Recommendations Concerning Accelerating Investment in Natural Gas Supplies, Infrastructure and Trading Networks in the APEC Region

An Initiative

To Be Presented By
The APEC Energy Working Group
To The
APEC Energy Ministers
At Their Third Meeting In
Okinawa, Japan
9 –10 October, 1998

Also available at http://www.apec.org/
INTRODUCTION

The goal of the APEC Natural Gas Initiative is to propose to APEC Ministers policy recommendations that could be adopted by APEC economies to promote the acceleration of investment in natural gas supplies, infrastructure and trading networks in the region. A natural gas trading network comprised of internal and cross-border pipelines, LNG terminals and distribution systems would further cooperation and trade between the APEC economies, promoting regional economic development and growth. These policy recommendations are non-binding and should be applied in agreement with the constitutional and legal frameworks in each economy.

In August 1997, at Edmonton, Alberta, Canada, the Energy Ministers of the Asia-Pacific Economic Cooperation (APEC) region discussed an initiative presented by the United States, as well as proposals from Indonesia and Papua New Guinea, on natural gas and requested that the APEC Energy Working Group in close cooperation with business, prepare recommendations for the next APEC Energy Ministers' Meeting in Okinawa concerning the acceleration of investment in natural gas supplies, infrastructure and trading networks as appropriate in the APEC region. Ministers asked the APEC Energy Working Group to report to them next year on opportunities, issues and options for APEC actions in this area.

This high-level interest in accelerating investment in natural gas supplies, infrastructure and trading networks was reiterated during the APEC Leaders meeting in November 1997, in Vancouver, British Columbia, Canada. In that meeting, APEC Ministers "welcomed" the initiative to promote development of natural gas infrastructure, and the APEC Leaders recognized the potential environmental benefits of increased natural gas use in the region by endorsing the development of an Asia-Pacific natural gas network.

Driven by goals of promoting economic development and growth, increasing energy security and improving the environment, demand for natural gas in APEC is expected to grow significantly over the next 20 years. Meeting this demand will require increased natural gas production and significant new infrastructure development. The Asian Development Bank estimates that as much as $70 billion in investment will be required for natural gas infrastructure in Asia over the next 15 years. In addition, it is estimated that hundreds of billions of dollars in investment will be required for North America, South America and Russia over the next 15 years.

Meeting increased demand for natural gas in the APEC region also will require increased trade in natural gas and natural gas-related products and services between APEC member economies.

Historically, in many economies in the APEC region, the resources to develop natural gas supplies and to build infrastructure have been provided by governments or
government-owned enterprises. Today, however, governments are experiencing growing demands on constrained resources, while numerous projects compete for the scarce funds of the development banks. Consequently, the private sector increasingly will provide the capital necessary to develop new natural gas supplies, infrastructure projects and trading networks in the APEC region.

The need to mobilise hundreds of billions of dollars of private capital requires the governments of the APEC economies to develop and implement policies that will make those economies -- and the region as a whole -- attractive to private project developers and financial institutions. Indeed, to one degree or another, most economies in APEC already are undertaking reform, restructuring and privatization of their energy sectors, and recent experience by APEC economies demonstrates that these efforts have been successful in attracting private capital. For example, a February 1998 report by the Australian Gas Association predicts that Australian natural gas transmission pipelines will account for $4.07 billion worth of investment over the next several years. Similarly, an April 1997 policy document, Prospects for the Natural Gas Market 1996-2005, estimates that investment in Mexico’s natural gas market will reach $1.4 billion in the 5 years leading up to 2000.

The purpose of the APEC Natural Gas Initiative is not to design, promote or replicate any particular regulatory or market "model" for each individual economy or for the entire APEC region; neither is its purpose to reflect or to endorse existing policies in any APEC economy. Rather, in response to the request of the APEC Energy Ministers, building upon earlier declarations made by APEC Leaders and Energy Ministers, as well as the policy goal of "reducing regulatory, institutional and procedural impediments to trade and investment in energy infrastructure, products and services," articulated by the Energy Working Group, and developed in close consultation with the business sector, this paper identifies conditions inhibiting the acceleration of private investment and recommends policies to remove those conditions.

Indeed, the APEC Natural Gas Initiative may be considered as the application, in a specific sector, of the 14 non-binding energy principles endorsed by the APEC Energy Ministers at their first meeting in Sydney, Australia. At that meeting, Energy Ministers identified as "an objective of fundamental importance to the region's future prosperity," "the adoption of energy policy principles which give impetus to regional initiatives to reform energy policies for incorporation into member economies' domestic energy policy deliberations." The APEC Natural Gas Initiative is such a "regional initiative." It should be noted that in August 1997, the APEC Energy Ministers endorsed a similar set of "best practice principles" to "encourage and facilitate greater business sector investment in power sector infrastructure projects in the region." Additionally, many of the APEC Energy Ministers have endorsed similar policies in the context of the G8 and the Summit of the Americas discussions.

Accompanying these recommendations is a separate background report, "Accelerating Investment in Natural Gas Supplies, Infrastructure and Trading..."
Networks in the APEC Region." That report discusses (1) the increasing role of natural gas in APEC, (2) natural gas supplies available to the APEC region, (3) natural gas trade in APEC, (4) natural gas infrastructure development in APEC and (5) the effect of the Asian financial crisis on investment in natural gas supplies, infrastructure and trading networks in the APEC region.

CONDITIONS INHIBITING THE ACCELERATION OF PRIVATE SECTOR INVESTMENT IN NATURAL GAS SUPPLIES, INFRASTRUCTURE AND TRADING NETWORKS IN THE APEC REGION

Natural gas exploration and production and infrastructure (including LNG and pipeline) projects are highly capital intensive. The amount of investment required for pipeline facilities can range from $110 million to $2.5 billion, while that required for LNG facilities can range from $4 - 7 billion.\(^{13}\)

Infrastructure may be financed from domestic and foreign sources. Governments and government-owned companies can draw on financing from tax revenues, or borrowing in domestic and international capital markets on their own account, or through international development agencies. The private sector also can raise funds from internally generated resources or capital markets.\(^{14}\)

While the governments of some APEC economies will choose to continue committing public resources to the development of their natural gas sectors, in Subic, The Philippines in 1996, the APEC Leaders acknowledged that:

Lack of infrastructure severely contains sustained growth. Since public finance cannot fully meet the enormous requirements of the region, private sector investment must be mobilized. *Providing the appropriate financial, economic, commercial and regulatory environment is the key to stimulating such investments.* We direct the relevant ministers to work together with private sector representatives and with national/international financial institutions including export credit agencies and develop a framework for this purpose.\(^{15}\)

Furthermore, in 1997, in Vancouver, British Columbia, Canada, the APEC Ministers "noted that public funds alone cannot meet the enormous infrastructure needs of the region, and reaffirmed the need for greater private/business sector involvement to meet the infrastructure requirements in the region."\(^{16}\) This sentiment was further emphasised by Leaders at their 1997 meeting in Vancouver where they endorsed The Vancouver Framework for Enhanced Public - Private Partnerships in Infrastructure Development.

*Consequently, when developing policies to govern the natural gas sector, it is important for governments to understand what private project developers and financial institutions perceive to be conditions inhibiting their investment in the gas sectors of the APEC economies. Such understanding would help APEC economies to*
fulfill the pledge made by the APEC Leaders in Bogor, Indonesia, in November 1994, "to continue to reduce barriers to trade and investment to enable goods, services and capital to flow freely among our economies." The purpose of this paper is to present to APEC Ministers the perspectives and requirements of the private/business sector with respect to investment and trade in natural gas and natural gas-related products and services.

Investment decisions by private companies are made by balancing the potential risks and returns associated with a particular project in a particular economy. Investors evaluate a particular project by assessing its expected return in relation to the risks associated with it, and comparing its risk/return profile to alternative investment opportunities. Project risks faced by investors include commercial, currency, regulatory and political risks. Investors quantify perceived risks, wherever possible, in order to compare them. Private investors and project sponsors are unlikely to invest in a project that promises a rate of return no greater than alternative investments, but which involves a higher level of risk. The higher the perceived risk in an investment, the higher the required return on the investment. Return is calculated based on the timing of the cash inflow to the investor based on the investor’s cash outflow. Delays in the timing of cash flow and increases in costs reduce the level of return on a project.

Similarly, if a project's risk-return balance does not support financing, the project will not reach financial closing. Financial institutions require a high degree of confidence with respect to the "cash flow" from a project. They look for projects that stand on their own economics, without government subsidies that are critical to the cash flow of the project or that may be withdrawn at any time. They seek financially and operationally strong sponsors on every side of the project, as opposed to sponsors who are only associated with the project only through favoritism from the government. Financial institutions also look for projects that meet the highest environmental standards. It is also significant that upstream (exploration and production), midstream (LNG and pipeline transportation) and downstream (distribution, processing and end-use) normally have quite different risk profiles, financing methodologies and fiscal regimes.

Private investors and project sponsors apply these fundamental principles to any investment in any economy. In evaluating the potential risks and rewards of a project, private project developers and financial institutions apply the same set of criteria to all projects, to all economies and to all regions of the world.

Generally, barriers to private investment in natural gas supplies, infrastructure and trading networks are policies -- or the lack of policies -- which increase the risk or the cost of investing in a particular project in a particular economy. They include:

**The absence of facilitating and predictable legal, regulatory and trade frameworks governing the natural gas sector.** When governments do not make clear (1) the relationship between the government and the private sector, and (2) the rules and requirements to which project developers and their projects will be subject, the
uncertainty and, consequently, the risk to project developers is increased. The absence of facilitating and predictable legal, regulatory and trade frameworks governing the natural gas sector generally is manifested by (1) cumbersome regulatory processes that lengthen the time required for government officials and investors to make decisions; (2) unclear and fluid regulations and requirements; (3) approvals and authorisations which must go to the highest levels of government; (4) policies and regulations that change arbitrarily and/or frequently; and (5) discriminatory treatment of participants in the natural gas sector in the application of laws, regulations, taxes and required technical or operational standards.

The absence of fiscal regimes that recognise risks to project sponsors and investors. Governments increase project risks and costs for private investors when they (1) restrict the returns that an investor can earn on a project, (2) restrict the timing or amount of payment of project earnings, (3) do not permit local currencies to be traded freely, (4) prohibit or restrict the conversion of local currency, and (5) restrict the amount or timing of repatriation of project earnings and funds.

The absence of open, transparent and competitive markets throughout the natural gas chain. When governments do not permit private investors and project sponsors to invest in and to participate in all sectors of the gas industry on an equal basis, it increases uncertainty and potential risk to investors. The absence of open, transparent and competitive markets throughout the gas chain generally is demonstrated when governments (1) require project developers to take on as partners particular people or companies favored by the government, regardless of their financial stability or business qualifications and (2) reserve particular markets or activities to domestic (either private or government-owned) companies.

Inefficient pricing of natural gas and natural gas-related products and services; including government price intervention and tax distortions and the absence of market pricing. When governments (1) set the price of natural gas (at the point of production or at the end-use level) below the cost of producing and/or transporting the gas, or (2) tie the price of gas to the price of another commodity in ways that inadequately respond to changes in supply/demand relationships, the risk to investors is increased. When governments subsidise and apply distortional taxes to the production and use of fuels that compete with natural gas, the ability of natural gas to enter markets is hindered. These policies increase the risk to investors that the project will not realise sufficient returns to recover costs and earn a return on the investment. The pursuit or realisation of a pricing system reflecting supply and demand of natural gas is important.

RECOMMENDATIONS CONCERNING ACCELERATING INVESTMENT IN NATURAL GAS SUPPLIES, INFRASTRUCTURE AND TRADING NETWORKS IN THE APEC REGION

The recommendations set out below are proposed to the governments of APEC member economies, and represent policies which, if adopted, would reduce perceived risk for private investors and project sponsors wishing to invest in natural gas supplies,
infrastructure and trading networks in the APEC region. While the recommendations emphasise less government intervention in the natural gas sector, governments still have a vital role in accelerating investment in natural gas supplies, infrastructure and trading networks -- within their own economies, and within the region -- by (1) partnering with the private/business sector to support Research and Development, (2) ensuring fair competition and protecting public interest through the development and application of legal and regulatory regimes, (3) reducing policy and regulatory risks for private investors and project sponsors, and (4) providing equity and debt financing as well as political risk insurance through appropriate bilateral and multilateral arrangements.

In assessing the potential returns of a proposed project, investors look for a "welcoming" investment environment that is demonstrated at all levels of government in an economy. While recognising that member economies have different priorities and that their gas sectors and industries are not at the same stages of development, it is recommended that, in order to create "welcoming" environment that would accelerate private investment in natural gas supply, infrastructure and trading networks, governments consider (1) general policies to promote investment and financing of natural gas projects, (2) policies to promote development of natural gas supplies, (3) policies to facilitate the development of markets for natural gas and natural gas-related products and services, (4) policies to facilitate construction of natural gas infrastructure, and (5) policies to facilitate development of domestic and cross-border trading networks for natural gas and natural gas-related products and services.

The recommendations set out below are non-binding. The actual development and implementation of specific policies, laws and regulations governing the natural gas sector will be determined and undertaken by the governments of each economy in the context of their legal and political systems, based on their particular needs, the facts and circumstances facing them, and other governmental policy goals and priorities. These recommendations will be subject to, and should be applied and interpreted in accordance with, the obligations of each economy in other international fora or agreements, or other undertakings within APEC.

The policy recommendations set out below should not be construed as a "recipe" or as a series of steps to be followed in a particular order. They do not assume or promote any particular path for the development of the gas sector within any economy or within the entire APEC region. They are not "ranked" in any way, and the order in which they are presented should not be interpreted as a commentary on their relative merit or importance.

**Recommended General Policies to Promote Investment in and Financing of Natural Gas Supplies, Infrastructure and Trading Networks in the APEC Region**

Governments have an important role in accelerating private investment in natural gas supplies, infrastructure and trading networks in APEC by implementing policies that reduce risk and costs to project developers. Where potential risk and costs cannot be eliminated or mitigated, investors require the ability to manage those perceived risks and costs. In order to promote investment in and financing of natural gas supplies,
infrastructure and trading networks, governments should consider the following policies:

**Establish stable, transparent, independently administered, predictable and nondiscriminatory legal, fiscal, regulatory and trade regimes that will consider the interests of all participants in the natural gas sector.** In Edmonton, Alberta, Canada, APEC Energy Ministers "noted the importance the private sector places on the openness, transparency and predictability of investment rules and trading regimes as key requisites for increased flows of private capital into the energy sector." In 1997, in Vancouver, British Columbia, Canada, APEC Leaders reaffirmed voluntary principles for facilitating private sector participation in infrastructure, including the principle "to establish stable and transparent legal frameworks and regulatory systems to provide a high level of investor protection."

Legal, fiscal, regulatory and trade regimes set out the rules by which participants will operate in the natural gas sector of any economy. These regimes (1) allow participants to understand what the government of an economy expects them to do; (2) allow participants to understand what they can expect the government to do, and (3) provide participants comfort that, once established, these regimes will not be changed arbitrarily, thus protecting the investment and the viability of the businesses initiated under these regimes. Such regimes increase certainty for investors, thereby reducing perceived risk.

Investors must know and must be able to understand all of the laws that apply to their projects. Legal regimes governing the natural gas sector should address (1) exploration and production, (2) transportation and distribution, (3) the creation and enforcement of contracts, (4) the creation and transfer of security interests in property, (5) taxation of property and businesses, and (6) eminent domain or expropriation of land. Legal regimes governing the natural gas sector should not be enacted arbitrarily or changed without the opportunity for affected parties to express their views.

The mechanisms and institutions through which governments enforce their laws also are important to reducing risks and costs to investors. These mechanisms and institutions should be independent from politics and other influence in order to assure all investors that they will be treated fairly and impartially.

Private investors and project sponsors need to know and to understand all of the regulations that apply to their projects. They also need to know which government authorities are applying those regulations. Regulatory regimes and authorities should be independent of politics and the industry that is subject to its rules, and should be able to enforce its decisions. Investors need to know the bases for decisions by the regulator, and they need assurance that regulators will apply regulations equally to all participants in the sector.

Regulated companies also desire the right to appeal decisions of the regulatory authority to higher independent authorities -- such as courts -- that will review such decisions under standards set out in law.
Permit private (domestic and foreign) ownership of natural gas facilities, and the assignment of security interests in assets. A legal framework enabling foreign companies to own and control natural gas facilities reduces the perceived risk assessment associated with natural gas projects, reducing financing costs. Investors also desire to have a security interest in the property they own, and the ability to assign those security interests to others.

Define and protect the property rights of private (domestic and foreign) investors/operators in natural gas facilities. The protection of property rights is essential to reducing risk to private investors. Investors need to know that they have the exclusive use of the property that they acquire, and that there are not other claimants to the property. Additionally, private investors and project sponsors require assurance that their real and personal property will not be expropriated, or otherwise encumbered, by the government or by other parties without just cause and appropriate compensation with recourse to international protection.

Ensure the sanctity of contracts between participants in the natural gas sector. Private investors and project sponsors require assurance that the agreements they reach with partners (both private and government-owned), suppliers, customers and others will be honored and enforced by the government; including provisions establishing mechanisms for dispute resolution, such as international arbitration.

Increase, to the maximum extent possible, private and commercial entities involvement in the provision of natural gas and natural gas-related products and services. Private sector participation should be promoted in an atmosphere of transparency and competitiveness. The fact that a government-owned company may receive favorable treatment by the regulatory authority in granting licenses or approving rates is perceived as risk from the viewpoint of private companies. In this regard, the regulator should ensure that government-owned companies should operate on a competitively neutral basis with private entities to guarantee fair competition.

Promote the establishment of an autonomous regulator in order to provide certainty to investors. An autonomous regulator with technical capacity, independent decision-making powers, and power to enforce regulations should be established in order to regulate the natural gas sector and ensure that private and public participants are treated on an equal basis.

Aim for non-discriminatory treatment of foreign and domestic (whether private or government-owned) companies. Private project developers require assurance that, absent overriding security concerns, they will not be treated differently than government-owned or domestic companies before courts, ministries, regulatory authorities or other government officials based solely on their status as foreign companies.

Establish stable, transparent and non-discriminatory project approval processes. Project developers need to know the processes (for example, bidding), standards and
requirements under which their projects will be evaluated. They need to know that such requirements will apply equally to all projects seeking approval, in particular, to competing projects, taking account of externalities of projects.

**Recognise that in the longer term incorporating full costs and benefits associated with energy projects will help promote sustainable development and acknowledge that this should be further examined with a view towards developing practical applications.** Full costs should include both the life cycle costs met by the investor (including de-commissioning costs), the costs met by governments in the provision of infrastructure (eg roads, water supply, port facilities), together with the costs to society (eg air and water pollution, greenhouse gas emissions, increased hazardous waste, noise, visual impacts). The latter costs are generally viewed as externalities and are often difficult and complex to quantify. It is worthwhile to investigate more fully the scope for practical assessment of these costs and their inclusion in energy prices.

**In the meantime, remove unnecessary barriers to natural gas utilization taking into account the environmental benefits of natural gas compared with other fossil fuels.** The third Conference of the Parties to the Framework Convention on Climate Change (COP-3) held in December 1997 in Kyoto agreed on introduction of such flexibility measures as the Clean Development Mechanism (CDM) and Joint Implementation. It is expected that necessary procedures be elaborated promptly.

**Permit required capital transfers and unrestricted repatriation of earnings.** Investors desire the ability to make dispositions of their funds and earnings with the same level of freedom that they could before making the investment. Governments should not restrict the payment of project earnings -- either by permitting earnings only when there is net income according to accounting principles, or by restricting the maximum amount of earnings that can be paid in a year at any one time. Many projects pay investors in local currency, while the capital for the project is provided in a different currency. Governments are encouraged to permit conversion of local currencies. Additionally, governments should not restrict the repatriation of project earnings.

**Foster competition between all sources of energy (including imported and domestic sources), and between energy service providers.** Private project developers need to know that the natural gas they offer and the services they provide will be able to compete with other fuels and services on an equal basis, without the costs of alternative fuel sources or alternative energy suppliers being artificially reduced through government subsidies.

Private project developers need to know that they will be able to enter markets for natural gas and, once there, will be able to participate in those markets. They need to know that they will be able to succeed in those markets if they provide safe, reliable and affordable services, rather than succeeding as a result of favorable status or treatment conferred by the government.
Develop mechanisms to allow stable and economically robust natural gas projects access to long-term credit both within each APEC economy and internationally. Construction of natural gas related infrastructure requires a huge capital outlay and its recovery takes very long period of time. Therefore, it is necessary to strengthen the financial capability through such measures as intensification of long-term finances from the institutional financial organisations, private financial organisations and international financial organisations such as IBRD or ADB; enhancement of the role of ECA (Export Credit Agency) in the sharing of risks such as political risks, which cannot be borne solely by private investors; and application of the ODA for environmental projects with special interest rates.

Promote the development, deployment and dissemination of advanced natural gas technologies. The development, deployment and dissemination of advanced natural gas technologies can help to reduce the costs of projects. Therefore, where appropriate, governments should partner with the private sector to support research, development and deployment of new technologies which will increase efficiency of gas utilization and decrease costs associated with natural gas exploration, production and transportation.

For instance, Gas-to Liquid (GLT) Technology, which make investors free from concern about constructing costly transportation infrastructure, has potential for drastic reduction of natural gas transportation costs and may contribute to make undeveloped gas fields more commercially viable. Other innovative technology, such as advanced CO2 removal technology, would contribute to cost reduction of the development and production of CO2 rich fields.

Ensure necessary capacity in government authorities responsible for the natural gas sector. Regulatory authorities and other government officials responsible for authorizing and regulating projects can create additional delay -- and cost -- to projects because they either do not have the necessary expertise to evaluate proposed projects or they are overburdened and, thus, cannot act promptly on authorization requests. Private investors need to know that government officials and authorities evaluating their projects are qualified to do so and are able to assist project developers through the approval process. Governments should ensure that regulators and other officials are highly educated and well-qualified in their areas of responsibility, providing sufficient training of regulatory officials.

Recommended Policies to Promote Development (Exploration and Production) of Natural Gas Supplies in the APEC Region

Increasingly in the APEC region, development (that is, exploration and production) of natural gas supplies will be conducted by the private sector; either on its own or in partnership with government-owned production entities. Increased development of natural gas supplies by the private sector requires that participants in the market have a reasonable opportunity to find natural gas as well as a reasonable assurance of recovering their investment in natural gas exploration and production. Consequently, in order to promote development of natural gas supplies, governments should consider
the following policies:

**Permit access to exploration acreage on a non-discriminatory basis, in particular, between domestic and foreign companies.** Investors in gas exploration and production need to understand the criteria under which exploration acreage is assigned. Foreign investors also require assurance that more desirable exploration acreage is not being reserved for domestic (either private or government-owned) companies.

**Permit access to spare capacity in upstream natural gas facilities (for example, processing and gathering) on a non-discriminatory basis, including between domestic and foreign companies.** Frequently, the only way in which producers of natural gas can transport their product to markets is through the upstream facilities, such as processing and gathering facilities owned and controlled by others. Often, it is not feasible, efficient or environmentally desirable for more than one such facility to be constructed between a source of natural gas supply and transportation facilities. Permitting other producers the opportunity to secure spare capacity in upstream facilities in order to reach transportation facilities and to reach markets permits more sellers of natural gas to enter markets.

**Permit production sharing agreements or other ownership mechanisms to permit private (domestic and foreign) company participation in the production sector.** Where public oil and gas companies are the only entities legally permitted to develop and explore for natural gas, production sharing agreements and other ownership mechanisms allow domestic and foreign private companies to participate through direct access to the product rather than through payments only. This is important to shareholders of publicly-held companies, who want to see that the company holds title or rights to the product on which the company's earnings are based.

**Provide favorable conditions for investors in upstream sector.** To promote investment in upstream sector, gas producing economies should make efforts in providing investors with incentives, for instance, by applying relaxed conditions for exploration and development and those for product sharing contracts. In concrete, removal of upper limit for cost recovery, reduction of initial share of the producing economies, and relaxation of sharing ratio can be important incentives for investors.

In particular, recently the areas for development and exploration are growing more remote and therefore more costly. In addition, fields in smaller-scale, scattered in Asia, are generally less profitable. Setting flexible conditions in production sharing according to the size of gas fields or characteristics of gas fields has become essential.

**Recommended Policies to Facilitate Construction of Natural Gas Infrastructure in the APEC Region**

As a general matter, developers of natural gas infrastructure projects require the ability to obtain land on which to construct facilities, certainty as to the requirements to which the project will be subject, and the ability to recover the costs of the project. In order to facilitate the construction of natural gas infrastructure in the APEC region,
governments should consider the following policies:

**Permit recovery of and return on investment in natural gas infrastructure projects.**
When governments establish a maximum rate of return that can be earned on a project, and the investor's desired rate of return is above the maximum allowed rate of return, investment will not occur. Project developers must have confidence that the costs they incur in developing the project will be recovered. They must also have the opportunity to earn a comparable rate of return on a world-wide basis with other uses of capital. However, where natural monopoly structure is unavoidable, governments will need to protect consumers from monopoly abuse by ensuring that competitive, but not excessive rates of return are realised. Project developers should also seek to limit costs to those necessary to complete the project as agreed.

**Establish transparent and non-discriminatory procedures for obtaining licenses/authorizations to construct and operate natural gas infrastructure projects.**
Because the construction and operation of natural gas facilities raise land-use, environmental and health and safety issues, governments require that project developers obtain a license or other authorization from a government agency to construct and operate such facilities. For example, in applying for such government authorization, project developers have been required to demonstrate (1) the need for the project, (2) ability to construct and operate the project, and (3) ability to secure gas supplies for the project.

Project developers need to know all of the criteria they must satisfy in order to receive a license or authorization to construct and operate natural gas infrastructure projects. They also need to know that these criteria will be applied equally to all applicants for such licenses or authorizations, including domestic (whether private or government-owned) companies. Project developers also need assurance that, if they comply with all requirements, they will receive authorization to construct and operate their projects. Investors need to know that their request for government approval and other relief will receive prompt and efficient attention.

**Establish transparent and non-discriminatory procedures for project sponsors to obtain appropriate eminent domain (expropriation of land), siting and right-of-way approvals.** The construction of natural gas facilities, both pipeline and LNG, require access to land. Quite often such land either is held privately or is controlled by local authorities or institutions, or frequently is held through local "squatters rights," and thus almost impossible to definitively provide ownership or title. Developers must have means under the law to acquire the rights to use such lands in the public interest.

**Establish health and safety standards for the construction and operation of natural gas infrastructure consistent with highest international standards.** Regulations setting out the technical, health and safety standards to which natural gas projects will be subject reduces uncertainty for investors, and also serves to protect the public. These standards should be applied equally to all participants in the gas sector, including domestic (private or government-owned) projects.
Ensure that insurance required to facilitate financing can be met in a timely and cost-effective manner. Securing insurance coverage for projects is one of the cost elements of a project, and a necessary requirement to obtain project financing. In many economies, policies can legally be provided only by local brokerages. However, the capacity to insure business, commercial and third party losses is usually severely limited within an economy, and reinsurance internally often is required with consequent increases in cost. Project developers desire the ability to go directly to international markets to secure the needed insurance coverage. This would reduce unnecessary costs and ultimately, provide a lower cost of the final products and services.

Clarify the environmental standards, appropriate to the conditions of the project, applicable to gas infrastructure projects and enforce such standards on a non-discriminatory basis. Governments are regulating the environmental effects of the construction and operation of natural gas infrastructure projects. Such environmental requirements and standards should be made known to project developers and should be applied equally to all participants. Guidelines for such standards are readily available from multilateral institutions.

Recommended Policies to Facilitate Development of Domestic and Cross-Border Trading Networks for Natural Gas and Natural Gas-Related Products and Services in the APEC Region

Facilitating domestic trade in natural gas and natural gas-related products and services basically requires policies that permit buyers and sellers of natural gas and natural gas-related products and services to deal directly with one another and to have physical access to one another through transportation systems. Facilitating cross-border trade in natural gas and natural gas-related products and services requires cooperation and agreements between economies. In order to facilitate development of domestic and cross-border trading networks in the APEC region, governments should consider the following policies:

Establish formal consultations between APEC economies involved in cross-border projects. All relevant government agencies of economies involved in a cross-border project should consult with one another as early as possible in the development process in order to identify those issues which must be resolved between the economies in order to reduce risk to the project and to allow the project to proceed unhindered.

Permit sellers and buyers of natural gas to have access to one another over spare capacity in transportation facilities. Frequently, both in domestic and cross-border markets, the only way in which buyers and sellers of natural gas may realize their bargain is to transport natural gas from a production area to a demand area by means of transportation or distribution facilities owned and controlled by others. Often, it is not efficient or environmentally desirable for more than one transportation or
distribution facility to be constructed between a source of natural gas supply and a demand area. Allowing third parties to purchase or rent the spare capacity in such facilities; that is, capacity for which there is no contractual obligation, permits additional buyers and sellers to participate in the market without interfering with the contractual obligations of the owners of the transportation or distribution facilities.

**Ensure transit rights for natural gas trade across borders.** In some cases, natural gas trade between economies will involve other economies that are not involved in the transaction other than supplying a transit route for the gas. Access, transit fees and other policies will need to be established between the economies involved.

**Ensure equitable treatment for domestic and imported sources of natural gas.** In some markets, imported natural gas will compete with domestic sources of natural gas for markets and customers. Governments should avoid conferring any preferences for domestic sources of natural gas or creating any disadvantages for imported sources of natural gas.

**Support the free flow of exports and imports of natural gas and natural gas-related products and services.** Governments should consider the elimination of tariffs, fees, prohibitions or restrictions on exports or imports of natural gas, and licenses for imports and exports of natural gas that hinder the free flow of natural gas across borders.

**Promote compatibility between APEC economies of regulatory policies and technical standards.** The development of cross-border natural gas projects and trading networks may be hindered if facilities are subject to widely different technical and operation standards and regulatory requirements. Governments should work to identify those areas where policies and technical standards and requirements should be harmonized between economies.

### Recommended Policies to Facilitate the Development of Markets for Natural Gas and Natural Gas-Related Products and Services in the APEC Region

Securing private investment in and financing of natural gas supply and infrastructure projects requires that the project developers demonstrate markets sufficient to justify the investment. In many economies, the principal markets for natural gas are electric power generation and large industrial processes, offering potential gas infrastructure projects customers large enough to "anchor" major investments in natural gas exploration and production and infrastructure projects. Consequently, in order to facilitate the development of markets for natural gas and natural gas-related products and services, governments should consider the following policies:

**Permit buyers and sellers of natural gas and natural gas-related products and services to negotiate directly with each other, consistent with sanctity of contract.** Project developers need to be able to assemble (or aggregate) and to contract sufficient customers for their project to justify the investment. As a general matter, potential buyers of natural gas (such as electric power generators and large industrial concerns) understand their energy requirements and their business needs better than
anyone else. Additionally, sellers and potential sellers of natural gas (such as producers and marketers) understand their ability to meet customer needs and their business needs better than anyone else. The ability of sellers of natural gas and natural gas-related products and services to work directly with customers for such services permits market participants to utilize creative and innovative structures to enhance value. As markets develop and pricing signals become clearer, more and more affordable products and services can be offered to customers. Consequently, permitting buyers and sellers of natural gas and natural gas-related products and services to deal directly with one another, without interference or involvement by governments, results in the most efficient development of markets for natural gas.

*Remove subsidies (direct and indirect) for fuels competing with natural gas.* Project developers need to know that their ability to secure customers and enter markets will not be inhibited by artificially low prices for competing fuels or competing energy services or suppliers.

*Promote pricing of natural gas and natural gas services based on competition between natural gas and other fuel sources and between natural gas suppliers, while protecting consumers lacking competitive alternatives.* Natural gas competes with different fuels in different markets. In order to enter various markets, participants in the natural gas industry need the freedom to set prices at a level which puts them in a competitive position with respect to other fuels, as opposed to tying the price of natural gas to the price of any particular other commodity. Where governments tie the price of gas to the price of another commodity in ways that inadequately respond to changes in supply/demand relationships, this increases the risks to investors.

However, regulatory authorities should have a duty to protect those consumers who are not able to protect themselves from possible monopoly abuse through setting maximum retail prices, for example. In other regimes where this takes place, this protection is limited to domestic and small commercial users only who do not individually have the market power or alternative fuel capability to be able to exercise influence on the supplier.

*Permit the entry of new participants into and the exit of participants from natural gas markets.* Project developers desire the freedom to enter natural gas markets and to leave those markets based on business decisions rather than on government restrictions or mandates. However, governments should ensure that customers without alternative sources of energy or services are protected.
**Ensure that policies governing the electricity sector do not inhibit the ability of natural gas to compete in that market.** As described in the accompanying background report, the largest potential market for natural gas throughout the region is the electric power generation market. Currently, the governments of many APEC economies are undertaking reform, restructuring and privatisation of their electricity sectors. Governments should ensure that the policies they are adopting with respect to the electricity sector, including pricing of electricity, provision of services, access to facilities and markets, fuel choice, and pricing of fuels to generate electricity, are consistent with the acceleration of investment in natural gas supplies, infrastructure and trading networks.

**STATUS OF POLICIES AFFECTING INVESTMENT IN NATURAL GAS SUPPLIES, INFRASTRUCTURE AND TRADING NETWORKS IN APEC**

Government policies affecting natural gas infrastructure development and trade vary greatly among APEC members.

As they seek to accelerate private investment in natural gas supplies, infrastructure and trading networks -- and, as projects compete for financial resources -- governments of the APEC member economies can benefit from information as to how their legal, fiscal, regulatory and trade policies compare with those of other economies.

Additionally, economies involved in cross-border natural gas projects and trade can benefit from information concerning the policies of other economies involved in such projects. For example, economies interested in exporting natural gas need to understand the import policies of other economies. Information about the policies of other economies also facilitates the identification of policy areas, which, if not harmonized between economies, could hinder the development and smooth functioning of cross-border infrastructure projects and trading networks.

The following table summarises key policy indicators affecting investment in natural gas infrastructure in the APEC economies.
<table>
<thead>
<tr>
<th>Economy</th>
<th>Legal</th>
<th>Fiscal</th>
<th>Regulatory</th>
<th>Pricing</th>
<th>Production/Sale</th>
<th>Trans/Dist</th>
<th>Export/Import</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>Federal and state laws governing gas sector; judicial review of agency decisions; court enforcement of contracts</td>
<td>36% corporate income tax currently under review; secondary petroleum tax paid on economic rent</td>
<td>Independent federal/state agencies(^{23})</td>
<td>Market wellhead price; regulated tariffs for transportation and distribution services</td>
<td>Private companies</td>
<td>Mainly private companies with remaining assets being privatized; third-party access to transportation facilities(^{24})</td>
<td>Export controls removed in 1997</td>
</tr>
<tr>
<td>Brunei Darussalam</td>
<td>30% corporate income tax; no tax on gas sales; 8-12.5% royalties; 25% Special Petroleum Tax</td>
<td>Central government authority(^{25})</td>
<td>End-user prices set by government; 0.5 Tcf of reserves allocated to industrial sector</td>
<td>Government owns 50% of Brunei Shell; foreign participation permitted by bid;</td>
<td>Resources owned by provinces</td>
<td>Pipeline jointly-owned by Brunei Shell and Brunei LNG</td>
<td></td>
</tr>
<tr>
<td>Canada</td>
<td>National and provincial laws governing natural gas sector; judicial review of agency decisions; court enforcement of private contracts</td>
<td>44.62% corporate income tax; variable royalties</td>
<td>Independent federal/provincial agencies(^{24})</td>
<td>Market wellhead price</td>
<td>Resources owned by provinces</td>
<td>Private transportation companies; open access to trans and distribution pipelines</td>
<td>Imports/exports regulated by NEB</td>
</tr>
<tr>
<td>Chile</td>
<td>35% corporate income tax; variable royalties</td>
<td>Federal authorities(^{27})</td>
<td>Market supply rates</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>China</td>
<td>33% corporate income tax; variable royalties</td>
<td>Central government authority(^{26})</td>
<td>price controls on established production (i.e., production at all times)</td>
<td>Chinese National Petroleum Corporation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Country</td>
<td>Economy</td>
<td>Legal</td>
<td>Fiscal</td>
<td>Regulatory</td>
<td>Pricing</td>
<td>Production/Sale</td>
<td>Trans/Dist</td>
</tr>
<tr>
<td>------------</td>
<td>---------</td>
<td>------------------------</td>
<td>--------</td>
<td>------------</td>
<td>--------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------</td>
<td>------------------------------------</td>
</tr>
<tr>
<td>Hong Kong</td>
<td>Appeal of Gas Authority decisions</td>
<td>Capital import taxes</td>
<td>Below-market natural gas rates</td>
<td>Competition between towngas and LPG suppliers</td>
<td>Private distribution company (towngas)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>China</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indonesia</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>48% corporate income tax; no tax on domestic gas sales; 20% royalties split between Pertamina and contractor</td>
<td>Govt. sets end-use price of gas</td>
<td>Pertamina (state-owned) exclusive production authority; PSC contracts with foreign companies</td>
</tr>
<tr>
<td>Japan</td>
<td>The Gas Utility Industry Law</td>
<td>44.625% corporate income tax</td>
<td>Central government authority</td>
<td>Regulated wholesale and end-user prices; except for supply to large-scale users</td>
<td>Private companies; gas companies may supply large users outside service area at</td>
<td>Private and municipal distribution companies operate in permitted areas</td>
<td>No tariff on LNG imports</td>
</tr>
<tr>
<td>Korea</td>
<td>Laws governing natural gas sector</td>
<td>30.8% corporate income tax; 15% tax credit for royalties paid</td>
<td>Central and local government authorities</td>
<td>Regulated wholesale and retail prices based on end-use sector</td>
<td>KOGAS (govt. equity share is 50.2%) exclusive right to sell at wholesale</td>
<td>City gas companies monopoly in service areas</td>
<td>Permit required to import LNG</td>
</tr>
<tr>
<td>Malaysia</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Petronas (state-owned) exclusive right to produce gas;</td>
<td>Gas Malaysia</td>
<td>No tax on exports; no license required to export</td>
</tr>
</tbody>
</table>

2. Competition between towngas and LPG suppliers.
3. Private distribution company (towngas).
4. Govt. sets end-use price of gas.
5. Pertamina (state-owned) exclusive production authority; PSC contracts with foreign companies.
6. Perum Gas Negara (state-owned).
7. Private and municipal distribution companies operate in permitted areas.
8. No tariff on LNG imports.
9. Permit required to import LNG.
<table>
<thead>
<tr>
<th>Economy</th>
<th>Legal</th>
<th>Fiscal</th>
<th>Regulatory</th>
<th>Pricing</th>
<th>Production/Sale</th>
<th>Trans/Dist</th>
<th>Export/Import</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mexico</td>
<td>Federal laws and regulations governing natural gas sector</td>
<td>34% corporate tax; 15% Value Added Tax; 10% production tax</td>
<td>Federal authority: Energy Ministry and Energy Regulatory Commission”</td>
<td>Regulatory authority based on international market price</td>
<td>Pemex (state-owned)</td>
<td>Private investment permitted in new transportation, storage, distribution, and commercialisation; open-access to Pemex transportation system</td>
<td>No license required for imports and exports; 5% tariff on US and Canadian imports. This tariff will be 0% by the year 2003. Other FTA’s with different countries. Most favoured nation tariff treatment to the rest.</td>
</tr>
<tr>
<td>New Zealand</td>
<td>Judicial appeal of agency decisions</td>
<td>33% corporate income tax</td>
<td>Central authority”</td>
<td>Market wellhead price</td>
<td>Private companies</td>
<td>Negotiated access to transportation and distribution pipelines</td>
<td></td>
</tr>
<tr>
<td>Papua New Guinea</td>
<td>National laws applying to natural gas sector court enforcement of contracts</td>
<td>30% corporate income tax</td>
<td>Central authority</td>
<td>Market point of export price</td>
<td>Private companies</td>
<td>Private investment required for upstream and downstream activities</td>
<td>Import and export tariff of 5%</td>
</tr>
<tr>
<td>Peru</td>
<td>Federal laws governing natural</td>
<td>30% corporate income tax</td>
<td>Independent federal</td>
<td>Market wellhead price</td>
<td></td>
<td></td>
<td>Concessionary natural gas exports</td>
</tr>
<tr>
<td>Country</td>
<td>Legal</td>
<td>Fiscal</td>
<td>Regulatory</td>
<td>Pricing</td>
<td>Production/Sale</td>
<td>Trans/Dist</td>
<td>Export/Import</td>
</tr>
<tr>
<td>-------------</td>
<td>------------------------------</td>
<td>------------------------------</td>
<td>-------------------------------------</td>
<td>-------------------------</td>
<td>----------------------</td>
<td>---------------------</td>
<td>---------------------</td>
</tr>
<tr>
<td>Philippines</td>
<td>Federal authorities[^1]</td>
<td>35% corporate income tax; 6% royalties</td>
<td>Regulated wholesale and end-use prices</td>
<td>Govt. owns 40% of Gazprom</td>
<td>Third-party access to Gazprom transportation system</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Russia</td>
<td>25% corporate income tax; 12.5% royalties</td>
<td>Federal authority[^2]</td>
<td>Regulated tariffs for distribution services</td>
<td>Chinese Petroleum Corporation; privatizing</td>
<td>Private and public distribution companies</td>
<td>No license required for LNG imports</td>
<td></td>
</tr>
<tr>
<td>Economic</td>
<td>National and provincial (municipal) laws governing natural gas sector</td>
<td>Petroleum Authority of Thailand; privatizing</td>
<td>50% corporate income tax</td>
<td>Private production and marketing companies; state regulation of</td>
<td>Private transportation companies; Private and (some) municipal</td>
<td>No restrictions on LNG imports; exports/imports approved by DOE</td>
<td></td>
</tr>
<tr>
<td>Singapore</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>China</td>
<td>National and provincial (municipal) laws governing natural gas sector</td>
<td>5% corporate income tax</td>
<td>National and provincial (municipal) authorities</td>
<td>Regulated tariffs for distribution services</td>
<td>Chinese Petroleum Corporation</td>
<td>Private and public distribution companies</td>
<td>No license required for LNG imports</td>
</tr>
<tr>
<td>U.S.A.</td>
<td>35% corporate income tax</td>
<td>Independent federal and state authorities[^3]</td>
<td>Market wellhead price; regulated transportation and distribution services</td>
<td>Private production and marketing companies; state regulation of</td>
<td>Private transportation companies; Private and (some) municipal</td>
<td>No restrictions on LNG imports; exports/imports approved by DOE</td>
<td></td>
</tr>
<tr>
<td>decisions; court enforcement of contracts</td>
<td>production companies; open-access transportation*1</td>
<td>Vietnam</td>
<td>Federal laws governing gas sector</td>
<td>50% corporate income tax; variable royalties</td>
<td>Petrovietnam</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**GLOSSARY OF TERMS AND CONCEPTS**

*capacity*: the maximum amount of natural gas that can be produced, transported, stored, or distributed by facilities in a given period of time under design conditions.

*contract carriage*: the transportation of natural gas as a separate service for a fee under the terms of a contract, subject to the capacity of the pipeline; to be distinguished from "common carriage," under which transportation service is prorated among all users when capacity is not sufficient to accommodate all request for service.

*costs*: the costs of a project include (a) cost of capital and (b) operating costs

*distribution*: the carriage of natural gas at relatively low pressures over relatively short distances from demand centers to end-use customers.

*independent*: an independent regime is one in which decisions are not at the direction of political forces or the industry that is subject to laws and regulations.

*monopoly*: exclusive or near-exclusive ownership or control of a commodity, service or facility.

*monopoly abuse*: the ability to manipulate prices through reducing or eliminating competition.

*natural gas-related products*: include pipeline, tankers, compressors, etc.
**natural gas-related services:** include, transportation, distribution, storage, sale, brokering, marketing, etc.

**non-discriminatory:** a non-discriminatory regime is one in which all participants are treated similarly.

**transparent:** a transparent regime is one in which all participants know or have access to the rules that apply to participants in the sector.

**transportation:** the carriage of bulk supplies of natural gas from production areas to demand centers.


5. Cite to source.

6. Cite to source.


8. Two workshops were held to receive business sector comments on drafts of this paper. The first was held in Calgary, Alberta, Canada, May 10-13, 1998. The second was held in Tokyo, Japan, July 8-9, 1998.

9. At their first meeting in 1996, the APEC Energy Ministers endorsed a set of non-binding energy policy principles, including:

   1. Emphasise the need to ensure energy issues are addressed in a manner which gives full consideration to harmonisation of economic development, security and environmental factors.
2. Pursue policies for enhancing the efficient production, distribution and consumption of energy.

3. Pursue open energy markets for achieving rational energy consumption, energy security and environmental objectives, recommending action in the appropriate forum of APEC to remove impediments to the achievement of these ends.

4. Recognise that measures to facilitate the rational consumption of energy might involve a mix of market based and regulatory policies, with the relative components of the mix being a matter for the judgement of individual economies.

5. Consider reducing energy subsidies progressively and promote implementation of pricing practices which reflect the economic cost of supplying and using energy across the full energy cycle, having regard to environmental costs.

6. The regular exchange of experience on the various policies being used by member economies to achieve a more rational energy consumption.

7. Ensure that a least cost approach to the provision of energy services is considered.

8. Promote the adoption of policies to facilitate the transfer of efficient and environmentally sound energy technologies on a commercial and non-discriminatory basis.

9. Encourage the establishment of arrangements for the development of human resource skills relevant to the application and operation of improved technology.

10. Enhance energy information and management programs to assist more rational energy decision making.

11. Encourage energy research, development and demonstration to pave the way for cost effective application of new, more efficient and environmentally sound energy technologies.

12. Promote capital flows through the progressive removal of impediments to the funding of the transfer and adoption of more energy efficient and environmentally sound technologies and infrastructure.

13. Promote cost effective measures which improve the efficiency with which energy is used but reduce greenhouse gases as part of a suggested regional response to greenhouse gas reductions.

14. Cooperate, to the extent consistent with each economy's development needs, in the joint implementation of projects to reduce greenhouse gas emissions consistent with the Climate Change Convention.

10. Id.


22. APEC Economic Leaders Declaration, Connecting the APEC Community, Vancouver, Canada, November 25, 1997.

23. Australian Competition and Consumer Commission regulates third-party access to transportation pipelines at the federal level.
States must designate an independent regulatory body to regulate third-party access to pipelines in their jurisdictions.

24. Contract carriage

25. Brunei Oil & Gas Authority (BOGA). The Chairman of BOGA is the Minister of Finance.


27. Ministry of Economy, National Energy Commission

28. Empresa Nacional del Petroleo

29. Gasco Magallanes

30. Chinese State Planning Commission (SPC)

31. Gas Authority

32. Hong Kong and China Gas

33. Ministry of Mines and Energy, Director General of Oil & Gas (MIGAS)

34. Ministry of International Trade and Industry (MITI)

35. "Large user" defined as over 2 MCM per year

36. Gas Policy Division of MOCIE approved supply terms and conditions, rates of wholesale gas and direct supply contracts of KOGAS with large-volume customers. Local governments (metropolitan cities and/or provinces) approve supply terms and conditions and rates of retail gas. The Ministry of Finance and Economy (MOFE) coordinates the levels of gas rates with MOCIE (inflation concerns).
37. KOGAS had been the only holder of import permit for natural gas until in mid-1997, when POSCO (a steel manufacturer) obtained a permit to import natural gas. City gas companies also are required to obtain permission to import natural gas.


39. Comision Reguladora de Energia (CRE) is charged with regulating private and state operators. It consists of five commissioners, one of which is the Chairman, who are appointed by the President. The Energy Ministry defines national energy policy, and has jurisdiction over the operational functions of state operators, including PEMEX.

40. Commerce Commission

41. Department of Energy, Energy Regulatory Board

42. Energy Regulatory Commission

43. Federal Energy Regulatory Commission and state public utility commissions.

44. Contract carriage.