

LeadingEnergy

Energy and Efficiency: The changing power climate

Energy, Utilities & Mining
Utilities Global Survey 2007

2007 marks a sea change in the mindset of the global utilities industry. For the first time, in the nine-year history of PricewaterhouseCoopers' global annual survey, sustainability is foremost in the minds of utility company leaders. Companies across the world expect that renewable energy and the need to gain increased energy efficiency will head the list of major developments in their power markets over the coming five-year period. This view is entirely consistent with New Zealand's current energy policy. Companies are placing a significantly increased emphasis on a range of 'climate change related' measures.

Each year PricewaterhouseCoopers goes to the heart of boardroom thinking in utility companies across the globe. Last year we examined the sector's thinking about the 'big leap' forward that needs to be made if the sector is to address the immense challenges posed by security of supply and climate change. We found a sector that recognised the need for change but remained hesitant about when and how it could be achieved against a background of continuing regulatory uncertainty.

In 2007 we see a power utilities sector that appears much more ready to make the changes that arise from the threat of climate change. In our 2007 global survey *Energy and Efficiency: the changing power climate* we report on a sea change in the sector's thinking. We find huge increases in the extent to which renewable and nuclear power are at the top of company agendas. We find an industry that believes that technological advances can take us into a



new era of energy efficiency. Although the sector believes that governments and end-users must set a lead on energy efficiency, we also find that companies are ready to invest in efficiency, not just in their own production and transmission but also to help their customers become more energy efficient.

Waking up to climate change

2007 looks set to be the year when utility companies worldwide gear up to seize the sustainability agenda. There are big jumps in the prominence of renewables, nuclear power and energy efficiency in the plans of utility companies. Companies expect wind and nuclear power to provide an increasing share of their market's energy consumption in the next five years. Last year, only 17% (wind) and 19% (nuclear) were looking toward these two fuel sources. By 2007, in the space of just 12 months, they were being mentioned by 48% and 45% respectively.

Climate change appears to have cemented its place on the agenda of utility companies. This move is strongly influenced by reactions to climate change and a watershed mood for action in the US. The public and political environment in the US around climate change has altered significantly in the recent past, both at state and national level and this, combined with the release of the Stern Report in Europe, and former US vice president Al Gore's documentary, *An Inconvenient Truth* have changed the climate of thinking.

Are we entering the era of energy efficiency?

Renewable energy and energy efficiency have been moving up the list of key issues for the industry as demonstrated in Figure 1. Together with continuing concerns about security of supply they now head the list. Companies expect that technological advances will have a major impact on energy efficiency. The focus of utility companies on this has again shot up over the last 12 months – from 22% to 81% among American respondents, for example, and from 33% to 43% in Europe. Utility companies believe that the greatest

gains could come from end-users, of all kinds – industrial, commercial and especially, residential customers. Indeed, 72% of respondents from companies with supply businesses are making some investment in demand-side efficiency measures. Clearly, utility companies are ready to step up to the plate but, with the exception of companies in Asia Pacific and the Middle East, only a quarter of total respondents around the world believe the main responsibility should be on their shoulders.

Figure 1: The rise of renewables and efficiency – Top six ranking of the most important major developments in your power market over the next five years

2007		Last year: 2006		Three years ago: 2004	
1	Encouragement of renewable energy	1	Concerns over security of supply	1	Increasing transmission capacity
=2	Increasing efficiency of conventional technologies	2	Encouragement of renewable energy	2	Concerns over security of supply
=2	Concerns about security of supply	3	Increasing regulation and obligation	3	Increased JV activity from oil majors/financial institutions
4	Increasing regulation and obligation	4	Increasing efficiency of conventional technologies	4	Continuing wholesale price volatility
5	Regulation of emissions	5	Continuing wholesale price volatility	5	Increasing regulation and obligation
6	Continuing wholesale price volatility	6	Regulation of emissions	6	Encouragement of renewable energy

Source: PricewaterhouseCoopers, *Utilities global survey 2007*

Concerns about security of supply intensify

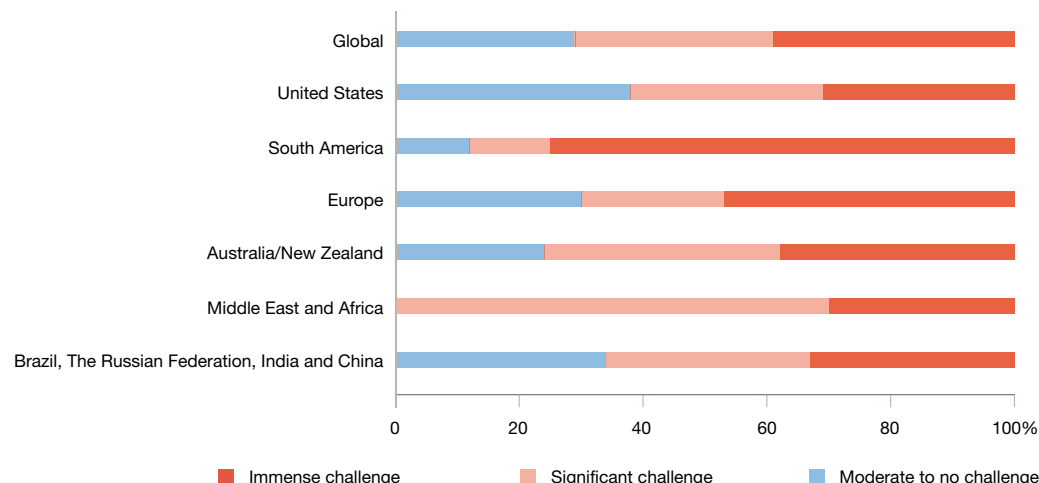
Concerns about security of supply have intensified across the globe since last year's survey as illustrated in Figure 2. 71% of utility company survey respondents expect to have to deal with conditions that are 'significantly' or 'immensely' challenging in the next five years.

Anxiety about security of supply is by no means confined to developing country markets. They are voiced by 62% of North American respondents, 70% in Europe and 76% in Australia and New Zealand.

Energy-intensive customers chart their own course

Companies in energy intensive industries, such as metals, chemicals and paper, are increasingly seeking to be in control of their own energy production and reduce dependence on utility companies. Investment in energy efficiency is a priority for all companies. In some instances, companies are considering moving production to lower price energy territories and many companies are stepping up investment in their own generation, often from renewable sources. There is also a feeling that utility companies could do more to structure their tariffs around the needs of their big energy consumers.

Figure 2: What is the extent of the supply and demand challenge over the next five years?



Note: average response

Source: PricewaterhouseCoopers, *Utilities global survey 2007*

HR shortages become a deal driver

Global M&A activity continues to be driven by the quest to build scale, to develop balanced portfolios and extend customer bases. Skills and knowledge shortages however are also becoming an increasingly important factor in M&A activity. They were mentioned by just a third of respondents as a deal driver in 2006 but, by 2007, this had increased to half. Shortages of knowledge and skills are becoming a crunch issue for utility companies worldwide. Investment in infrastructure, new generation and technology is driving up the demand for expertise. However, this is against a background of an ageing workforce and, in some countries, few graduates studying relevant engineering subjects. As illustrated in Figure 3, the effect on M&A is reported especially by companies in the Asia Pacific and Middle East and Africa regions where more than two thirds of respondents reported acquisition of skills and knowledge as a deal driver. In Asia Pacific, this reflects a marked increase from the 2006 survey, where only half of all respondents rated this factor as important.

Figure 3: Growth of 'acquisition of skills and knowledge' as a deal driver

	2007	2006
Global	51%	33%
Americas	54%	26%
Europe	35%	25%
Asia Pacific	69%	50%
Middle East and Africa	70%	60%

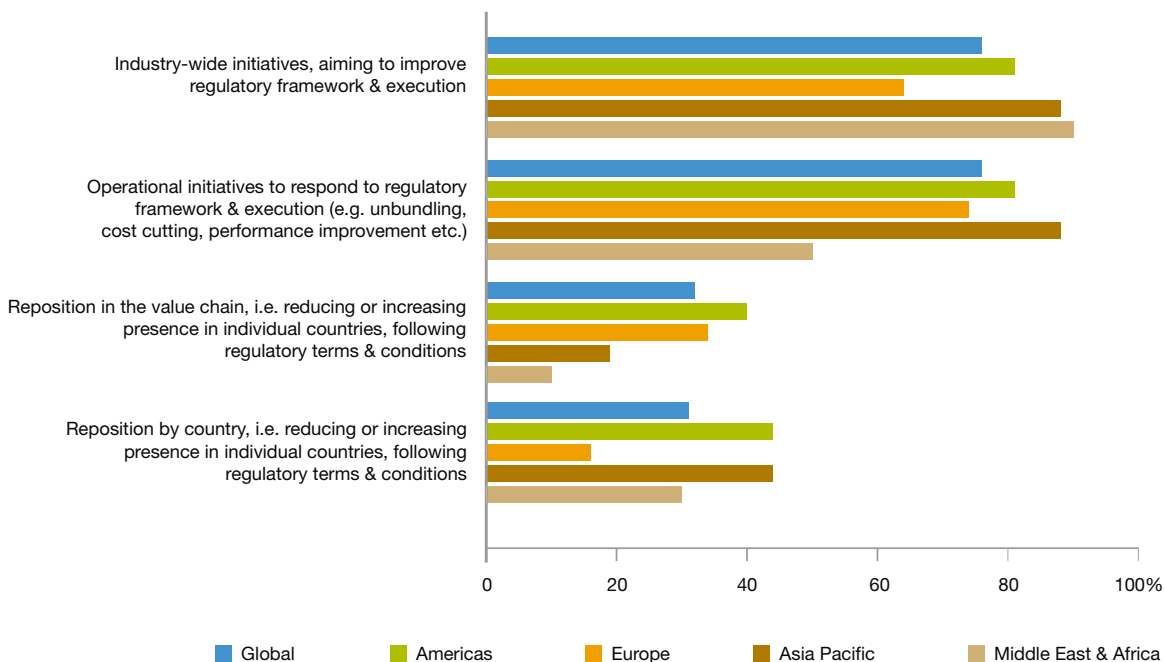
Note: % share of responses saying it is an 'important' or 'major' driver
Source: PricewaterhouseCoopers, *Utilities global survey 2007*

Significant repositioning along the value chain

Regulation, as always, is a key factor determining utility company strategy. Companies are responding to both existing and anticipated regulatory moves in different ways as illustrated in Figure 4. 48% of utility company executives say they expect regulatory moves to unbundle transport from vertically integrated businesses will have a strong or very strong impact on their power and gas market in the period ahead. Indeed, 32% of respondents say they will reposition their company in the value chain in the next five years.

A similar proportion of respondents say that they also intend to reposition by country. In the Americas there is a net exit from generation. In Europe, in contrast, there is an expected net increase in generation arising from repositioning. Across Asia Pacific companies predominantly expect to focus on industry wide initiatives through their ongoing interactions with regulators, and operational initiatives to improve performance.

Figure 4: How are you responding to regulatory changes now and in the next five years?



Note: % share of responses

Source: PricewaterhouseCoopers, *Utilities global survey 2007*



New Zealand's Emissions Trading Scheme

The Government has recently released a package of initiatives to advance sustainability and economic transformation and to help New Zealand respond to climate change.

In addition to the companion documents, the New Zealand Energy Strategy¹ (NZES) and the New Zealand Energy and Efficiency Conservation Strategy² (NZECCS) the Government has also released its framework document³ for the introduction of an Emissions Trading Scheme (ETS).

The NZES provides leadership for the energy sector to respond to long term challenges of energy security and climate change, while the NZECCS

details actions planned for increasing the uptake of energy efficiency, conservation and renewable energy programmes. Both of these highlight the focus of the Government on addressing climate change concerns.

The Government has also decided to adopt an ETS as its core price-based measure for mitigating climate change. With an economy wide focus, the impact of the ETS will be felt by all businesses, predominantly through the price of their own direct emissions or indirectly through more expensive energy.

Businesses need to understand their greenhouse gas emissions profile in order to be able to assess the likely

financial impact on their operations, and to evaluate potential options for managing and mitigating exposures.

Sector Coverage

The Government's proposals are broad – capturing all sectors and all gases. The ETS will be introduced over a five year period with the timing of each sector's introduction into the scheme, reflecting the differing abilities of each sector to adapt and the price effects of the scheme on the economy.

Figure 5: Commencement of obligations by sector

Sector	Commencement of obligations
Forestry (includes deforestation of pre-1990 forest land and Afforestation post-1989)	1 January 2008
Liquid fossil fuels (mainly transport)	1 January 2009
Stationary energy (including coal, gas and geothermal)	1 January 2010
Industrial processes (non-energy) emissions	1 January 2010
Agriculture (includes pastoral and arable farming and horticulture)	1 January 2013
Waste and other sectors	1 January 2013

¹ New Zealand Energy Strategy to 2050 – Powering Our Future. October 2007

² New Zealand Energy Efficiency and Conservation Strategy – Making It Happen. October 2007

³ The Framework for a New Zealand Emissions Trading Scheme.

Unit of Trade

The primary unit of trade in the ETS will be an NZU. During the First Commitment Period, each NZU will be fully comparable to a Kyoto unit. Participants will be able to exchange NZUs for Kyoto units and sell them internationally. Participants will also be able to acquire Kyoto compliant credits from other Kyoto markets to meet their domestic obligations. At this stage the Government has placed no restrictions on the types of credits that may be purchased, potentially opening the door to 'hot air' credits from Russia or the Ukraine – credits that are not currently able to be utilised for compliance purposes in the European Union Emissions Trading Scheme (EU-ETS).

Points of obligation

The point of obligation refers to where in a supply chain the obligation for accounting for emissions arises. There is a balancing act to be had here between sending the right signals to those who create the emissions, and the costs of compliance. Generally, it is appropriate to target the emitters, but in some cases this is impracticable. The Government has adopted a general principle of placing the obligation for emissions upstream in each market to limit the number of participants and facilitate administration, but potentially to the detriment of providing appropriate incentives to change behaviour.

In the forestry sector, generally landowners are the most appropriate point of obligation for emissions from deforestation of pre-1990 forest land, and for post-1989 afforestation. NZUs (and associated liabilities) would be awarded to landowners or forestry right holders as appropriate (if they opt to receive them).

In the transport and stationary energy sectors, the point of obligation will be a small number of businesses high in the supply chain, in particular fuel suppliers taking fuel from the refinery, coal and

gas extraction companies, or fuel importers. Large consumers such as airlines and electricity generators may elect to directly participate in the ETS and manage their carbon exposures.

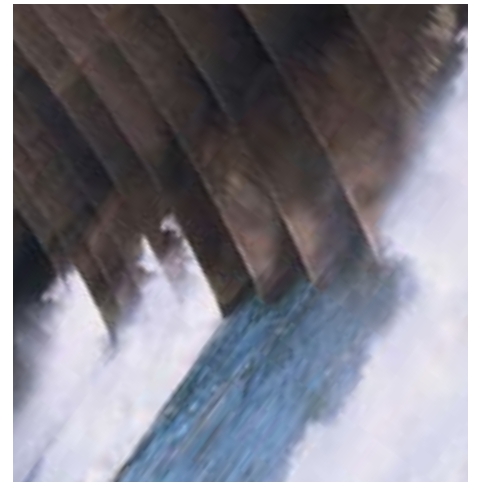
In the industrial sector given the breadth of industries involved and gases produced, the point of obligation will differ. In some instances, the emitter will bear the obligation, such as aluminium smelting, while for other sectors the point of obligation may be on the importer. The Government has indicated it is yet to finalise its approach to the point of obligation for the agricultural sector. Its options include at the farm level, the processor level or possibly a sector body level, although it has indicated that its preferred approach at this stage is to impose direct obligations on processing companies, such as fertiliser manufacturers, dairy processors and meat processors.

Allocation

The Government recognises that some businesses will be at risk or trade exposed as a result of the introduction of the ETS and has proposed providing assistance to such businesses through the free allocation of NZUs.

The Government's guiding principles are that no free allocation will be given to firms whose profits are largely unaffected by the introduction of the ETS – free allocations will only go to those businesses that can't pass on their emission costs. There will be no free allocation of NZUs to the liquid fossil fuels (transport) or to the stationary energy sector. Generally, those businesses that have high emission levels and are unable to pass on costs because they are trade exposed will receive an allocation of credits based on 90% of their 2005 emissions. Free allocations will be phased out to zero by 2025.

“Businesses need to understand their greenhouse gas emissions profile in order to be able to assess the likely financial impact on their operations, and to evaluate potential options for managing and mitigating exposures.”



We introduce four new partners who have recently joined our Energy team



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Geof is an experienced tax partner who has provided tax advice on operations and transactions to clients in the generation, distribution, exploration and production sectors of the energy industry. His involvement in developing tax policy provides valuable insights to clients within the industry.



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Jill is a partner in the tax practice focused on tax compliance and consulting to electricity line and infrastructure clients. Her involvement in the energy sector commenced in the 1990's where she was involved in multiple projects preparing for and responding to the restructuring of the industry.



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Jonathan is an experienced audit partner who has worked with many businesses across the energy sector both in New Zealand and in Australia. In recent years he has provided assurance and financial due diligence services to a number of New Zealand's leading electricity generators.



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Grant has 20 years experience working both within, and as an advisor to, businesses in the electricity, energy and electricity trading sectors throughout New Zealand and Asia. His expertise ranges from generation IT management, plant management (geothermal and electricity), process transformation, IT and systems selection, implementation and management, to providing operational and strategic advice.



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Copies of the full Energy and Efficiency report may be downloaded or ordered online from www.pwc.com/nz/Energy or by contacting Lynne Taylor on lynne.taylor@nz.pwc.com

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