

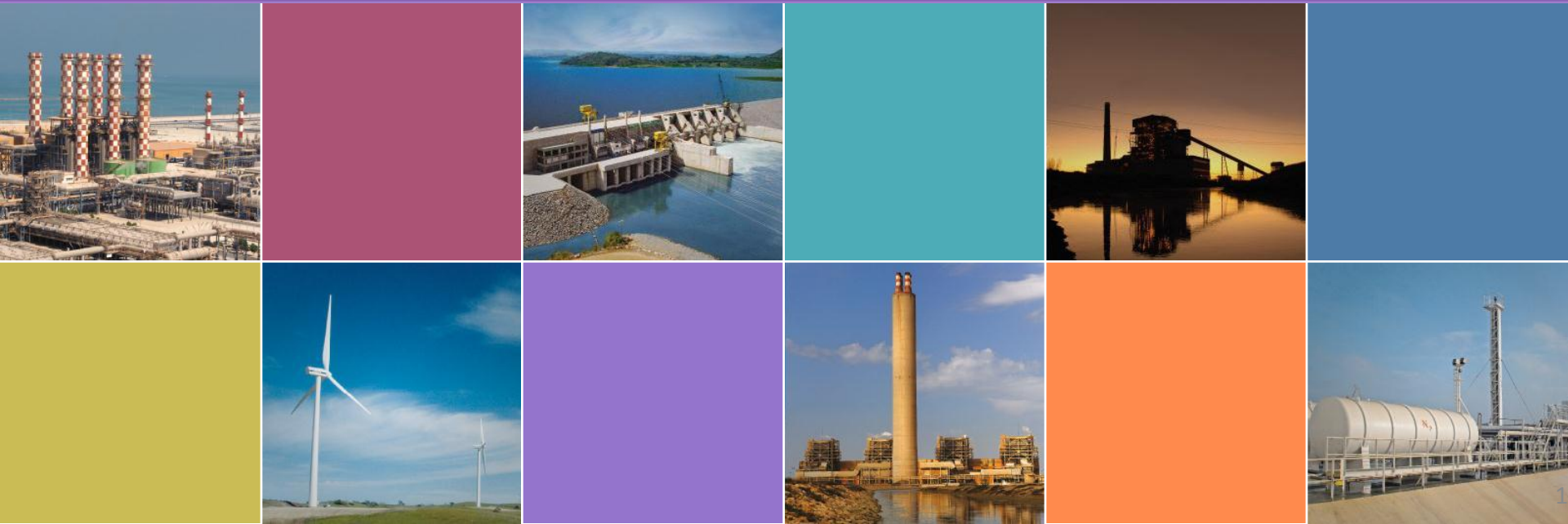
Investing for the future

9th BIEE Academic Conference

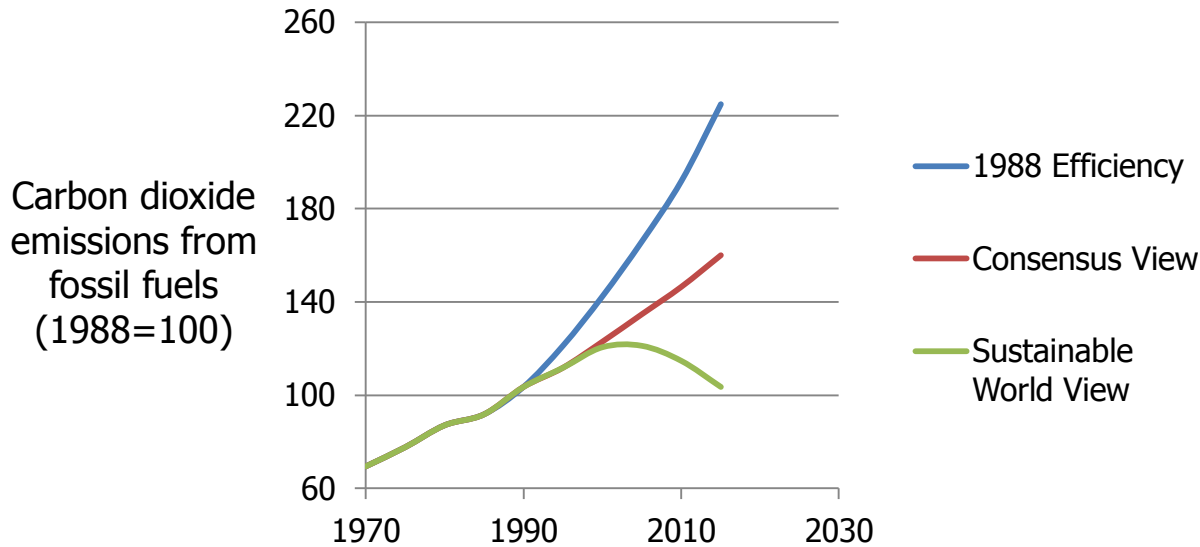
European Energy in a challenging world: the impact of emerging markets

St John's College, Oxford, 19-20 September 2012

Dr Steve Riley, CEO and President UK-Europe, International Power Plc



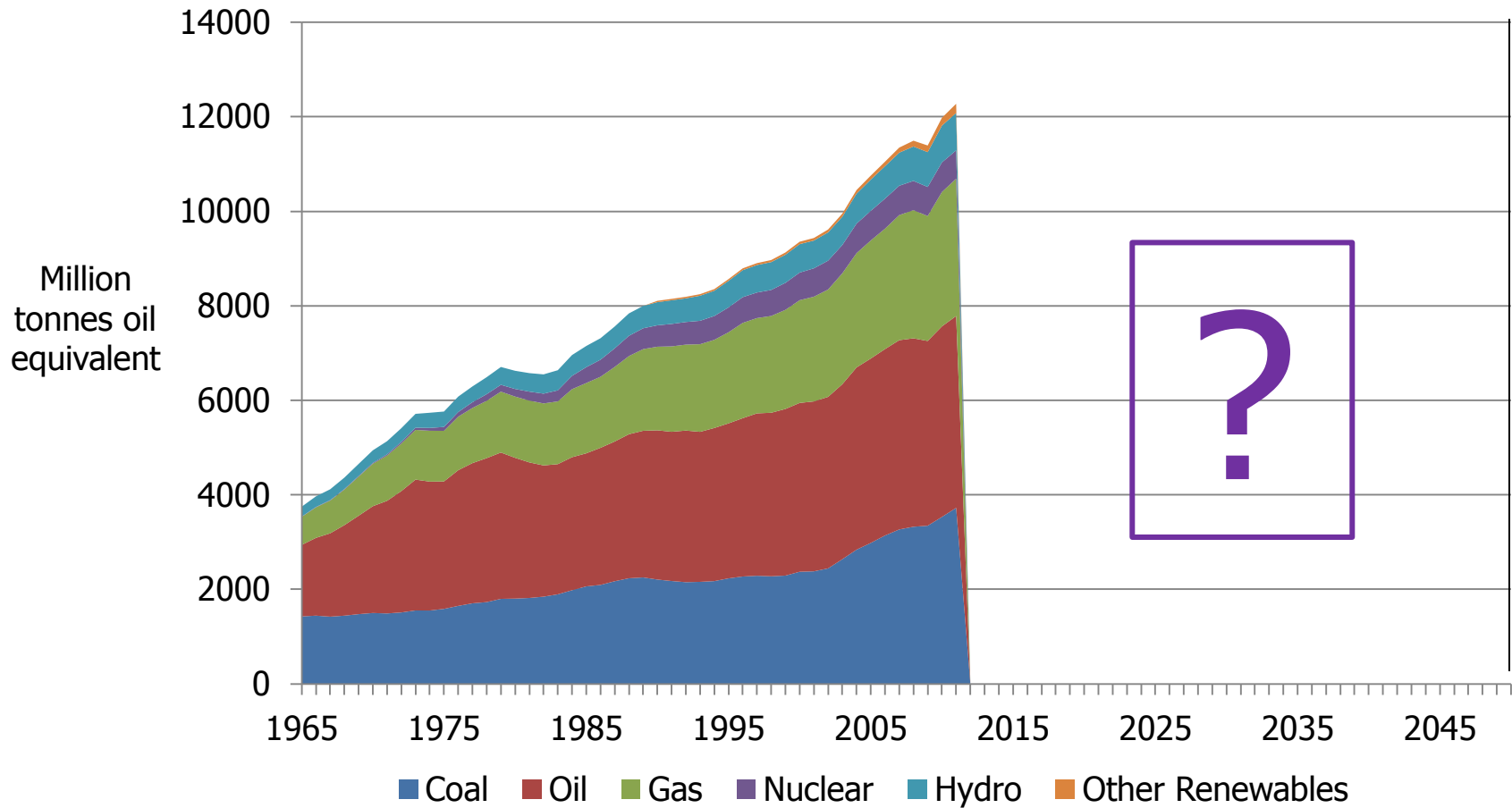
Scenarios from the past



"Human beings depend on energy for their livelihood. Achieving a sustainable relationship between energy and the environment hinges on technological innovation and our ability to generate and use energy in ecologically sound ways."

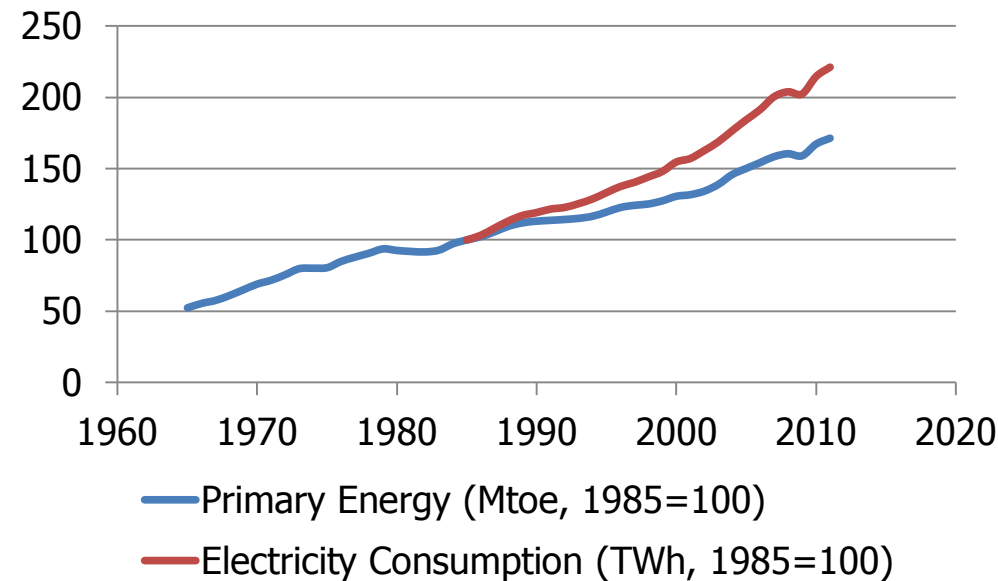
Ged Davis
Energy for Planet Earth
Scientific American
September 1990

Global energy over the last fifty years



Source: BP Statistical Review of World Energy, June 2012

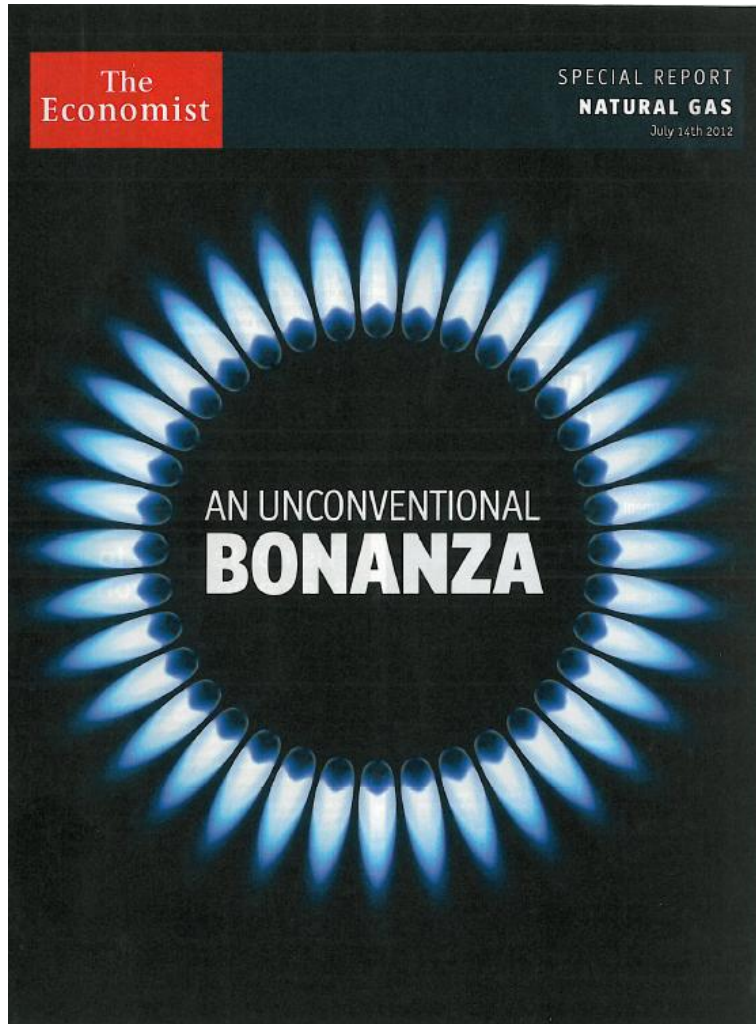
"There is no power more expensive than no power" Indira Gandhi



Country	Electricity production (TWh)	GDP (\$US Bln)	Electricity intensity (TWh/\$USBln)
UK	365	2432	0.15
Germany	615	3571	0.17
Poland	163	515	0.32
China	4700	7298	0.64
India	1006	1848	0.54
Indonesia	182	847	0.21
Russia	1052	1858	0.57
Turkey	228	773	0.30
Brazil	501	2477	0.20
Mexico	289	1155	0.25

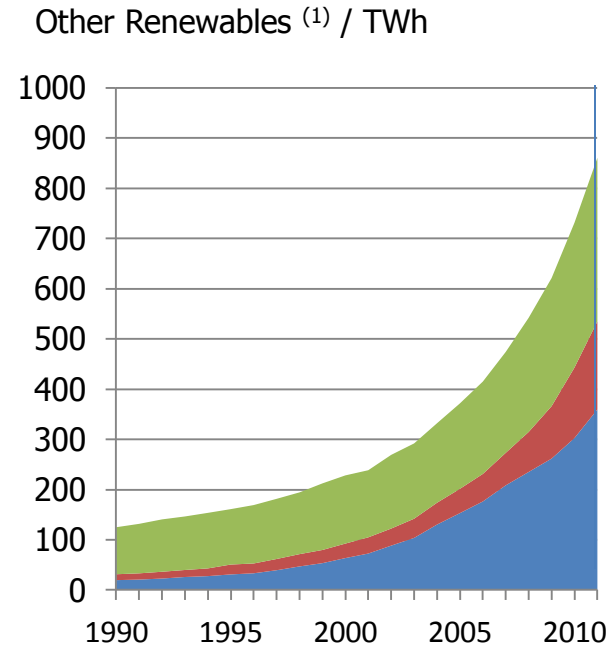
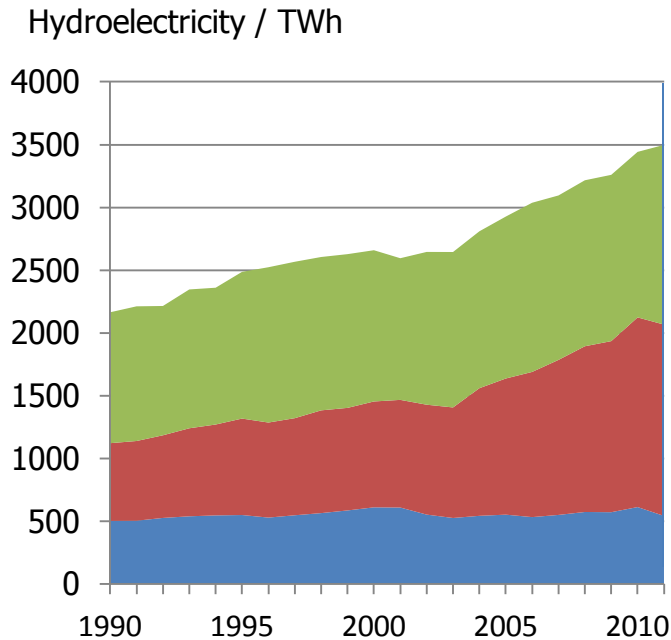
Source: Electricity production from BP Statistical Review of World Energy, June 2012 and GDP from World Bank

Shale gas a 'disruptive' technology



- Shale gas recoverable resources – currently estimated at 5,800 tcf in 32 countries compared with 16,000 tcf natural gas
- Estimated production costs - 5.5 to 8.2 US\$/mmbtu
- Implications - USA from net consumer to net exporter and releases LNG resources for other countries
- Environmental concerns remain

Renewables deployment growing quickly

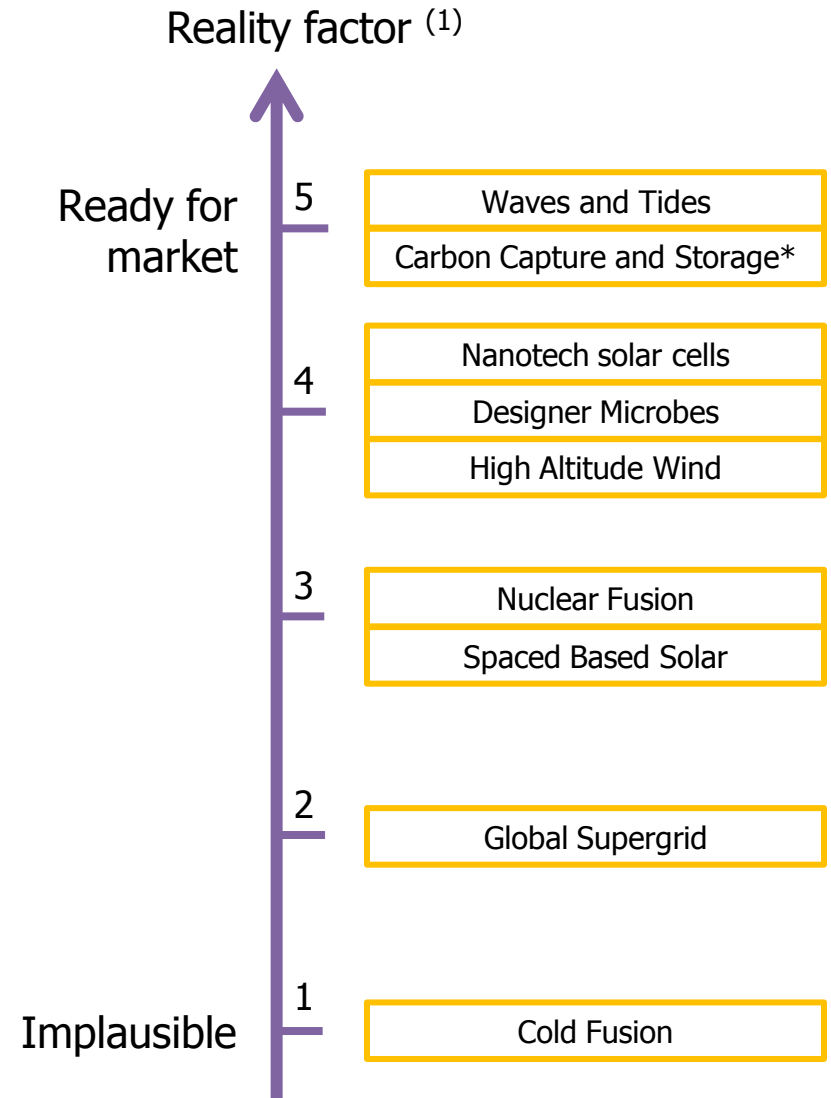
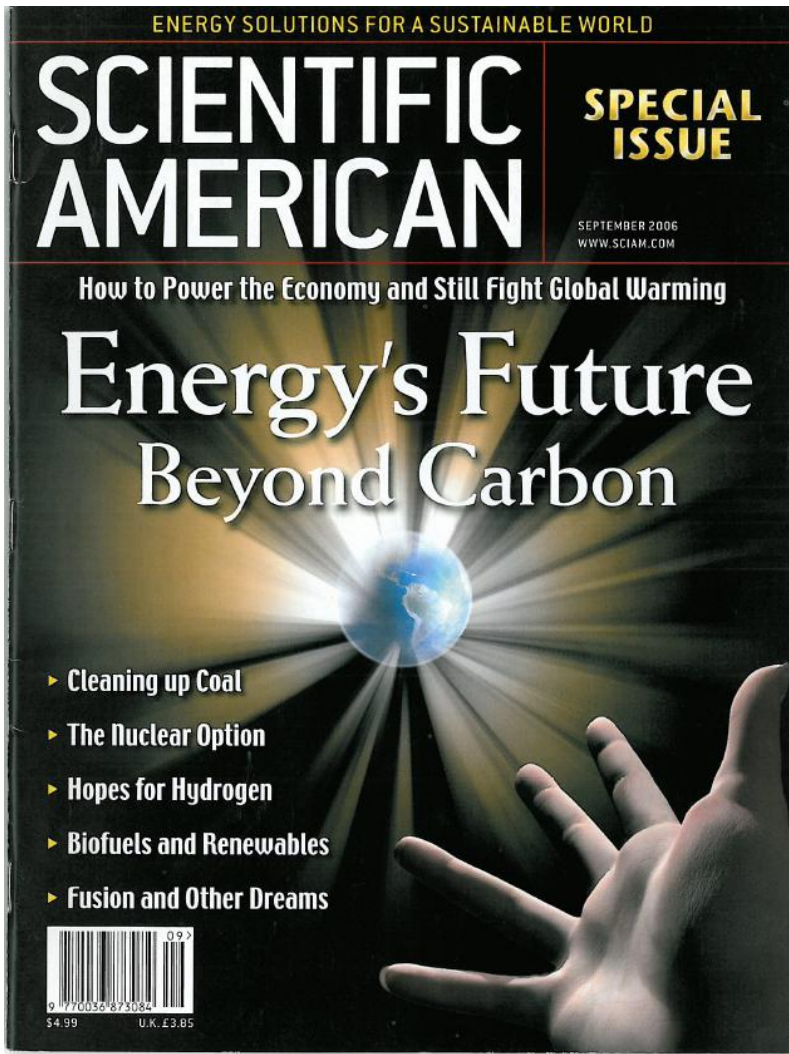


- Rest of the World
- Emerging economies
- Europe

Source: BP Statistical Review of World Energy, June 2012

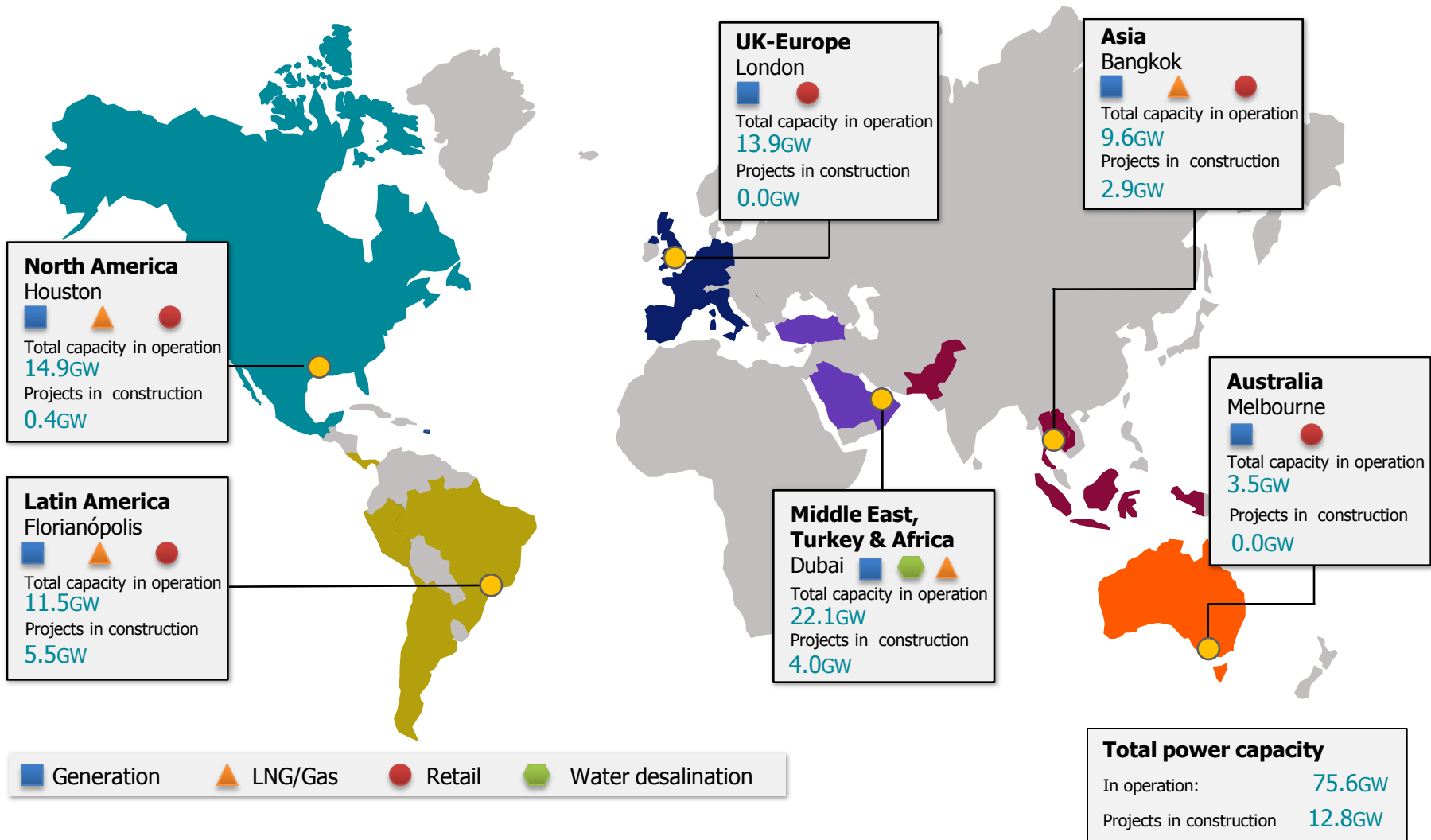
Notes: (1), includes wind, geothermal, solar, biomass and waste

There can be 'surprising' developments



Note * - added by the author

Global presence, global opportunities



Note: MW gross figures as at December 31st, 2011

Electricity investments in different markets

Lower Risk Projects

Higher Risk Projects

Merchant

- History of regulatory stability
- Reliable forecast of market supply
- Stable / predictable fuel prices
- Mechanisms promoting price stability (e.g., capacity payments, caps/floors)

- History of regulatory changes, with negative impact on participants
- Unpredictable demand or supply
- Unpredictable fuel prices (e.g., US Shale Gas)
- No price protection mechanisms

'Contracted'

- Credit-worthy offtaker or guarantee from Credit-worthy Government
- Contractual risks are under the control of IPR and in line with our experience (e.g., Operations, Trading)
- Contractual risks are predictable

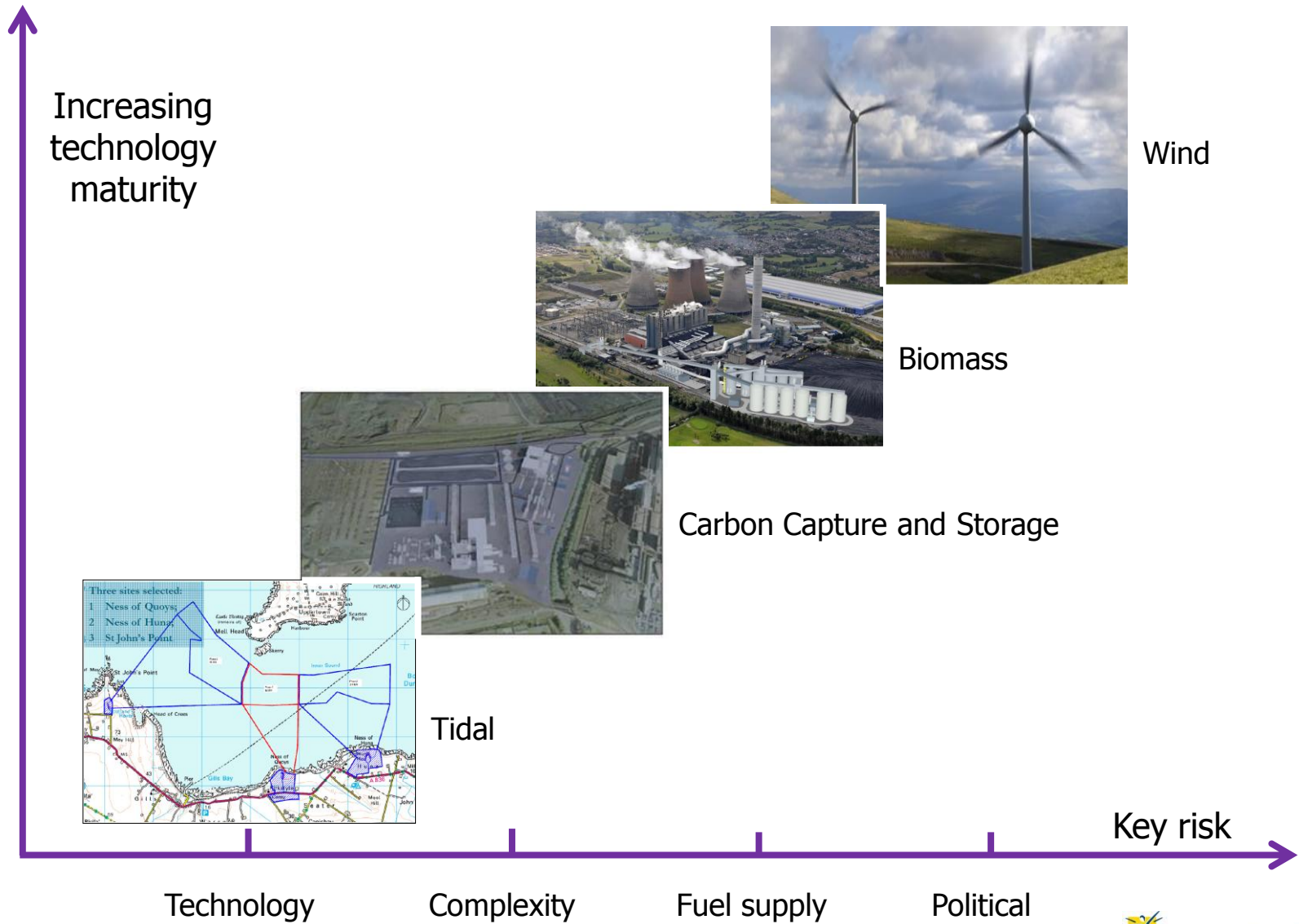
- Concerns about credit-worthiness of offtaker
- Contractual risks are not under the control of IPR or are not in line with our experience (e.g., Dispatch risk)
- Contractual risks are unpredictable

General

- Committed Financing in place
- Committed Engineering, Procurement and Construction Contract in place, with back to back penalties with Offtake contract
- No Development Risk

- Financing Risk
- Contract Risk
- Development Risk

International Power's low carbon projects in the UK



International Power's investments in emerging economies

Brazil – Hydro

- 3,750MW (gross) hydro project, 50.1% owned by IPR
- 50 units x 75 MW each
- 73% contracted under 30 year PPAs ⁽¹⁾, indexed to inflation
- Energy not contracted (net of PPA) to be sold in the free market and/or via future auctions
- Project to start phased commissioning in early 2013
 - River deviation successfully completed in September 2011
 - Fast ramp up to full assured energy

Indonesia – Geothermal

- 3 geothermal projects in Indonesia under development (3 x 220 MW)
- 30-year per MWh PPA with PLN⁽²⁾, backed by guarantee from Indonesian Government
- Baseload technology with Take or Pay Guarantee
- Concessions awarded based on bids in 2010. Tariffs are now fixed
- IPR is about to start exploratory drilling to confirm the resource, requiring significant capital spend
- While the tariff is fixed from 2010, it is not possible to fix construction/financing contracts before the resource is confirmed

Notes: (1), Power Purchase Agreement; (2), Perusahaan Listrik Negara

Messages across time



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September 1990



"This country needs an all-out, all-of-the-above strategy that develops every available source of American energy – a strategy that's cleaner, cheaper, and full of new jobs."

President Barack Obama,
State of the Union Speech
24 January 2012