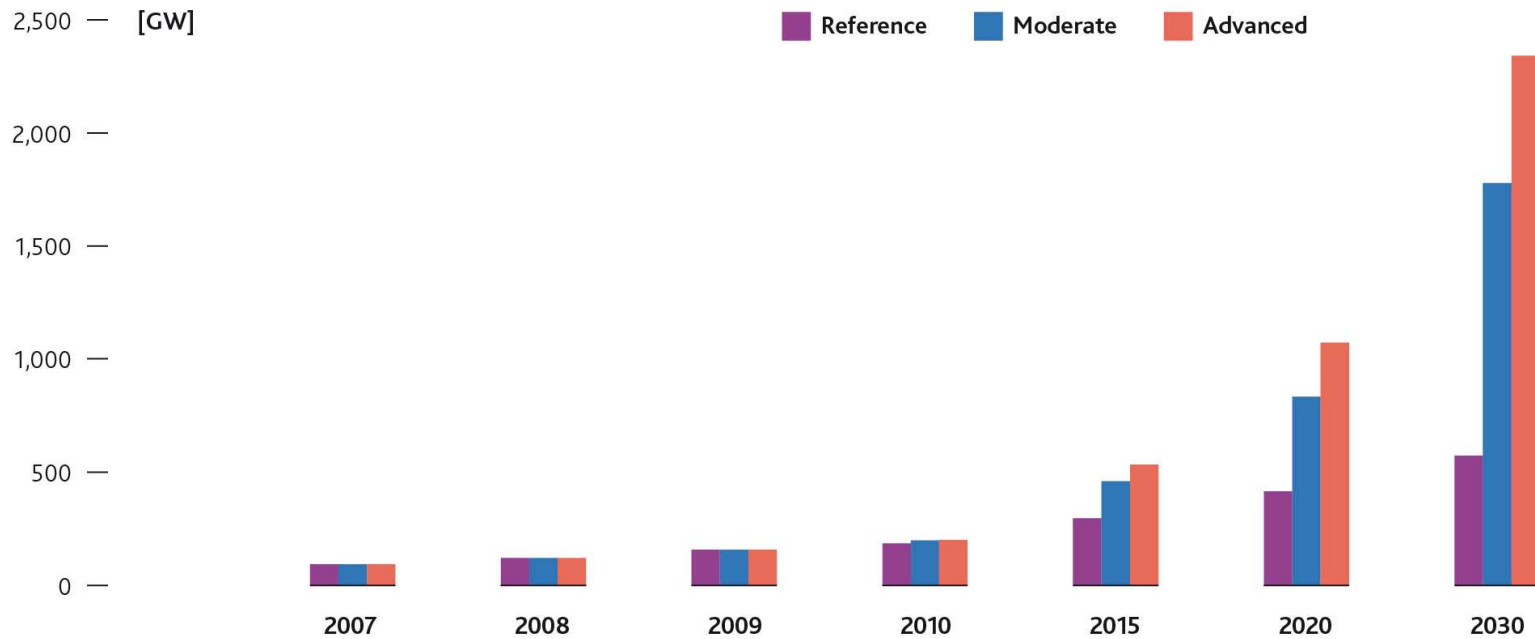


Cumulative Market Forecast by Region 2012-2016



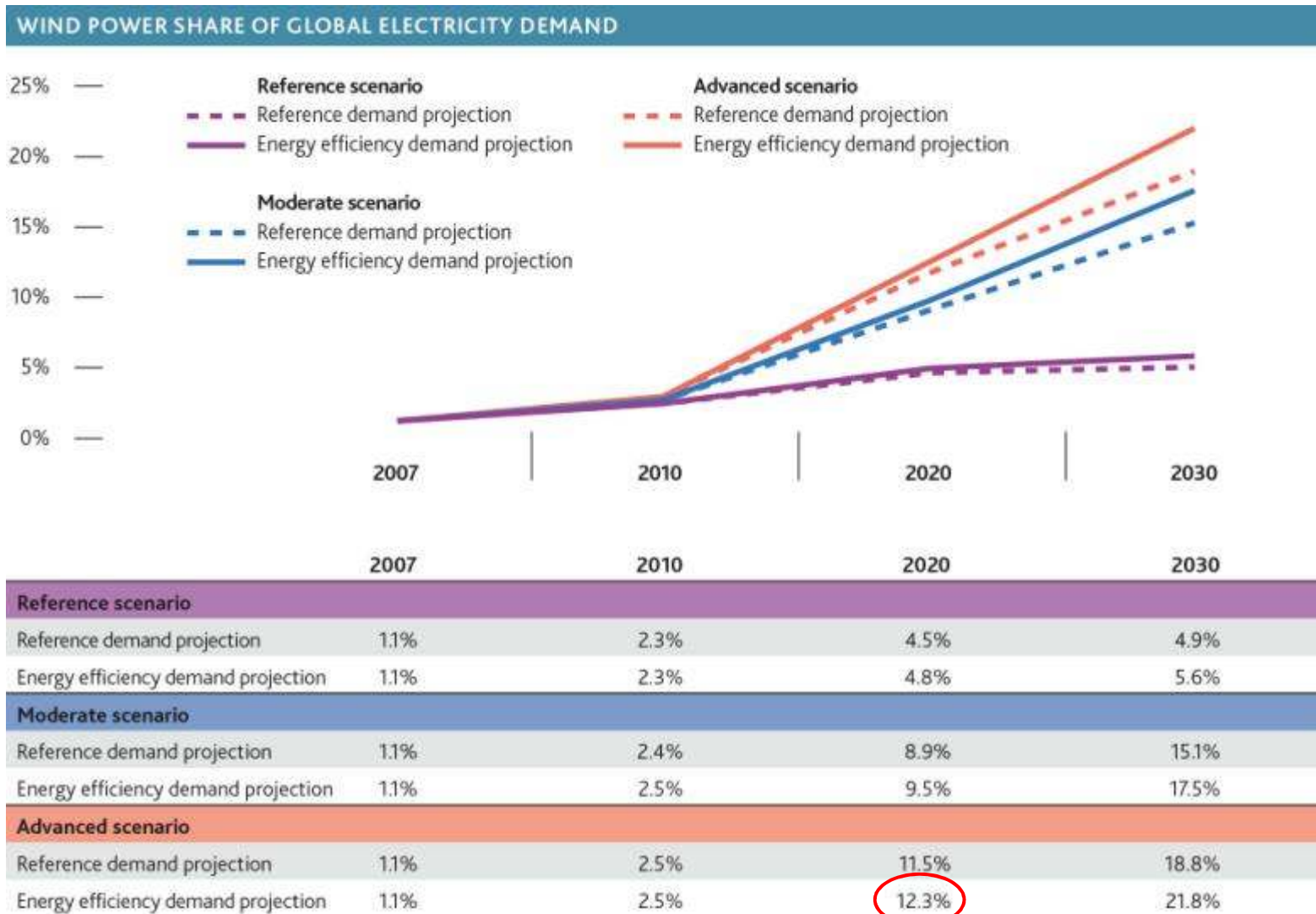
Source: GWEC

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

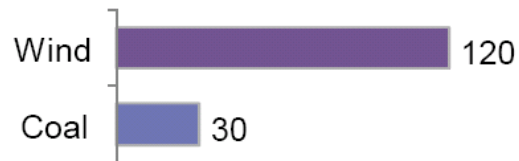


Challenges (1)

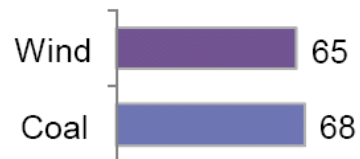
Perceptions

LEVELIZED COSTS: BEST NEW WIND VS NEW COAL (\$/MWh)

Perception:



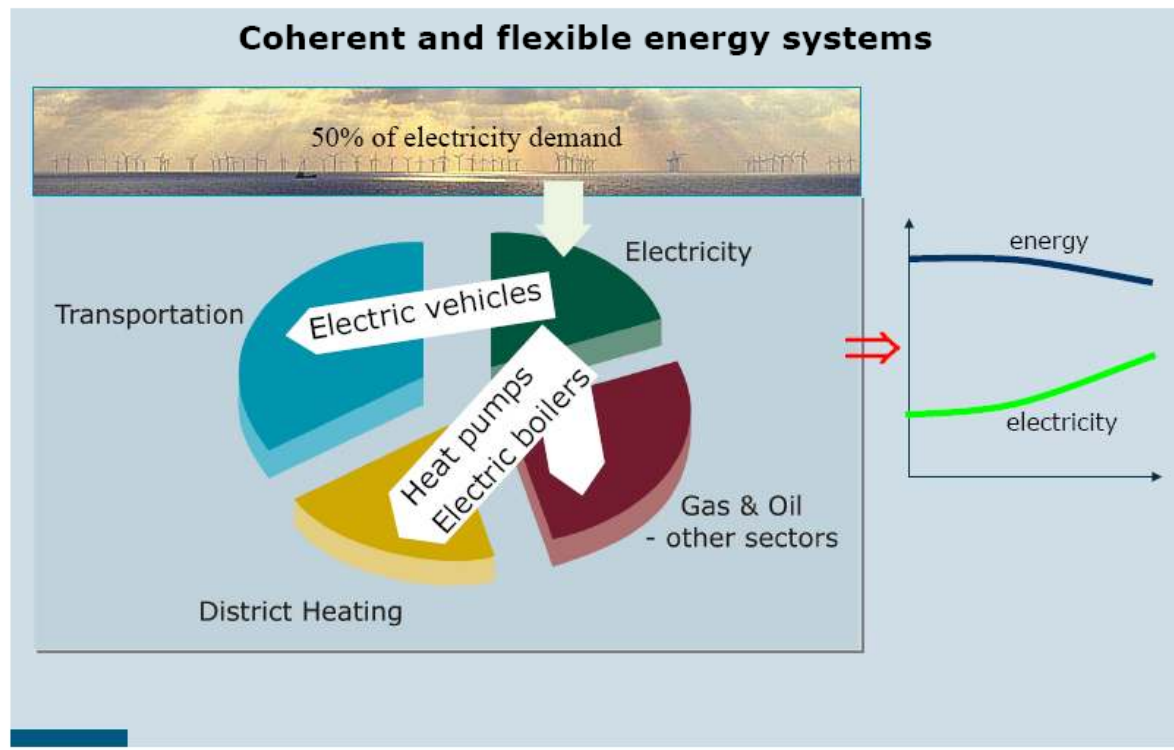
Reality:



- New coal must cover cost of capital
- New coal requires advanced pollution control
- Wind turbines back to 2005 prices, but now perform much better
- Wind bankability has driven down cost of capital
- Coal suffers from carbon price risk

Challenges (2)

Integration/transformation



New Markets

Latin America: Brazil leading, followed by Mexico, Chile, Uruguay and others;

Africa: Egypt, Morocco and Tunisia; now Kenya, Tanzania and Ethiopia. South Africa now beginning

Asia: Mongolia, Viet Nam, Thailand, Sri Lanka. Japan?

Conclusions

- Asian market driving global growth
- European market solid for now
- North America uncertain and volatile
- Hopeful signs in Latin America, Africa
- Downward price pressure continues
- Trade barriers/new protectionism?
- International commodity price volatility returns with economic recovery

Looking Ahead

Rate of global growth will slow until and unless:

- new markets fill the 'gap' left by lack of growth in OECD, or...
- OECD economy recovers, and/or
- new CO2 related legislation takes effect.

Downward price pressure continues:

- Oversupply and tough economic times mean margins are slashed to the bone and competition is fierce;
- Consolidation in manufacturing sector *seems* inevitable.

Looking Ahead (2)

A global climate agreement will be fundamental for wind power to achieve its maximum potential, but 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

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



Thank you!

For more information:

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