Achieving a sustainable gas industry

Dr LWH Taylor

Chief Operating Officer, Fletcher Challenge Energy, Private Bag 92-114, Auckland, Telephone 0064-9-525 9116, Email lloyd.taylor@fce.co.nz

Abstract

Gas accounts for 17% of New Zealand industrial energy consumption, a figure that belies its significance to industry. The latter arises from the fact that gas is the marginal fuel, in effect meeting most of the thermal energy demand swing created by seasonal and volatile hydro-electric production. In this respect gas sets the price for almost all industrial energy sources.

The gas industry in New Zealand is underpinned by very low field prices which on a weighted average basis amount to 15% of the delivered price, the balance being made up of transmission and distribution charges, wholesaler and retailer margins and Government take. Unlike most other developed countries, New Zealand depends upon an almost non-diversified gas supply with over seventy percent of annual production coming from the Maui Field. The Maui Field is in the last third of its life. At the national level, proved reserves cover is now less than eight years. These facts highlight the sustainability challenge that faces the gas industry and the larger economy.

At the heart of the sustainability issue is the matter of scale. In many respects, New Zealand currently lacks the scale to ensure a sustainable gas industry. Moreover, the approach of many stakeholders militates against the achievement of scale. Foremost in this regard is the level of exploration drilling. Annual exploration drilling at around three times the current level is required to guarantee a sustainable industry.

To achieve this requires some rethinking on the part of all industry stakeholders. Firstly, upstream industry participants must consider more cooperative and collaborative approaches aimed at reducing exploration cost structures, thus increasing the drilling footage per dollar of capital spend. At the policy level there is the need to integrate Energy and Environmental policy. At the regulatory level there is the need to give effect to competition law and other regulation in a manner that provides the optimal incentive for exploration investment. In this regard it is necessary to draw a clear distinction between static and dynamic efficiencies, an aspect which currently appears to receive little consideration.

With the necessary rethinking, the gas industry and broader energy industry in New Zealand can face a more certain future.

Introduction

Good morning ladies and gentlemen. It's a privilege to be invited to present one of the opening addresses at the 2000 Petroleum Conference. In this address I would like to focus upon some of the issues surrounding the upstream gas industry in the country.

The messages that I will place before you are equally applicable to the upstream oil industry. However, it is the gas industry which will be more significantly influenced by the approach of a multiplicity of stakeholders. I believe it is the gas industry which will have a more profound impact upon the country should the issue of long term sustainability not be addressed in the coming three to five years.

My underlying messages are that :

- The gas industry in New Zealand is of greater economic significance than many people are aware
- The sustainability of this industry requires greater upstream scale than is currently evident, and
- The regulatory framework should facilitate rather than hinder the achievement of improved scale, recognising the benefits that accrue from a sustainable gas industry.

The gas industry forms an important part of the overall energy market in New Zealand. Gas accounts for 17% percent of energy consumed by industry, and 9% percent of energy consumed by New Zealand households.

The significance of gas in the energy market is greater than its overall contribution to energy supply would indicate. This arises from the fact that gas is the marginal fuel meeting most of the thermal energy demand swing created by seasonal and volatile hydro production. As a result, gas effectively sets the price for many industrial energy sources. Gas thus plays a central role in not only meeting energy demand, but in the pricing of energy to much of New Zealand industry.

Despite its significance, many people in New Zealand do not appreciate that current known gas reserves are below the levels that are needed to ensure the sustainability of the New Zealand gas industry.

More importantly, they probably do not appreciate that in a number of dimensions Government policy could be adjusted and integrated to better assist the development of a sustainable gas industry. In this speech I will consider some of the issues raised by the relatively low level of our known gas reserves. I will make some suggestions about the contribution that government policy could make to ensure that our reserves are increased.

The link between exploration and gas reserves life

Notwithstanding a recent upturn in oil and gas exploration, the reality remains that the New Zealand gas industry largely depends upon supply from the Maui Field. Unlike most other western countries a significant diversity of gas supply is absent. Yet the Maui Field, which accounts for 70% of gas production and 80% of remaining proved developed gas reserves, is in the last third of its productive life. Recent gas discoveries such as Mangahewa and Kauhauroa have not produced very large proven reserves. Alternative technologies, such as gas from rubbish tips, can produce only tiny volumes of gas relative to current demand.

New Zealand's gas reserve life index on a proven basis is less than eight years at current levels of gas demand. As a result, there is an emerging requirement to establish new gas reserves. Yet historically, annual exploration drilling and exploration success rates in New Zealand (which average four wells per year and less than 10% respectively) are insufficient to guarantee a satisfactory outcome. Based on the historical averages, it can be statistically demonstrated that in order to achieve a 90% confidence of material gas discovery in the next three years we require a level of wildcat drilling three times that of historical levels. Given the three to five year lead time required for commercialisation and development of any major new gas reserve, three years is potentially all we have to find sufficient reserves to replace Maui.

Clearly the industry needs to increase the scale of exploration effort if a sustainable gas industry is to be guaranteed. This requires, amongst other things, the facilitation of additional new upstream participants to share the risk and spread the cost.

The achievement of greater industry co-operation and consistency of program can have a profound impact on the viability of exploration. For example one of our Joint Ventures will incur over half of the cost of a currently drilling well in mobilising a jack-up rig for the Pohokura gas wildcat. Amortisation of this fixed mobilisation cost of $14 million over a program of three or more wells would not only lower exploration well cost, it would dramatically reduce the size of breakeven gas prospects, thus affording a greater inventory of economic drilling opportunities.

Beyond the achievement of exploration scale, another aspect that critically impacts upon the level of exploration is that of access to land and the environmental consenting of projects. Frequently, the consenting process is a project critical path determinant. Proposed changes to the process of implementation of the Resource Management Act (RMA) can only extend the uncertainty attached to the consenting process and increase project lead-time. This is hardly conducive to increasing the scale of exploration program to industry sustaining levels.

The industry itself has much to learn in the area of land access and consenting. Disparate and purely technical approaches alienate many stakeholders for whom the association with the land is central to their identity. Consistency of industry approach, matched with respect of indigenous stakeholders through the consenting process, are requirements for a sustainable upstream gas industry with scale. Herein lies a challenge for the upstream gas industry.

Beyond the RMA, the impact of the national approach to Energy policy and Greenhouse gas emission management must be considered. The potentially adverse impacts of misaligned policies upon the sustainability of the gas industry are significant. At this time there is a degree of denial in many areas of the community and Government that economic well being, Energy policy and Greenhouse management are inter-linked. Deflection of much of the responsibility for Greenhouse issues onto the oil and gas industry, rather than the energy consumer, is one manifestation of this denial of reality.

Moreover, it must be recognised when framing Greenhouse policy that we are dealing with a global issue. In developing a national approach to the issue, New Zealand and the world will be best served if this fact is recognised. We require a consistent international response and accompanying international systems of carbon taxation and carbon credit trading that will allow the most efficient resolution of what is a global problem.

Integrated Energy and Greenhouse policies matched to international responses and norms are required. The alternative of disparate and unilateral policies will only stimulate the flight of exploration risk capital from the country to the detriment of sustainability in gas, one of the cleanest fuels.

An example of the potential policy disconnect is the suggested imposition of carbon taxes remote from the point of energy consumption. This would raise energy costs across the board, adversely impacting economic growth and international competitiveness. It could act as a disincentive to switching to cleaner fuels such as gas and in the resultant economic malaise mitigate against the achievement of Greenhouse-efficient energy consumption.

Risks and unsustainable behaviour

Let's now look at the risks that attach to the current industry position.

The risk issues arising from industry dependence on a non-diversified and unsustainable gas supply base are many. They include national operational and financial exposures arising from the potential interruption to a single point supply such as Maui. Such risks were dramatically demonstrated by the profound economic impact upon Victoria in the months following the Longford gas plant disaster. Yet Victoria has greater diversity of gas supply than New Zealand.

In the longer term, the risks include the potential need to scrap current investments in gas infrastructure, the higher cost of import substitutes, or of using (costly) alternative technologies to generate gas supplies.

Ultimately, the risks include the long-term exposure to increased gas prices with consequential flow on to the price of electricity and other forms of energy due to the role of gas in defining marginal electricity cost.

The challenges in securing long term gas supply from a diversified supply base are significant. It is a fact that in most respects the New Zealand gas industry lacks the scale sufficient to continue the pursuit of conventional industry approaches to exploration, development, production, transmission and distribution. Yet many stakeholders give scant attention to this fact. All too often they seemingly focus upon:

- arguing the division of existing industry value at the expense of value creation and a sustainable future;
- fostering uncertainty and risk at the front end of the supply chain through the vagaries of securing land access, delays in resource consenting and the threatened imposition of carbon taxes at point of supply rather than consumption;
- assuming positions that mitigate against collaborative approaches resulting in an increased total industry cost base; and
- often removing the decisions on the future from the market to the courts.

In part these approaches may be attributed to symptoms of a locally reforming energy market in which existing positions are under challenge in a dynamic and increasingly globalized local business environment. However, their maintenance is counter-productive to the achievement of a sustainable gas industry.

At its simplest, at this point of time, the key to the sustainability of the gas industry lies in achieving an ongoing exploration program of sufficient scale to guarantee the material gas discovery and ultimately gas supply from a diverse supply base.

Policy and actions that work against the achievement of exploration scale work against industry and environmental sustainability.

The division of current value versus a sustainable future

Moving on to the matter of the impact of Competition Regulation upon the industry. This essentially comes down to value judgement about the division of value.

The tension between the current division of value and incentives for investment in exploration is well illustrated by the position of Fletcher Challenge Energy. We have substantial ownership stakes in much of the known oil and gas reserves in New Zealand. This situation might on the surface be thought to present some problems for competition and efficiency – or at least that is so if you imagine that the distribution of gas reserves among a large number of small players is either efficient or feasible in the New Zealand environment.

Fletcher Challenge Energy's substantial stake in our different reserves results from two factors. Firstly, our willingness to purchase gas resources at varying stages of development with all the inherent uncertainty and risk as to ultimate value. Secondly, our preparedness to invest in the very high-risk and knowledge/capital-intensive business of exploration. Entry to the exploration business is open, and there is every reason to expect that the outcome from this business is competitive. However, a competitive outcome does encompass the possibility that if one company makes large investments in exploration, and is skilled at that business, it may end up with rights over a large proportion of the known gas reserves at any one time.

If the competition regulatory authority takes the view that this distribution of reserves is inefficient, it can take proceedings to try and force divestment. Such is an issue we currently face with the Commerce Commission. Thinking about whether such an approach to policy is efficient, it is helpful to invoke the distinction between what economists call static and dynamic efficiency. Divestment of some of our rights to known gas reserves might increase static efficiency by its impact on the way that the market works today. But it would also effect dynamic efficiency by influencing our incentives to undertake investment in exploration in New Zealand.

Policy implementation, which includes the requirement to divest from the outcome of competitive successful investment, trades off static efficiency gains against dynamic efficiency losses. However, what competition regulators might not see is that their interest in short term, static efficiency issues takes little account of the costs associated with their policy; at least until the gas price increases or they no longer have assured gas supply.

The bottom line here is that competition law and other regulations must provide the optimal incentives for risk capital investment with a view to the longer term sustainability of an industry. I suggest that such incentives will not be provided if competition authorities make arbitrary judgements about the efficiency of the allocation of rights to gas that result from the highly competitive yet uncertain exploration and development processes.

Long-term contracts and uncertainty

The application and interpretation of Contract Law is another area that critically impacts the matter of long term sustainability.

The commitment of the Government and the courts to a framework of competition law and contract law which aims to facilitate and enable effective long-term contracting and flexible voluntary commercial relationships is more important for oil and gas than for any other industry.

Gas producing assets are long lived and uncertainty is rife. Not only is there the obvious uncertainty of discovery, but over the life of a field there is general uncertainty about the extent of the reserves, the costs of recovery and potentially huge uncertainty about future prices in wholesale and retail markets.

The importance of contracts has been greatly enhanced by New Zealand's economic reforms since 1984. Until the late 1980s, long-term contracts between private sector entities were uncommon because Government ownership was pervasive in industry and the scope for opportunistic action was limited by regulatory proscription of activity. Now there is a need for the courts to recognise that the efficient operation of private markets hinges crucially on the efficiency and integrity of the contracting process. Legal enforceability is a fundamental part of that integrity.

Of necessity, gas contracts tend to be medium to long term. This arises because of the substantive up-front capital commitment and fixed costs of extraction, processing and transmission. These are combined with a parallel capital commitment in plant and equipment by major end users. Without the security of pricing afforded by long term contracts no such investments would be made.

In the longer term, the outcomes of these contracts may sometimes appear to be strongly disadvantageous for one of the parties to the contract. However, this will have been a factor in the risk-bearing that the parties to the contract chose to assume at the time of execution of the contract.

In the Kapuni judgement, the court took the view that it should require changes to a long-term contract because market conditions prevailing at the time of the judgement differed from those operating when the contract was written. In a second somewhat analogous case, the Court recently granted an injunction that enables a telecommunications company to resile from a provision of an interconnection contract it is party to, pending testing the contract against competition statutes. Such decisions and actions adversely affect the confidence to negotiate and enter into new contracts because they add contract uncertainty to all the other risks and uncertainties of the business. Long-term contracts should be enforced and not be viewed as having anti-competitive effects simply because the economy has changed since they were written.

Again, the consequences of the achievement of short term static efficiency at the expense of longer term dynamic efficiency must be considered, rather than focussing upon the short-term advantage or disadvantage arising from long term contract positions. The fact is that long term contractual arrangements are and will remain a pre-requisite to secure the underwriting of the major upstream capital investment necessary to secure a sustainable gas industry in New Zealand.

Industry structure: Joint ventures

Turning now to joint venture structures.

Oil and gas joint ventures often provide inputs to a market where members of the joint venture are competitors. Joint venture arrangements frequently attract the attention of regulators and, at times, are the subject of litigation amongst co-venturers. Although at times portrayed as anti-competitive, such arrangements can be demonstrated to mitigate any potential abuse of monopoly power. Moreover, they are essential to the achievement of a viable gas industry.

In the oil and gas business, joint ventures are the primary vehicle by which risk is spread amongst industry participants. They allow entry into and participation in risk capital investments that are of a larger scale than an individual firm would prudently take on independently. Joint venture agreements among oil and gas companies relating to the discovery and distribution of oil and natural gas are a pre-requisite to the achievement of scale in a high risk industry.

Joint venturing is the most efficient way for risk to be shared. It provides the mechanism for achievement and management of the very large risk capital investments that are required to achieve a sustainable gas industry.

Theoretically in the oil and gas industry, economies of scale may be large enough to confer potential monopoly power upon a single firm in a joint venture. However, in reality competition in other markets produces competition within the joint venture under its rules, particularly where constituent co-venturers are in generally different markets apart from the joint venture.

My message : A joint venture offers an arrangement in which risks are shared, costs are minimised and monopoly problems are handled. The Maui Joint Venture is a case in point, where the co-venturers cooperate in production, yet compete with each other in the broader gas and LPG markets utilising production from sources beyond Maui.

The basis for any particular joint venture will change as objectives and opportunities of joint-venture owners place stress on their common interest and external pressures affect the economic basis for the venture. Joint ventures form, change and disintegrate under these pressures. Particularly in the search for industry competitive scale. This is a natural economic process that should not be inhibited by regulation nor contracting problems. It is best exemplified by the vast restructurings at the major end of the oil and gas industry which parallel those occurring in the information technology and communication industries.

Other aspects of competition law

Beyond the reality of joint venture structures, there remain some further aspects of the interpretation and application of competition law that will impact upon the future of the industry. I speak specifically of proposed changes to the law.

The proposed changes to the Commerce Act with respect to dominance and competition law thresholds are premature and not suited to oil and gas exploration. In particular, the need for large specific joint venture investments and the scale of operation set against the reality of small markets in New Zealand imply that the existing thresholds should not be tightened. Seeking to force the textbook "competitive-looking" industry is seldom in the public interest. It provides for little room for factors such as innovation and development which are critically important for the longer term delivery of relatively low-cost quality products. Given New Zealand's very small markets, stricter thresholds are likely to have more severe impacts on business productivity and innovation than in other larger markets. The potential to adversely affect industry performance through reduction in scale should be apparent to all. International competitiveness is at risk here and we need to recognise that exploration risk capital is an increasingly scarce international commodity.

Moreover, the associated benefits of firms co-operating on some issues while competing on others, in the context of uncertainty associated with discovery, reserve levels and long-term supply in the gas industry, make a very strong argument against the application of any new joint dominance provisions of competition law to situations such as those in which Fletcher Challenge Energy operates.

Contract law uncertainty and *ad hoc* regulation hold up the spectre of dramatic change which works counter to the achievement of a sustainable oil and gas industry. Ultimately this compromises national economic well-being. Governments that change the regulatory or tax environment after discovery, as happened in the UK, inhibit further investment and may not gather the rents that are reasonably due to the government as resource owner. These remarks go to the full process: from allocating exploration licences to the distribution of the final product. The process from the (desirable) auction of exploration licences to final delivery if successful should be a stable, transparent process.

Conclusion

In summary, when placed against the lead time for new gas discovery and development it is clear that the clock is "fast approaching midnight" on the gas resource that has underpinned the gas industry for the last twenty years. We have but a few years to find replacement reserves and the policy makers and regulators will be as instrumental in the outcome as the explorers.

To create a sustainable natural gas industry in New Zealand we need innovative and collaborative arrangements between industry participants. These should be combined with industry structures and flexible regulatory approaches that recognise the need to achieve globally competitive full cycle cost structures within a stable regulatory environment that encourages a vibrant and diverse supply base.

A competition law and regulatory environment that permits innovative and collaborative arrangements that combat risk and provide for the investment in, and management of, large purpose-specific investments is essential for a cost-effective and sustainable gas industry.

This presents challenges not simply for the industry, but also for public policy. I invite our politicians and regulators to think carefully before they adopt policies and interpretations of law that address short-term issues while undermining the long-term dynamism and sustainability of the gas industry.

In short, the issue of achievement of a sustainable gas industry in New Zealand would be greatly assisted if Government, regulators and stakeholders recognised and acted with consideration of four points:

- the urgency to discover and delineate major new gas reserves;
- the pre-requisite of industry scale to sustainability, particularly at the exploration end of the business;
- the potential catalysing impact of integrated Energy and Environmental policies in harmony with international approaches and systems to address global warming; and
- the criticality of balancing static and dynamic considerations in the application of competition regulation.

Ignore these facts to the risk of international competitiveness and national prosperity. Acknowledge these facts to the enhancement of the likelihood of achieving a sustainable future. The choice is yours.

Author

LLOYD TAYLOR, age 48 years, joined Fletcher Challenge Energy in June 1998 as Chief Operating Officer New Zealand. In February 2000 he assumed responsibility as Chief Operating Officer for Fletcher Challenge Energy's global business. He holds a Doctorate in Geology and Geophysics from the University of Sydney and has 23 years upstream E&P industry experience, having worked in a range of countries including Australia, Argentina, Egypt, Holland, the United Kingdom, Malaysia and Indonesia. During this period he has been employed by Woodside Petroleum, Shell International, Santos Limited and Fletcher Challenge Energy.

Lloyd is a member of the New Zealand Institute of Directors, the Australian Institute of Company Directors and the Society of Petroleum Engineers.