


Fundacion Chile 2009

Adam Bruce

Chairman, BWEA

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Delivering the UK's wind, wave and tidal energy

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- UK's largest renewable energy association
- 30 years old
- 500 corporate members
- Represent wind, wave and tidal energy – as well as other technologies

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The challenge for Chile

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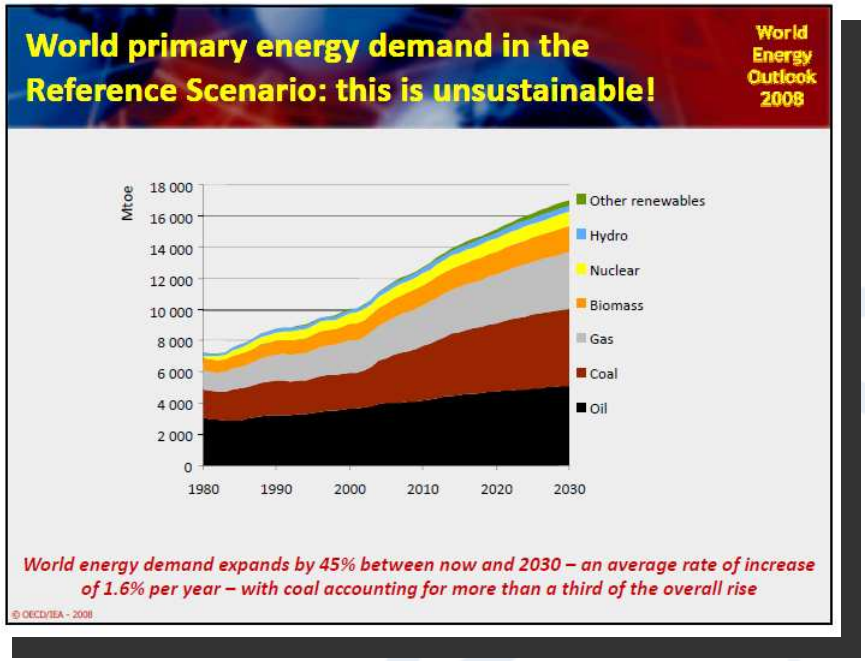
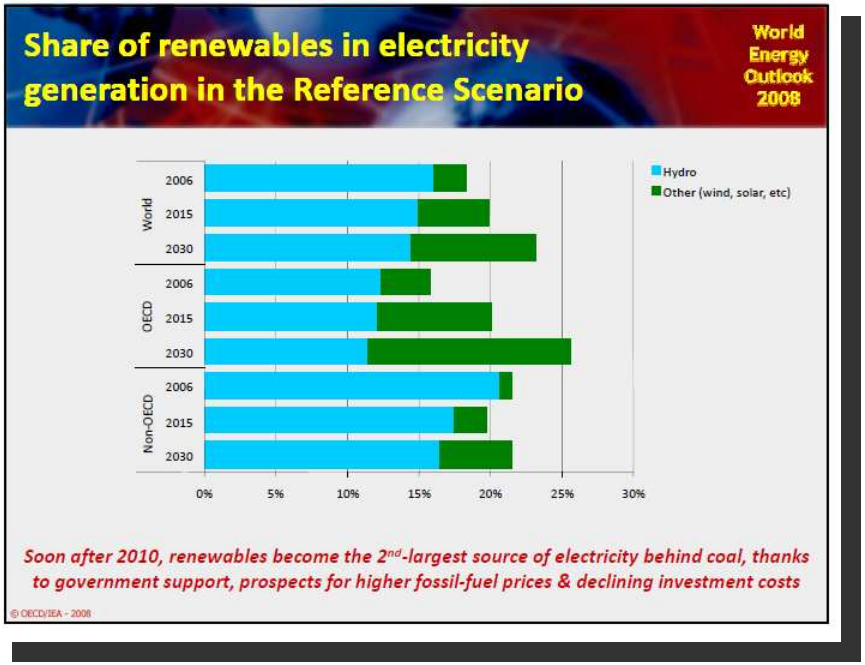
The Global Outlook





Source: *IEA* World Energy Outlook 2008

Global consumption of fossil fuels is unsustainable...the consensus is to deliver more renewable energy

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The EU context

- 20:20:20
- "20% by 2020"

- 20% all energy from renewables
- 20% reduction in GHG emissions

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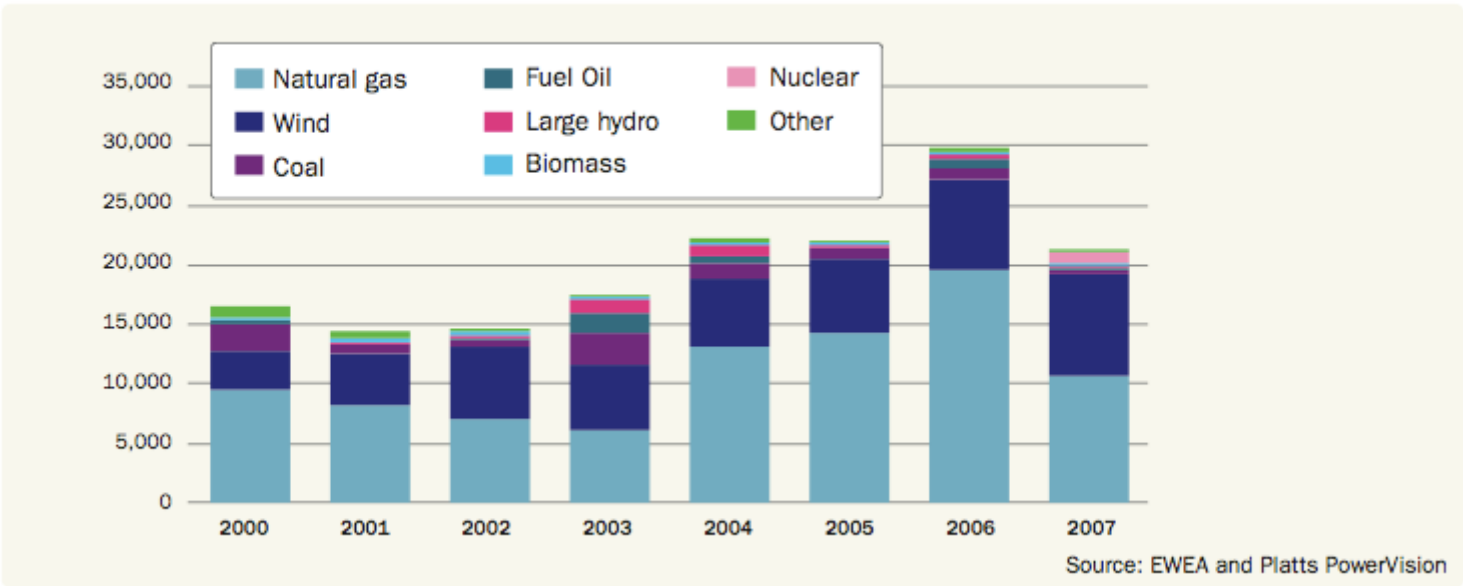
The EU Context

FIG 1.6: **New power capacity EU 2000-2007 (in MW)**



The trend: since 2000 renewables have been second only to gas in annual installed generation capacity...until 2008 ...

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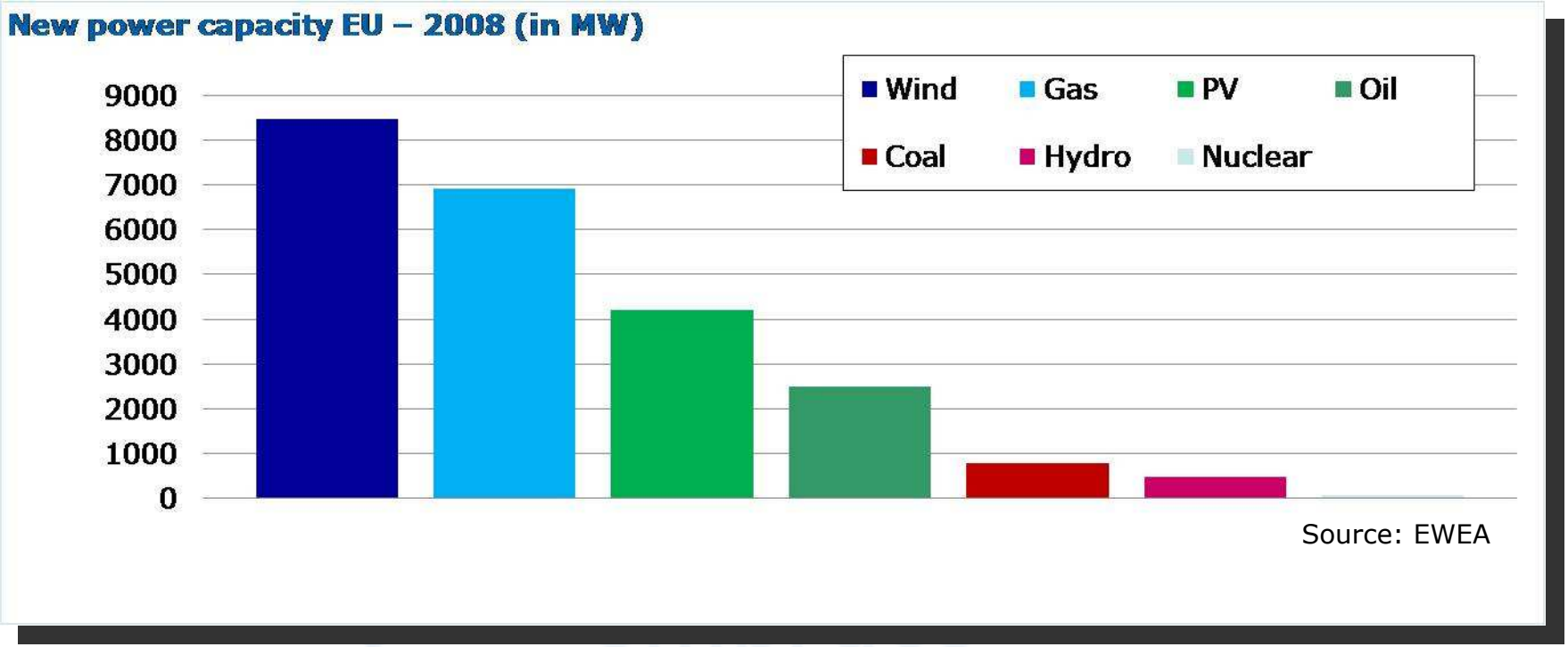
The EU Context



In 2008 more renewable energy was installed in the EU than any other generating technology.

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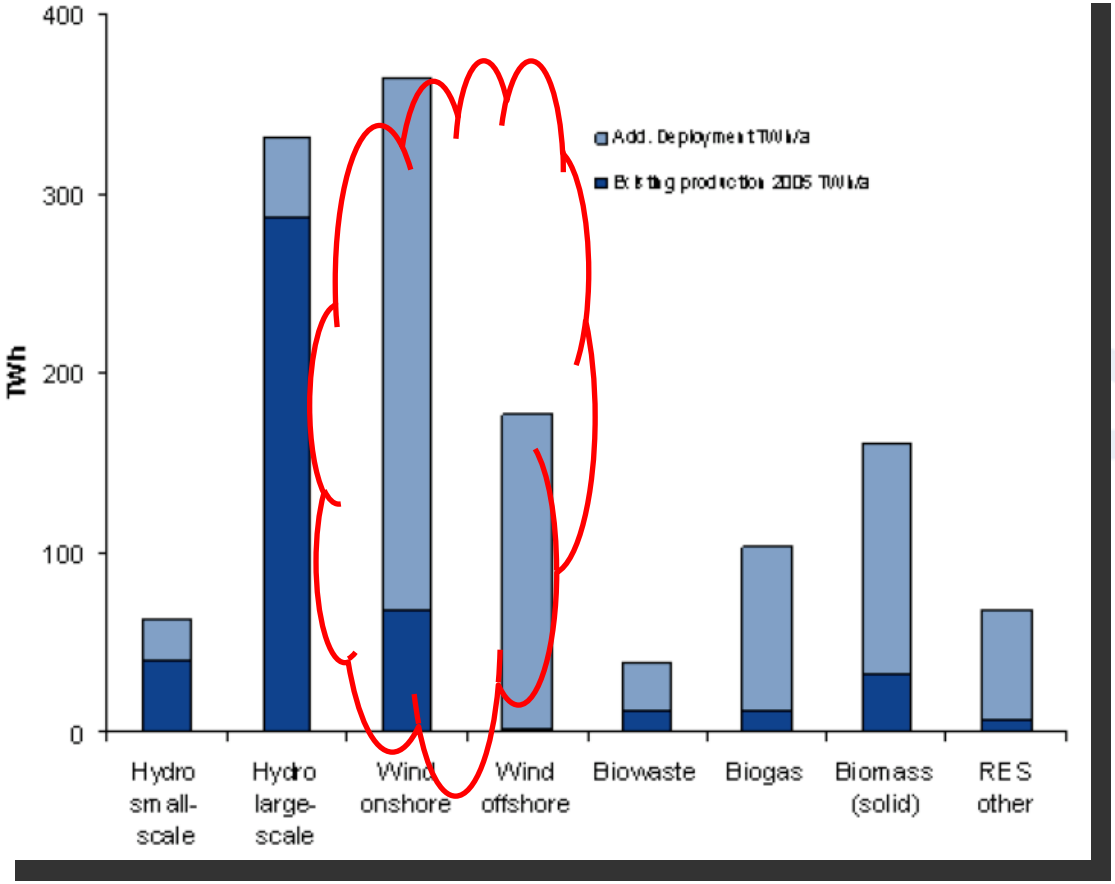
The EU 2020 context



By 2020 wind will be the major contributor to the EU's goal of reaching ~30% of electricity from renewable sources.

Implication of Large-Scale Wind Power in Northern Europe
Klaus Skytte, Econ Poyry
EWEC 2008

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Making renewable energy mainstream: Some examples from wind in Europe

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Wind energy is popular

"How much do you favor or oppose a large increase in the number of wind farms in [the UK, France, Germany, Italy, Spain, the U.S.]?"

Base: All EU adults in five countries and US adults

	Great Britain	France	Italy	Spain	Germany	United States
	%	%	%	%	%	%
Unweighted base	1087	1076	1045	1109	1111	1020
FAVOR (NET)	**87**	**89**	**91**	**90**	**79**	**92**
Strongly favor	48	49	64	55	34	61
Favor more than oppose	39	40	27	35	45	31
OPPOSE (NET)	**13**	**11**	**9**	**10**	**21**	**8**
Oppose more than favor	9	8	8	7	14	7
Strongly oppose	4	3	2	3	7	1

- The regulatory framework in Europe is stable, well understood and benefits from strong popular and political support.

poll source: *Harris Interactive,* February 2008

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Some form of support is needed - initially

- Most countries with significant penetrations of renewable energy have introduced a support scheme.
- Why?
- To correct inefficiencies built into the existing electricity market – and- to provide a long-term investment signal
- Feed-In Tariff (REFit) – obliges supply companies to buy renewable energy at a fixed rate
- Usually tapered to a % installed capacity
- AND...

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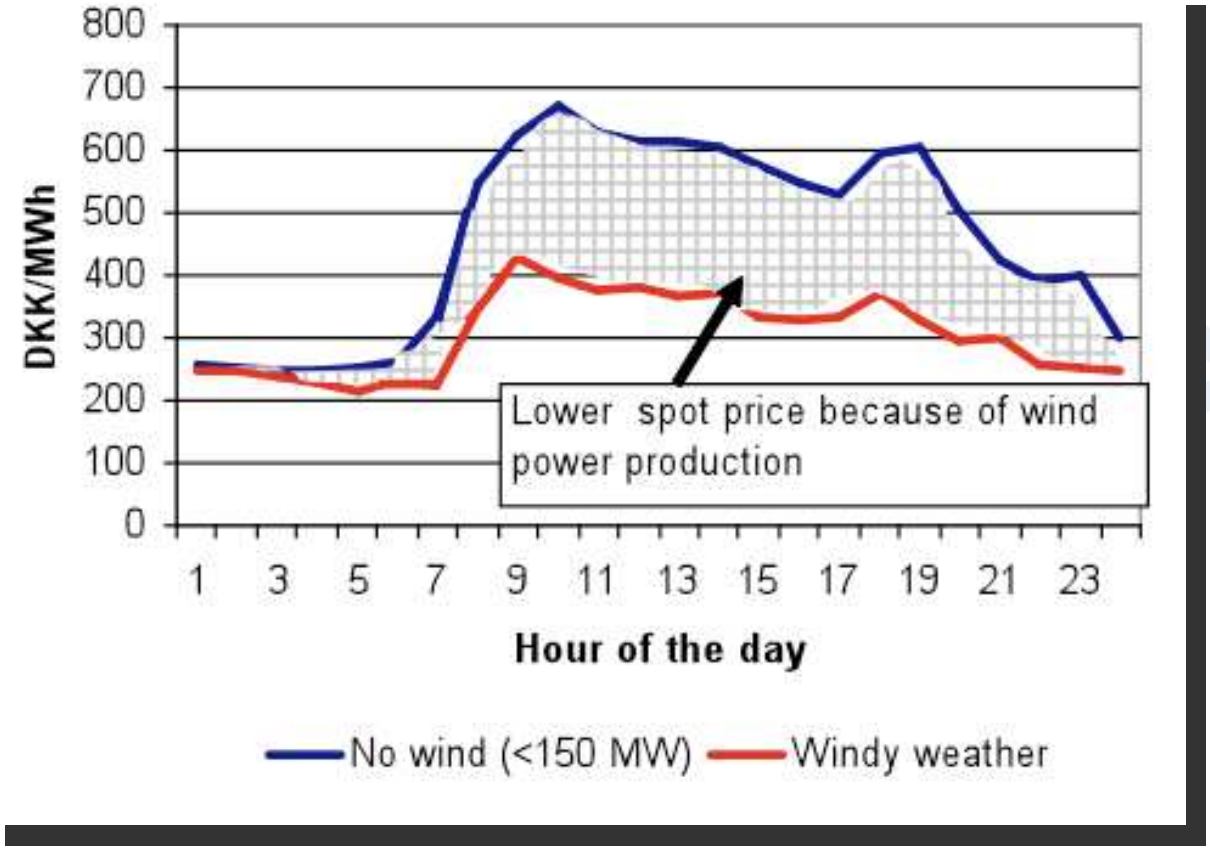
Wind energy reduces the cost of electricity

Wind power is not an "unaffordable luxury"



The overall effect (price reduction multiplied by the relevant volume) now brings savings to consumers in Denmark that are **equivalent to the gross cost of feed-in tariffs**, and significantly higher than the net support.

source: *The effect of wind power on spot market prices*, Rune Moesgaard , Poul Erik Morthorst, EWEC 2008

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Wind energy in Europe

- Long-term energy policy provides certainty for investment

- Renewable energy introduces competition and brings down prices

➢ Wind power is now a competitive, utility-scale, proven technology

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Making renewable energy mainstream: Lessons learned

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Five success factors

- Good Renewable Resources
- Public and Government support
- Support schemes – reduce commercial uncertainty
- (New) infrastructure – grid to bring power to market
- Clear and swift planning process – attracts investment

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The UK experience in wind energy

Good Renewable Resources

Public and Government support

Support schemes – reduce commercial uncertainty

(New) infrastructure – grid to bring power to market

Clear and swift planning process – attracts investment

- Before 2002 limited support scheme (NFFO) – few MW built – auction based
- 2002 – introduction of RO – but no reform of planning or grid
- By 2006 – 2GW installed – 20GW in planning
- 2006-2009 – review of planning, grid and support mechanism (driven by 2020 commitment)
- 2009 – 4GW installed with clear line of sight to ~30GW

Lessons from UK:

Co-ordinate policy to maximise deployment

Targets are insufficient on their own

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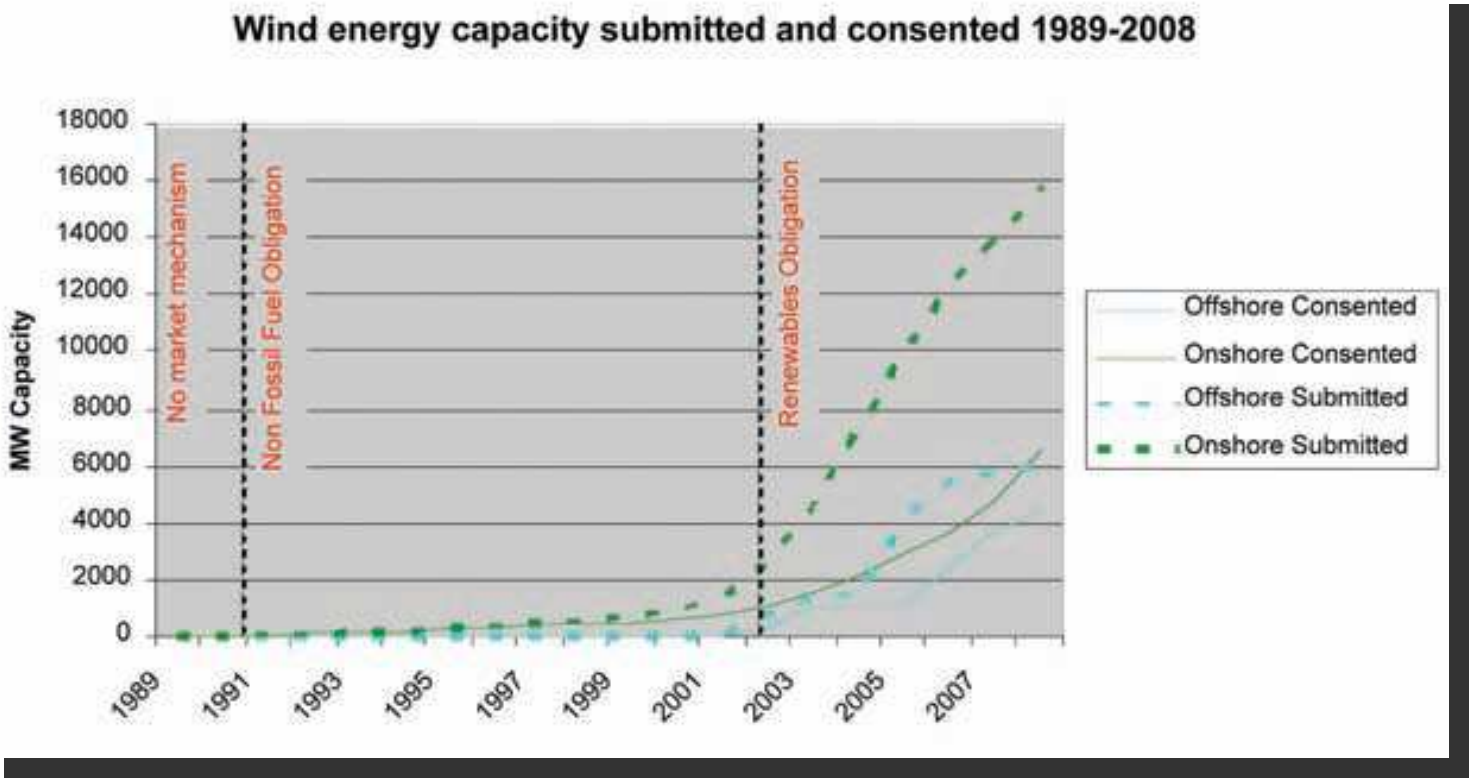
The UK experience in wind energy



source: *BWEA* State of the Industry Report 2009

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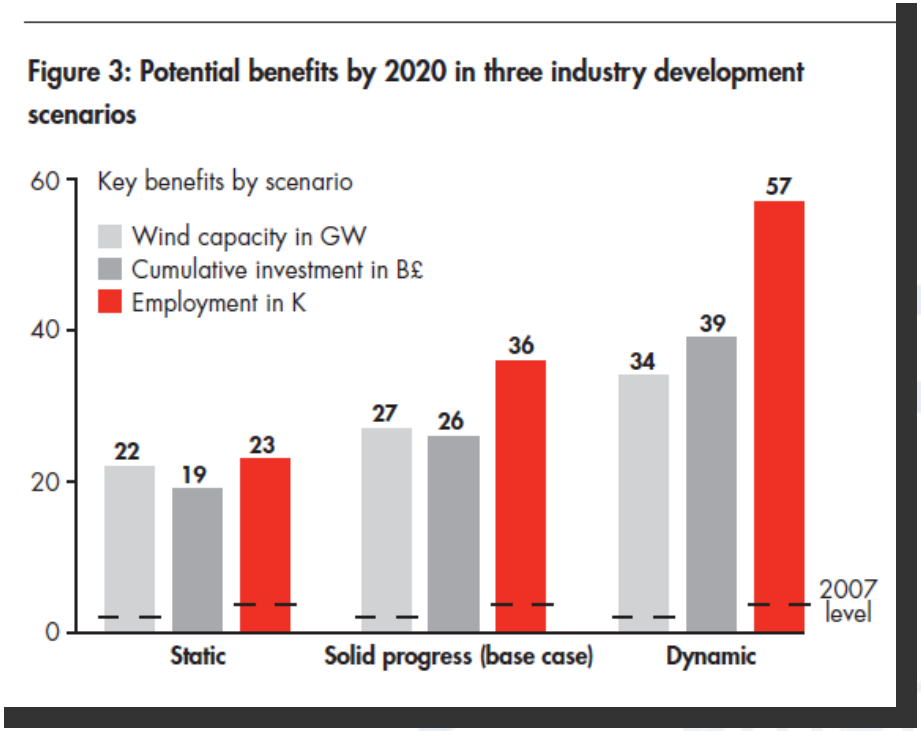
The UK experience in wind energy



source: *Bain & Co* Employment Opportunities and challenges Boettcher et al 2008

- "Green Jobs" – wind energy provides a benchmark
- By 2020 up to 57,000 **direct** positions
- Already 100,000 jobs in the wind industry in Germany, Denmark and Spain
- First mover advantage
  - Denmark, Spain & Germany – onshore
  - UK - offshore

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Making renewable energy mainstream: The experience in South Africa

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Chile and South Africa

Chile

- GDP per capita $14,300
- GINI – 54.9
- HDI – 0.867
- tCO2 emissions per capita – 3.9
- Electricity consumption per capita – 3,300 kwh

South Africa

- GDP per capita $10,100
- GINI - 57.8
- HDI – 0.674
- tCO2 emissions per capita – 9.8
- Electricity consumption per capita – 4,810 kwh

source: *CIA Factbook , UNDP et al*

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South Africa- embracing renewables

"In addition, there is now a greater need to be responsive to the climate change imperatives as we embark on the biggest energy infrastructure investment programme the country has ever seen... we should "*ensure a security of supply of energy resources, and pursuing an energy mix that includes clean and renewable resources to meet the needs of our fast growing economy without compromising our commitment to sustainable development.*"

This work must include escalating our efforts towards a greater contribution of renewable energy sources, including solar and wind power, as well as harnessing the hydroelectric potential of the SADC Region. These must be accompanied by a **clear programme of incentives for investment**, as well as the development of the requisite human resource capacity to take full advantage of the opportunities presented due to the growth in this sector."

Ms Dipuo Peters, Minister of Energy
23 June 2009

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South Africa

Good Renewable Resources

Public and Government support

Support schemes – reduce commercial uncertainty

(New) infrastructure – grid to bring power to market

Clear and swift planning process – attracts investment

- Pre-March 2009 20MW installed wind energy
- REFiT announced March 2009
- September 2009 – 6000MW new sites identified
- SA government working on planning and grid reform
- International manufacturers (e.g. Turbines) looking to invest in SA – first mover advantage
- Other drivers: water saving; new jobs and supply chain; rural development

Lessons from South Africa:

Co-ordinate policy to attract investment

Targets are insufficient on their own

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Making renewable energy mainstream: Lessons for Chile

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Chile

Good Renewable Resources

Public and Government support

Support schemes – reduce commercial uncertainty

(New) infrastructure – grid to bring power to market

Clear and swift planning process – attracts investment

- Significant renewable resource

AND

- 2008 energy law – 5% in 2010 growing to 10% in 2024

BUT

- No support mechanism
- Lack of policy co-ordination?

SO

- 20MW installed & 150MW in construction (15GW total capacity)
- Investment only on balance sheet
- Little competition & no economic benefit

Lessons for Chile:

Co-ordinate policy to maximise deployment

Targets are insufficient on their own

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Chile
Overcoming the challenges

- Some common themes

- Targets are insufficient on their own
- Support mechanisms deliver high penetration of renewables
- High penetration of renewables delivers lower prices
- Lower prices drive growth

- Chile can have a low carbon-high growth future

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A thought

200 years of Chilean independence

Cochrane the Dauntless “El Diablo”

Our challenge today

To deliver energy independence for Chile

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