COMPETITION FOR PETROLEUM EXPLORATION CAPITAL IN THE ASIA–PACIFIC REGION — IMPLICATIONS FOR NEW ZEALAND AND AUSTRALIA

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Abstract

This paper examines the future energy production and demand profiles for the Asia Pacific region and the global allocation of exploration capital made by major international petroleum companies. The implications of these factors for future government petroleum exploration policies within the region are considered, in particular the Australian and New Zealand situations, together with likely effects of such measures on the ability of exploration and production companies to raise capital.

Introduction

The Asia–Pacific region is heavily oil dependent and this dependency is widely expected to continue and increase into the 21st century. If China is excluded from the calculation, oil consumption accounts for in excess of 50% of total regional energy consumption. During the coming decade, continued high rates of economic growth are anticipated for the Asia–Pacific region with corresponding high growth in demand for oil. In fact, the Asia–Pacific region is expected to experience the fastest rate of oil demand growth of any region in the world over this period. Pressure will come to bear on the regional oil markets, since this forecast growth in oil demand (figure 1) will take place concurrently with a forecast decline in the production of local crudes. In the absence of significant local exploration successes, the region seems destined to become even more dependent on imports of Middle Eastern crude.

The drive for indigenous energy supply is crucial to governments in the region (figure 2). New Zealand and Australia are no exceptions.

Oil remains a critical resource for most nations in relation to vitally important areas such as finances, transportation, electrification, industrialisation and national security. As history has shown, over-reliance on the volatile Middle East region as a secure supply of petroleum is certainly not a desirable strategy for any nation to pursue.

There is strong competition for oil exploration capital around the world. In the Asia–Pacific region, this competition is particularly fierce due to the strong regional demand for the product and declining production rates. Asia–Pacific has over 56% of the world's population; oil consumption in the region continues to increase relative to the rest of the world. Most governments in the Asia–Pacific region have recognised the need for an indigenous energy supply and are now making substantial structural changes to make petroleum exploration in their respective countries more attractive.

This paper will cover the following topics:

- demand for crude oil in Asia-Pacific Region
- the role of Government
- identifying and managing the risks associated with exploration and production
- raising exploration capital
- the New Zealand situation

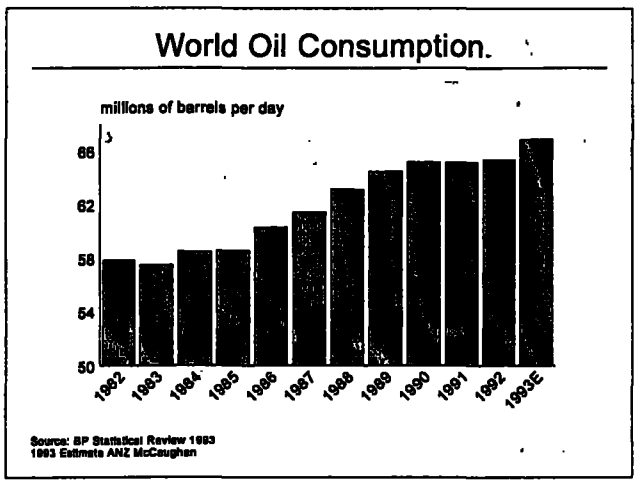

Fig. 1. World oil consumption.

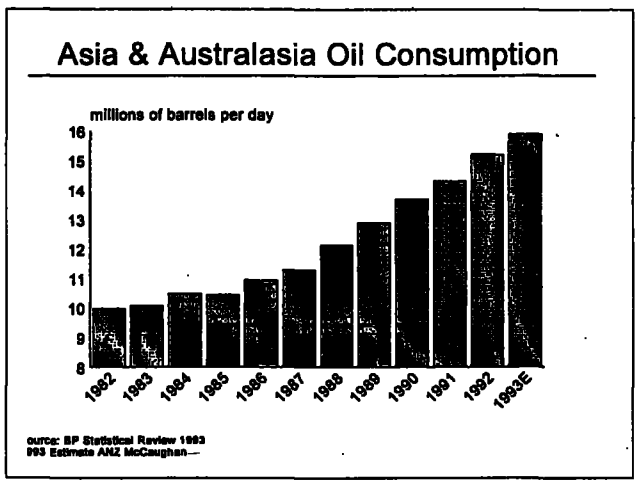

Fig. 2. Asia and Australasia oil consumption.

Oil Demand

Oil demand in the Asia–Pacific region is expected to continue its strong growth pattern for the rest of the decade. Strong economic growth, historically low priced and readily available oil and reduced government regulation of the oil market will be the major reasons for this growth in oil demand. As stated previously, if China is excluded, oil accounts for over 50% of total Asia–Pacific energy consumption followed by coal at 29%, natural gas 12%, nuclear 7% and hydro electricity 2% (figure 3). This compares to the global consumption mix of 42% for oil, 23% for coal, 25% for natural gas, 5% for nuclear and 2.5% for hydro electricity. These figures show that the Asia–Pacific region is substantially more dependent on oil relative to natural gas, when compared to global energy consumption patterns.

The size of China's energy market tends to distort the regional picture. China is the world's largest consumer of coal which makes up some 80% of the primary energy mix in China, accounting for approximately 25% of world consumption.

The energy mix in Asia is expected to change during this decade, with natural gas expected to increase its proportion of the market for both environmental and energy security reasons. According to Fesharaki and Wu of the East West Centre, by the year 2000 oil is projected to make up a minimum of 37% or a maximum of 45% of Asia–Pacific energy consumption, depending on prevailing oil prices. On this basis, oil appears most likely to remain the key energy supply source in the Asia–Pacific region throughout at least the next decade.

In 1992, Asia–Pacific regional consumption was larger than that of OECD Europe, remaining the second largest oil consuming region after the USA. In recent years Asia–Pacific countries have continued to grow their economies, while many western industrialised nations have been hit with prolonged recessions. As a consequence of this rapid economic growth, spectacular changes occurred in regional oil consumption in 1992 (table 1).

Korea's economy recently has grown at the rate of around 8% per annum. At the same time, Korean oil consumption has increased by approximately 20% per annum. Thailand's economy has been one of the fastest growing in the region, averaging more than 10% per annum since 1986. Thai oil consumption has risen at the rate of approximately 14% per annum since 1987. These figures compare with the average global growth in demand for oil of around 0.5% over the past 5 years (table 2).

Table 1. Regional oil consumption in 1992.

Country	Annual Increase for 1992
Philippines	16.8%
South Korea	21.2%
Thailand	12.6%
China	8.7%
Indonesia	8.4%

Source: BP Statistical Review 1993

Some of the Asian nations, such as Korea, will experience a significant reduction in demand in the middle of this decade, but the overall forecast demand for the region remains particularly strong (figure 4).

Increased consumption of transportation fuels, as a result of increased ownership of motor vehicles and higher international passenger traffic, have and will continue to play a major part in the increased demand for oil in this region.

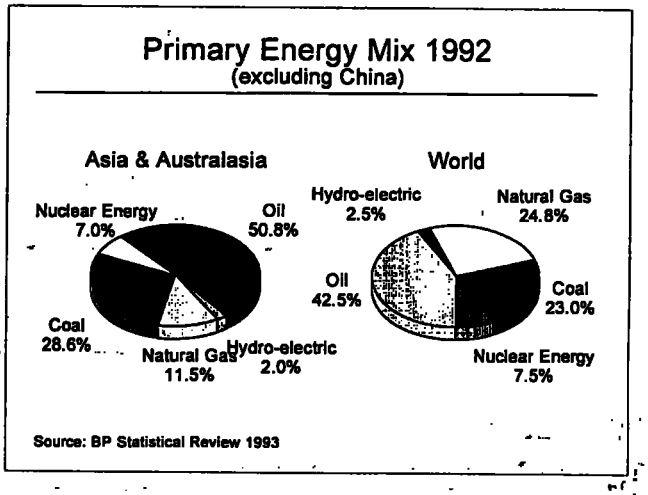

Fig. 3. Primary energy mix 1992 (excluding China).

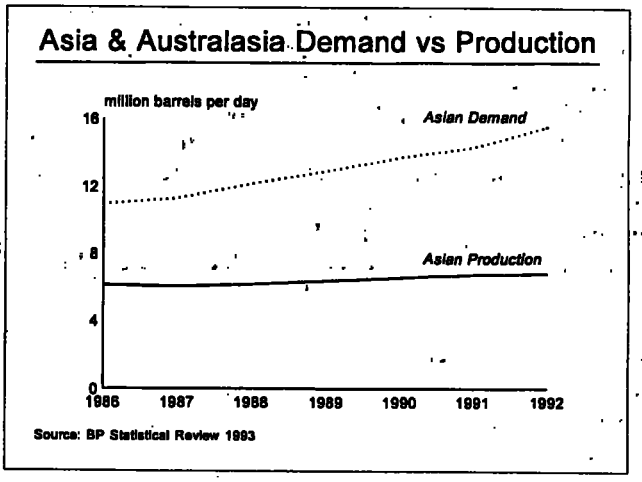

Fig. 4. Asia and Australasia demand vs production.

Table 2. World oil consumption from 1981 to 1992.

Millions of barrels per day	1981	1992	% change
North America	17.3	17.9	3.4
Latin America	4.8	5.2	9.0
OECD Europe	13.1	13.6	4.0
Non-OECD Europe	11.1	7.9	-29.1
Middle East	2.1	3.5	65.5
Africa	1.5	2.0	32.8
Asia & Australasia	10.3	15.2	48.0
TOTAL WORLD	60.2	65.4	8.6

Source: BP Statistical Review 1992 and 1993

Asia-Pacific oil consumption is currently around 14.5 million barrels per day. This is expected to grow to 20 million barrels per day by the year 2000.

Current Asia–Pacific oil production is 6.5 million barrels per day. Over the next few years, crude oil production in the region will increase, stemming from new systems coming into production.

Most of these new fields are relatively small. Keeping production levels up in most countries requires a high and continuous level of investment in exploration. New developments in both Indonesia and Malaysia, coupled with greenfield sites in Vietnam and Papua New Guinea, will increase regional production in the near term. However, by 1995, region-wide production should be around 7.2 million barrels per day and should be sustained at that level until the end of the decade.

The real wild card in the equation is China. In recent times, a steady movement toward a market economy in China's south eastern coastal provinces has made that region the world's fastest growing economy. This has lead to a boom in oil demand which has compelled the Chinese government to scale back crude exports to feed this massive domestic consumption (figure 5).

China, like India and Australia, needs all the crude it can produce; any exports of petroleum from these countries will be offset against increased imports.

Net Asia–Pacific crude production is currently unable to meet existing regional oil demand (figure 6). Further, regional suppliers will be unable to keep pace with expected growth in oil demand projected to the turn of the century. The result will be a major increase in import dependence. In 1992, 50% of the oil consumed in the region was imported. By the year 2000, this figure could rise to more than 60%.

Currently, the Persian Gulf producers supply approximately 70% of the Asia–Pacific region's total oil imports. This figure could easily rise to somewhere between 80–90% by the turn of the century. To have such dependence on supplies from the Middle East is clearly putting the Asia–Pacific region in a precarious situation.

Not surprisingly, governments and regional producers are responding actively to this scenario. Asian countries are wooing foreign oil firms with revised production sharing and concession terms and generally improving conditions for foreign investors. New Zealand's largest oil producer, Petrocorp, a wholly owned subsidiary of Fletcher Challenge, is just one of the many international companies that have been attracted to the region. Petrocorp is actively involved in Indonesia, Thailand, Philippines and China. Most Australian oil companies are also becoming increasingly active in the Asia–Pacific region which is a direct response to a perception of greater prospectivity and improved fiscal regimes (figure 7).

The Role of Government

In the 1970s, there was a view adopted by many developing countries that direct investment by foreign companies meant exploitation and economic dependency. History has shown that the nationalisation of industries has not been as successful as direct foreign investment. Governments need policies that can induce the private sector, both domestic and foreign, to invest in the upstream oil industry in their particular country.

The past two decades have been a period of unprecedented volatility in oil prices which have led to a dramatic change in oil exploration and production. After enjoying regular oil price rises throughout the 1970s, oil companies, like many commodity producers, have had to face a steady decline in prices over the last decade (figure 8).

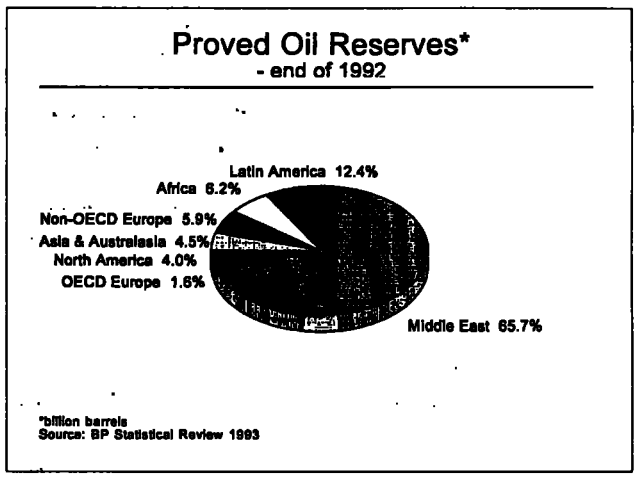

Fig. 6. Proved oil reserves — end of 1992.

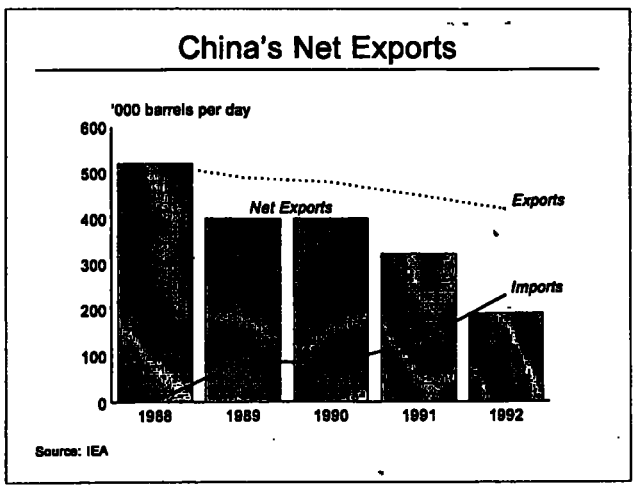

Fig. 5. China's net exports.

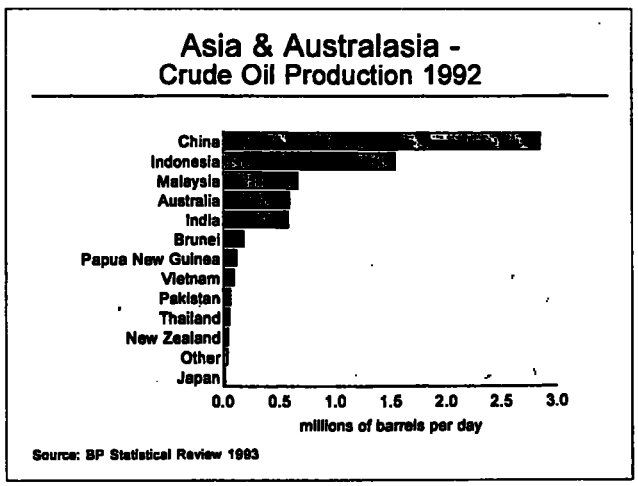

Fig. 7. Asia and Austalasia — crude oil production 1992.

This has led to reduced exploration efforts globally and a corresponding fall in production levels. State oil companies in developing countries faced organisational and efficiency problems not regarded as serious while prices remained high, but found themselves in a more difficult situation in a reduced oil price environment. Eventually the governments of these countries began to turn to international oil companies to explore and produce reserves, rather than relying solely on the financial and technical capabilities of their state oil companies.

The competition between countries in the Asia–Pacific region to attract foreign capital for investment in petroleum exploration is fierce and the competition between regions is equally fierce. Presently, this competition is made even keener by the reduced level of available exploration capital which has been caused by historically low crude oil prices.

The opening up of areas of the former Soviet Union, Latin America and Africa will make competing for international capital even tougher. This emergence of opportunities in countries previously closed to exploration by foreign corporations has increased the competition for exploration capital in countries with established exploration regimes.

For international oil companies with resources to allocate on a global basis, the concept of production sharing and the numerous foreign contracts based on this theme become paramount in competing for capital. Host countries usually try to achieve a balance between the prevailing fiscal terms, the various local risks associated with winning petroleum from the region and the geological potential or prospectivity of the region. This balance is formulated so as to encourage exploration and development of the country's natural resources while still retaining as much of the economic rent associated with a commercial discovery as possible. There must be a balance between fiscal conditions and geological conditions. Where the benefits of more favourable geological conditions and lower associated risk exist within a country, the tougher the contract and fiscal terms its government should be attempting to exact (figure 9).

Prospectivity, and, to a lesser extent the associated risks, are matters of perception, whereas fiscal terms are real. The real skill of a successful oil company, and in fact the investor or shareholder in that company, is to accurately assess the prospectivity of a particular sedimentary basin and the risks associated with exploration and production relative to the fiscal terms.

Governments have a difficult job in formulating policies to attract explorers, not least because the perceived prospectivity and risks associated with successful exploration are dynamic and can change with the drilling of one promising well or with one stroke of a judge's or legislator's pen. The government's job is, in fact, more difficult in many cases because their perception of prospectivity is usually biased. Governments that employ excessive fiscal terms in low prospectivity areas can stop exploration dead in its tracks and put a country at least five years behind its competitors. Nearly all countries in Asia–Pacific have improved their exploration terms in recent years. Some have been more successful than others and this includes Australia which has been successful in increasing offshore exploration work following further changes to its resource rent tax regime.

Such improvements in the region include:

- lower oil production tax rules
- higher drilling expense deductions
- faster award of exploratory tracks
- loosening of state monopolies
- easier repatriation of profits

Identifying and Managing the Risks

The upstream oil and gas industry is a risky business. In fact, its a high risk/high return business. There is considerable risk in just about every facet of the business. The major risk components are:

- exploration risk
- appraisal risk
- development risk
- sovereign/political risk
- commodity and exchange rate risk

Larger oil companies are typically very good at assessing and managing risk and usually have the benefit of a reliable cash flow to support their exploration activities. Smaller companies are usually reliant on a relatively small pool of exploration funds which will be quickly exhausted without exploration success. Consequently, their survival rate is low. There are very few small explorers that have made the transition from exploration to production.

The competition for petroleum exploration capital is dependent on the risk components and the fiscal conditions outlined above.

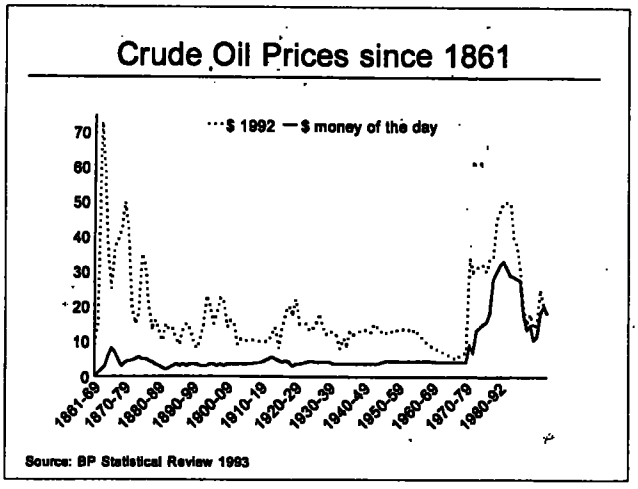

Fig. 8. Crude oil prices since 1861.

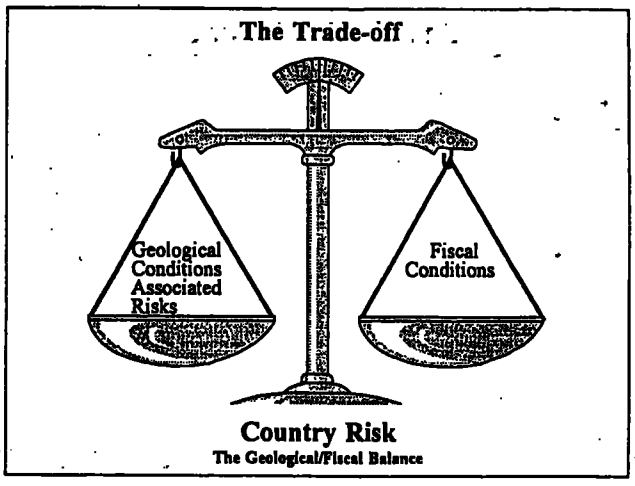

Fig. 9. The trade-off.

Exploration risk

Exploration risk is essentially the probability of a commercial discovery. This discovery rate typically ranges from 5% to 20% and is basin determinant rather than country determinant. Assessing exploration risk is the first and most important ingredient to a successful project. New Zealand or Australia may have a most favourable taxation regime, but if you can't find oil then there is no tax to pay.

Exploration risk also relates to the cost of drilling. Many small companies have gone broke on the back of one or two very costly exploration wells. Varying geological conditions can have a major impact on the cost of drilling. One unsuccessful exploration well drilled offshore New Zealand is estimated to have cost close to NZ$40m. The thought of undertaking that sort of exercise with no certainty of a return is enough to send a chill down any accountant's spine.

Appraisal risk

Appraisal risk concerns drilling additional wells after the discovery is made in order to prove a commercial accumulation is present. There are many discoveries in Australasia that have been unsuccessfully appraised and, in pessimistic terms, can be regarded as throwing good money after bad. It is one thing for a company to make a discovery, but it is another to successfully appraise the discovery and bring that field into commercial production. Commerciality of a discovery is determined by numerous factors, of which the most important is obviously recoverable reserves. Appraisal drilling is used to delineate the field and determine reserves with a sufficient degree of certainty to proceed to production. An oil company should aim to drill the least amount of appraisal wells, thus reducing costs to the minimum required to satisfy themselves (and their bankers) that they have a viable project. Sometimes appraisal drilling raises more questions about the field than it answers on the reserves side and companies get locked into massive appraisal drilling programmes, as was the case with the Kutubu project in Papua New Guinea.

Development risk

Development risk usually relates to the location of the discovery and the ability to transport the product to market. The cost of an offshore project is obviously much greater than an onshore project. Water depths influencing the type of offshore platform will have a major impact on costs. It also relates to ultimate recoverable reserves and the deliverability of the producing reservoir sequence. Water depths, weather conditions and geology are three variables that can have a major impact on the costs of a platform. Recent problems with the Goodwyn platform on the North West Shelf of Australia are a sobering reminder of the risks of getting it wrong. Repairs to the Goodwyn platform seem likely to cost the North West Shelf Joint Venture almost one year of delayed revenue and, together with its insurers, in excess of A$200 million.

It is one of those laws of nature that most of the world's great oilfields aren't found conveniently on the consumers' doorstep. Most oil discoveries tend to be made in remote locations and need billions of dollars of capital to develop the fields.

Political risk

Sovereign or political risk is the risk that the sovereign power of the state will change the legal and/or fundamental regimes applicable to an existing project.

Political risk in the form of the Mabo decision has certainly been a hot topic in Australia over the last eighteen months as resource companies and investors in these companies have had some first-hand experience on the potential for sovereign risk affect their investment.

Political risk can take several forms and some of these forms are outlined below in broad terms:

- currency exchange restrictions and manipulation
- foreign investment controls
- import/export controls
- exploration/production title risk
- changes in fiscal regime
- environmental changes
- price control

Papua New Guinea is resource rich and this has attracted considerable foreign investment capital. Despite the country's large deposits of oil, gold and base metals, a number of international resource companies have made the conscious decision not to explore there or to withdraw from or wind down exploration activities there, taking the view that the potential rewards from investing exploration capital in New Guinea is not justified after accounting for the risks associated with deriving profits from this investment. Political risk is certainly one reason for this, as is development risk. The government imposed change to the ownership structure of the Porgera gold mine is a clear example of sovereign risk companies must consider when allocation exploration capital to this regime.

Political risk has and will continue to have an impact on resource development and attracting exploration capital in this region. It is important to note that within South East Asia, it is not uncommon for governments of any political philosophy to exercise sovereign powers, regardless of political party.

Understanding political risk and managing this risk is crucial to determining whether to invest in a region. There are ways to minimise political risk which may include, the use of non-recourse finance, political risk insurance and legislated agreements, just to mention a few.

Raising exploration capital

Most large oil companies fund their exploration expenditure through production cashflows. The amount each company spends on exploration can often be a fixed percentage of cashflow but this can vary dramatically between organisations, depending on their respective financial stability. Companies with successful exploration track records tend to have larger exploration budgets, while companies which are good acquirers of assets have relatively smaller exploration budgets. Exploration budgets tend to be flimsy and generally responsive to factors such as the oil price, level of exploration successes and drilling commitments on acreage held by the company. Larger companies may have internal competition for available funds between the upstream (exploration and development) and downstream (marketing and distribution) divisions.

There will also be competition within the upstream division as to where and how the available exploration budget should be allocated. Although there may be certain exploration obligations which a company must meet as part of the terms of holding its exploration tenements, there will usually be a considerable discretion as to the use of the balance of the exploration budget.

Smaller companies tend to raise exploration capital through the stock market. These companies are often unable to borrow to fund exploration as lenders are reluctant to advance funds on assets which currently produce limited or no cashflows. Equity issues are an extremely popular and logical method for raising exploration capital and usually provide the basis for a small exploration company to continue to pursue exploration activities and, with success, grow larger.

A small company's ability to raise money for exploration is dependent on many things, which include:

- quality of the company's management
- its exploration portfolio
- the state of equity markets
- the oil price environment

If all (and quite often most) of the above conditions are met, there is no reason why small companies should have trouble raising exploration capital. Over the past twelve months, there have been hundreds of millions of dollars raised by Australian listed oil companies, principally to support exploration activities. According to ANZ McCaughan's estimate, more than 50% of the capital raised will be spent outside Australia.

New Zealand Situation

New Zealand, like most other countries in the Asia–Pacific region, is facing challenging times. For two decades New Zealand has relied heavily on gas and associated condensate production from two large fields, Maui and Kapuni, for the bulk of indigenous hydrocarbon production. Other significant discoveries of oil at McKee and Waihapa/Ngaere have certainly contributed in latter years, however, the outlook for maintaining current levels of self sufficiency is not promising. New Zealand is facing a situation of rapidly depleting petroleum reserves and an expanding economy, albeit not at the same rate as many other Asia–Pacific economies (figure 10). All of New Zealand's present hydrocarbon production is restricted to one region (basin) — the Taranaki Basin. And the bulk of New Zealand's production is restricted to one field in that basin — Maui. This concentration exists despite the fact that New Zealand has eight sedimentary basins, five of which ANZ McCaughan believe are prospective for oil and gas. The challenge facing the New Zealand Government is to stimulate exploration in frontier areas such as the Canterbury Basin, Great South Basin, Westland Basin and East Coast Basin, as well as further increase drilling in the Taranaki region, particularly offshore.

New Zealand currently has a liquid hydrocarbon self-sufficiency of about 50%. Based on proven and probable known crude oil and condensate reserves, this level of self sufficiency is expected to almost halve by the end of this decade (figure 11). New Zealand is, in fact, in a worse position than many other countries with regards to oil. There have only been two significant oil and gas discoveries in the offshore Taranaki Region after almost 30 years of exploration.

Some major oil companies have withdrawn from exploration in this region over recent years and with them the prospect of increased exploration activity. As these companies withdraw, the chance of making much needed discoveries gets smaller. New Zealand's taxation regime is favourable compared to many other Asian countries. However, due to complex geology, its prospectivity is not clearly understood (and therefore is not well perceived) outside of the onshore Taranaki region. New Zealand has two domestic corporate entities actively involved in the bulk of domestic oil exploration in New Zealand. The major thrust of their current exploration activities is directed towards the central onshore Taranaki basin. New Zealand needs more international and domestic oil companies to increase exploration activities in proven petroleum areas, as well as to test the potential in some of New Zealand's frontier areas.

Conclusion

As economic growth in the Asia–Pacific continues, the demand for energy is set to increase significantly. The forces shaping Asia's energy balance point in one direction; intense pressure to increase indigenous oil and gas production throughout the region. By the end of this decade, Asia's oil consumption could be around 40% higher than it is today. Consumption growth and contracting supply will combine to increase the region's dependence on imported oil, primarily from the Middle East. Governments in the region are therefore taking active steps to attract exploration and development capital to the region. The competition for this capital is extremely fierce at the moment. Poor returns on oil investments in the 1980s coupled with weak equity markets have significantly reduced the amount of capital available for petroleum exploration at a time when opportunities are abundant.

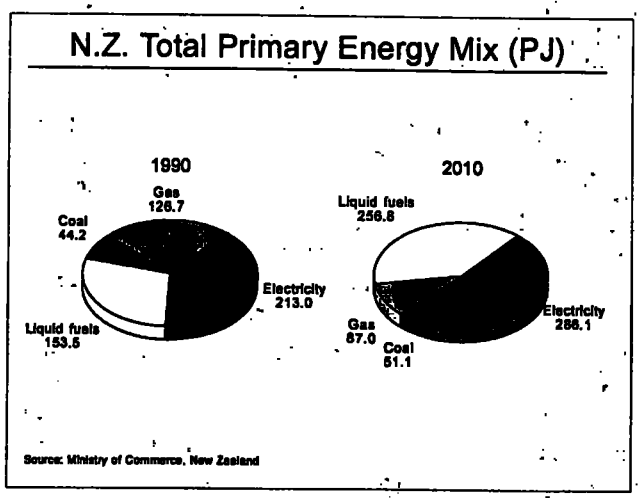

Fig. 10. New Zealand total primary energy mix (PJ).

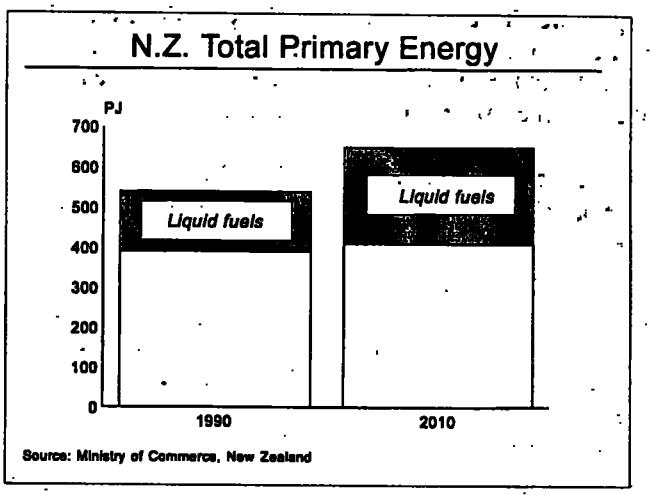

Fig. 11. New Zealand total primary energy.

The oil industry is too important to be ignored in the hope that it will prosper on its own accord. Where the perception of prospectivity begins to wane, Government stimulus can go a long way to remedying the imbalance between prospectivity and associated risks on the one hand and the fiscal conditions on the other, luring new investors as well as enticing current participants to "have another go". Companies need to be compensated for all the usual risks as well as the commitment of shareholders' capital and other scarce resources such as technical and management time. For countries which have potential for production of indigenous oil supplies, priority has to be given to accelerating the development of their domestic oil reserves.

The liberalisation of economies has opened up numerous opportunities for direct foreign investment in the upstream oil and gas sector, particularly in the Asia–Pacific region. Governments of both rich and poorer countries have come to the conclusion that exploration and production of hydrocarbons creates long-term growth and employment. If countries in the Asia–Pacific region or, in fact, the world, are to have the oil supplies they need, technological advances, energy conservation, and substitution are not the only answer. The international oil industry's ability to raise sufficient funds for exploration and development in an environment where the returns are adequate for the risks involved becomes crucial to minimising the impact of future energy "shocks".

Acknowledgement

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Author

AUSTIN MILLER has Bachelor degrees in Science (Geology) and Law as well as a Master of Business Administration. He has worked in the petroleum exploration industry and more recently has practised in corporate, commercial and resources law with a national Australian law firm. Mr Miller works within the Corporate Division of ANZ McCaughan, principally in the area of resources and energy related capital raisings.