



APEC ENERGY WORKING GROUP

***Great Expectations:
Cross-Border Natural Gas Trade
in APEC Economies***

RESOURCESLAW INTERNATIONAL

CHAPTER 1: INTRODUCTION AND EXECUTIVE SUMMARY

- APEC economies possess abundant stranded natural gas resources representing huge export potential. By 2025, the value to APEC exporting economies of this additional volume of trade at current prices should exceed \$100 billion per annum.
- Greater use of natural gas is supported by APEC at the highest political level as one of the solutions to global energy insecurity.
- Greater use of natural gas is also supported by APEC as a key strategy in delivering a sustainable global economy and a sustainable global environment.
- Domestic gas markets in most APEC importing economies are immature and require development. This is a major bottleneck for cross-border natural gas trade.
- There is a paucity of gas transportation infrastructure in APEC economies, requiring an unprecedented level of expenditure on development of new infrastructure. Some \$10-15 billion per annum will need to be invested within the APEC region. Without this massive investment, cross-border natural gas trade cannot occur.
- Globally, there are great expectations of natural gas as the preferred “swing fuel” for the energy industry.
- Safety fears have been expressed about the siting of additional liquefied natural gas (LNG) import terminals. There is a need to educate and inform communities of the outstanding 40-year safety record of LNG import terminals.
- The great expectations of natural gas will not be fully realized unless there is collaboration amongst governments, investors and communities in developing and operating natural gas supply chains. A collaborative institutional mechanism is recommended for this purpose, as part of a three-level best practice regime.
- The goal of energy sustainability must be the unifying theme for the pursuit of APEC’s cross-border natural gas strategy.

About the APEC Energy Working Group (EWG)

APEC economies currently account for around 60 percent of world energy demand. The APEC region overall is a net energy importer, meaning that aggregate annual consumption of energy exceeds annual domestic production, with the balance imported from third-party economies. Energy imports to APEC economies are projected to increase by some 92 percent, as indigenous (or “within economy”) supply fails to keep pace with expanding energy demand driven by economic growth, industrialization and urbanization.

The EWG was launched in 1990 and comprises representatives of the governments of APEC economies who meet twice a year. The EWG seeks to maximize the energy sector's contribution to the region's economic and social well being, while mitigating the environmental effects of energy supply and use. Facing the challenges of short-term energy supply disruptions and ever increasing long-term demand for energy, the EWG works to ensure energy security in the region.

Business and Private Sector Participation in the EWG

The EWG has long recognized that business makes an important contribution to the development and implementation of its work program. It is one of the APEC Working Groups that first established its own public and private sector dialogue mechanisms. The EWG established the APEC Energy Business Network (EBN) in 1999. Under the guidance of the APEC Energy Ministers, the EWG has invited the EBN representatives to participate in its working group meetings over the past two years.

According to the EWG's projection, with huge and ever-increasing demand for energy, the energy sector in APEC economies faces significant challenges in mobilizing private capital and international financial resources to fund an estimated US\$3.4 trillion to US\$4.4 trillion in energy investments required in the next 20 years.

Meetings of APEC Energy Ministers

APEC Energy Ministers' Meetings provide policy guidance and momentum for the work of the EWG in implementing measures consistent with the goals established by APEC Economic Leaders. APEC Energy Ministers have met six times since their first meeting in Sydney in 1996.

The Fundamental Importance of Energy and Energy Trade

Energy is the lifeblood of modern economic activity. As economies expand, their energy consumption accelerates relative to the rate of expansion. There is however a great geographic disparity in energy supply and demand in the world. Cross-border energy trade is of fundamental importance to energy-importing economies, as it underpins their economic structure.

In January 2004, the Asia-Pacific Economic Cooperation Energy Working Group (APEC EWG) appointed ResourcesLaw International of Sydney, Australia (ResourcesLaw) to undertake a study of best practice in cross-border interconnection of natural gas in APEC member economies, with the aim of accelerating APEC cross-border natural gas trade.

ResourcesLaw initially developed a framework paper. After this, it collaborated with the United States Department of Energy (US DOE) to run a workshop in San Francisco. ResourcesLaw then organized workshops in Tokyo and Singapore to review the framework paper with a wide cross-section of government officials and industry participants.¹ Between the first and second workshops, APEC Energy Ministers held their 6th biennial meeting and encouraged member economies to move towards best practice in facilitating the development of APEC LNG trade.²

¹ The first workshop, focused on LNG trade into the West Coast of the United States, was organized by the USDOE and held in San Francisco, California, USA on 29-30 April 2004. A second, also on LNG trade, was organized by ResourcesLaw and held in Tokyo, Japan on 16-17 June 2004. The third workshop, on the Trans-ASEAN Gas Pipeline, was organized by ResourcesLaw and held in Singapore on 12-13 August 2004. Case studies based on all three workshops are contained in appendices 1-3 of this report.

² The APEC LNG trade best practice principles were drafted at the San Francisco workshop and were tabled at the 6th meeting of APEC Energy Ministers in Manila, Philippines on 10 June 2004. The principles are set out in full in appendix 1 of this report.

Changes in Specific Energy Dependencies

At a global level, except for a handful of major energy exporters, mainly in the Middle East and Russia, all economies now depend on the efficient functioning of an open global trading system for their energy supplies. They are especially dependent, directly or indirectly, on a secure supply of oil from exporters in the Middle East.

Rising global oil prices are an indicator of an increasingly narrow gap between supply and demand and of an increasing mismatch between points of production and centers of demand. Since the 1973 Arab embargo on the supply of oil to the United States, the major focus of global attention has continued to be on the general dependence of all oil importing economies on exports of oil from the Middle East. This has distracted attention from some of the specific energy dependencies of regions and individual economies. These include:

- ❖ Japan's continuing dependence on imports for virtually all of its energy supplies
- ❖ Europe's heightened dependence on its largest supplier (Russia) for ever-increasing supplies of natural gas
- ❖ Indonesia and Australia having shifted from being oil exporters to net oil importers
- ❖ China's recent greatly heightened and growing dependence on imports of oil and gas, which is expected by 2020 to grow to 60 percent of its needs, to fuel its rapid economic expansion and
- ❖ the United States' continuing and heightened dependence on imports of oil and gas, as its domestic production of both of these energy forms has failed to keep pace with demand.

Global Energy Security and the Paucity of Infrastructure

Although cross-border energy trade takes place today between a much larger number of sellers and buyers than ever before, the above energy dependencies highlight the risk for energy importing economies of a major global oil supply disruption. A major supply disruption is not predicted to occur but, if one did occur, it could have major economic, social and environmental consequences for most energy importing economies – hence the search for other energy supply options such as natural gas.

Increased utilization of natural gas is therefore supported by APEC at the highest political level.

The contemporary quandary about global energy security involves two main elements: one is the "peak oil debate" that we constantly read about in the daily media: the question whether the energy resources are adequate ("is the oil/gas running out?"). This is in our opinion currently a peripheral issue. The fundamental issue is the barely-appreciated question of whether there is sufficient energy infrastructure to reliably handle the volumes of energy that must be produced and transported across national borders and the sequential question of whether this infrastructure is secure against sabotage and other events of force majeure.

The paucity of infrastructure is a major bottleneck for cross-border natural gas trade and requires an unprecedented level of investment to be made. This is easier said than done. For example, although LNG import terminals have an outstanding 40-year safety record, a number of stakeholders are opposed to their development because of concerns about safety.

Sustainable Development and Global Climate Change

On top of questions relating to the adequacy of energy resources, the risk of energy supply disruption and energy transportation capacity, there looms the specter of global climate change.

The now almost-universally accepted wisdom is that greenhouse gas (GHG) emissions from energy production must be minimized in the interests of tempering the effects of this widely-feared global phenomenon. Many now claim there is a need to reduce GHG emissions to 40-60 percent below 1990 levels to achieve long-term climatic stability at 450 ppm of atmospheric carbon, with a two-degree temperature rise. Irrespective, natural gas offers the lowest GHG emissions of any fossil fuel and the acceleration of cross-border natural gas trade is a key strategy in making progress towards sustainability of the global economy and the global environment.

Nuclear energy generation and new renewable energy technologies (including wind and solar power) may also play an increasingly significant part in reducing GHG emissions. However, renewable technologies, because they are coming off a very low base and are currently available in only small-scale units, may be hard pressed to practically and commercially meet global demand growth.

Natural Gas – The “Swing Fuel” or “Bridging Fuel” Towards Sustainability

Taking into account all of the economic, energy security and environmental implications of energy production and utilization, the world has expressed a preference for natural gas as the “swing fuel” to lead the world in the direction of more sustainable energy systems for at least the next quarter century. Natural gas is also commonly spoken of as the “bridging fuel” on the way to a hydrogen economy in 30 – 50 years or more from now.

The world has an abundance of resources of natural gas. These resources are adequate for at least the next 50 years, and perhaps for as long as 200, at current levels of consumption. Many of these resources are, however, “stranded” in the sense that they are isolated from markets and cannot be taken to markets without installing very costly transportation channels. The two main transportation channels are currently gas pipelines and shipment by special tankers as liquefied natural gas (LNG).

Globally, by 2025, the value at current prices of the additional volume of cross-border natural gas trade should exceed \$200 billion per annum. Within APEC alone, the value of the additional trade should exceed \$100 billion per annum.

The Crucial Linkage between Trade and Investment

The development of cross-border natural gas trade is inextricably intertwined with the requirement of investment on a major scale. At its simplest, without massive investment, cross-border natural gas trade cannot occur.

Giving effect to the world's preference for natural gas will require capital of around \$30 billion per annum to be mobilized and invested in the global natural gas sector for the period to 2025 (around \$25 billion per annum on infrastructure and \$5 billion per annum on exploration and gas field development).

Some \$10-15 billion per annum will need to be invested in APEC economies. This provides a major commercial opportunity for investors, but it also poses a development challenge of unprecedented magnitude.

It is to be remembered that very large natural gas projects have very long, often decadal, exploration, appraisal and development cycles. It is simply not feasible to ramp up projects quickly to meet either a shortfall in supply or an increase in demand.

Market Forces Alone Are Not Enough

Assuming adequate transportation infrastructure can be installed to enable exports of natural gas to reach importing economies, many APEC domestic gas markets are too immature to utilize large additional volumes at the present time and their long build-up periods pose huge challenges for gas sellers.

Gas markets do not automatically happen – they need to be created and they need very substantial investment to underpin them. Enabling regulatory frameworks are required for this purpose.

The Missing Link

In the modern communications age, an abundance of indiscriminate and extravagant information is circulating about the energy industry in general and about the natural gas industry in particular. As well, there are conferences and information-peddlers everywhere. Still, many communities do not understand the economic, social and environmental implications of energy production and use. These communities are unlikely to trust what they do not understand.

There is a missing link ... the dots need to be connected. In pursuing this challenge, APEC's unifying theme must be the goal of energy sustainability.

Overcoming all of the trade, investment and information challenges in the natural gas sector in a timely manner requires proactive and collaborative involvement by governments, investors and communities in facilitating the development of natural gas supply chains. In pursuing this, transparency is an essential ongoing requirement.

This report recommends, as part of a three-level best practice regime, a collaborative international forum through which the great expectations that are held for cross-border natural gas trade and investment within APEC can be realized within a reasonable timeframe. A collaborative forum of the type recommended would facilitate the maintenance of the energy balance of the APEC region.