

PROGRAM ON ENERGY, THE ENVIRONMENT AND THE ECONOMY

With All Deliberate Speed: Electricity Restructuring in Asia

15th Pacific Rim Workshop
November 9–10, 1999

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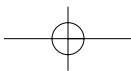
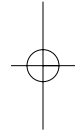
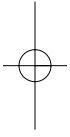
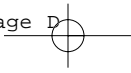
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Foreword

Since 1983 the Aspen Institute has periodically convened a Pacific Rim Energy Workshop to discuss energy fuels trade and other topical issues. In November 1999 the 15th Workshop was held in The Shonan Village Center, Kanagawa, Japan, hosted and co-sponsored by the Asia Pacific Energy Research Centre (APEREC).

The principal theme of the Workshop was electricity restructuring. The agenda was divided into three parts: a discussion of the modernization and restructuring of the electricity industry; a review of recent developments in fuels trade; and a review of the plans for or developments in electricity restructuring and other energy issues in each of the countries or economies represented at the meeting.

As with all Aspen Institute policy programs, the objective of the Workshop is to improve the quality of leadership and policy formulation. To achieve this goal, a group of energy experts, diverse in nationality, employment, and academic training, discuss and analyze energy problems and solutions in a casual and collegial atmosphere that fosters the free exchange of information and opinions. Unlike a typical conference in which experts deliver their wisdom to an audience from the podium, the expertise at these Workshops is distributed around the table, and all participants contribute their knowledge and perspective to the others.

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To encourage free and open discussion, the Workshop is conducted under a not-for-attribution rule that assures participants that they will not be quoted by name without their explicit permission. In addition, the Workshop does not seek to arrive at specific conclusions or policy recommendations. The Moderator's report that follows thus represents only his attempt to capture the major points of the discussion.

The 1999 Workshop was ably chaired by Mr. Keiichi Yokobori, President of APERC, an energy expert with long international experience. His graciousness and good judgment in helping to plan the meeting and to identify participants were largely responsible for its success. The APERC staff ensured that the preparations and logistics for the meeting were smooth and painless, and the Aspen Institute is grateful to both president and staff.

The Workshop was skillfully moderated, as in previous years, by Mr. Loren Cox, Associate Director of the Center for Energy & Environmental Policy Research and the Program on the Science & Policy of Global Change at the Massachusetts Institute of Technology. His broad knowledge of energy markets in Asia, based on consulting to governments and companies in the region for over 20 years, allowed him to focus the discussion on important points and to elicit relevant information from the wide variety of participants.

The Aspen Institute also gratefully acknowledges the financial support of Unocal Corporation and A.T. Kearney Inc., who generously contributed to the Institute's administrative costs associated with the meeting. Without their support, the Workshop could not have taken place.

John A. Riggs
Executive Director
Program on Energy, the Environment,
and the Economy

Agenda

Monday, November 8

Opening reception and dinner

Tuesday, November 9

Welcome and Introduction

Session I: Electricity Restructuring

North America / Oceania

Gerald Klenner, McKinsey & Company, USA
Hoff Stauffer, A.T. Kearney, USA

East Asia

Ichiro Maeda, TEPCO, Japan
Hyun-Joon Chang, Korea Energy Economics
Institute

Southeast Asia

Pio J. Benavidez, NPC, Philippines
Luluk Sumiarso, Ministry of Mines and Energy,
Indonesia
Mohd Annas Haji Mohd Nor, Department of
Electricity and Gas Supply, Malaysia

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China

Hao Weiping, SDPC, China
Barrie Leay, Ecodyne Ltd., New Zealand

Session II: Energy Trade & Infrastructure

Oil Trade

Tilaklal Doshi, Unocal, Singapore

Gas Trade (including infrastructure)

Hoesung Lee, Council on Energy and
Environment Korea (CEEK), Korea
Shigeru Muraki, Tokyo Gas, Japan

Coal

Ian Coddington, Coddington International,
Australia

Electricity Grid

Ira H. Jolles, GPU, USA
Koomchoak Biyaem, EGAT, Thailand

Session III: Review of Economies

Australia	Roger Stuart
Canada	Phil Prince
China	Wu Zongxin

Wednesday, 10 November 1999

Session III: Review of Economies (continued)

Indonesia	Luluk Sumiarso
Korea	Hyu-Joon Chang
Malaysia	Mohd Annas Haji Mohd Nor
Mexico	Juan Eibenschutz
New Zealand	Barrie Leay

PACIFIC RIM ENERGY WORKSHOP

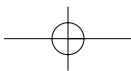
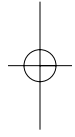
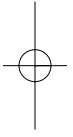
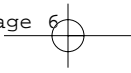
Papua New Guinea	Martin Bonou
Philippines	Pio J. Benavidez
Chinese Taipei	Jing-sheng Su
Thailand	Koomchoak Biyaem
USA	David Jhirad
Japan	Toshio Inoue

General Discussion and Conclusion

Moderator's summary remarks: Loren C. Cox

General Discussion

Chairman's concluding remarks: Keiichi Yokobori



Moderator's Summary

Electricity Restructuring

The theoretical and observed benefits of electricity deregulation are quite powerful. Where undertaken they seem to reflect the economic gains which have been found in the deregulation of other sectors such as airlines, trucking and so on. These projected and experienced benefits to the electricity sector include such matters as:

1. Declining prices to most classes of customers. While prices may not decline at the same rate to all groups (with larger industrial customers seeing the largest decreases), most have seen the price of electricity go down.
2. Increasing choice of suppliers. As has been observed with airlines and telecommunications, there has been a remarkable increase in service providers, which has increased choices to nearly all classes of customers.
3. Opportunities to choose reliability levels. Some of the cost savings have resulted from the ability of customers to choose levels of reliability of electric supply (interruptible rates, peak shaving supply reductions and so on). Because such choices allow electricity suppliers to make optimal use of electric supply, they can pass savings on to such customers.

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4. Expanded sources of investment capital. This has been most notable when state monopolies have been both privatized and deregulated. In those instances, private direct investment has been attracted in lieu of limited governmental resources, and frequently this investment flow has been from offshore sources. However, even deregulation of private power franchise systems has seen an increase in new capital, especially in the case of Independent Power Producers in several of the economies.
5. Increased productivity in the electricity sector. This benefit has been observed in most places where deregulation has occurred, though the sources of increased productivity have varied. In all cases, competitive pressures have sharpened skills in reducing fuel and other procurement costs, reducing costs in central administration, selling off unnecessary assets, which were money losers, and other such financial control techniques. In other instances, personnel reductions have been noted as well as quite dramatic restructuring from vertically integrated systems to unbundled stand-alone businesses.
6. Increased international competitiveness of electricity-intensive economic sectors. Due to the increases in efficiency and reduced costs of electricity, industries in those countries which have undergone deregulation and restructuring have reduced their costs—quite dramatically in some instances. These reduced costs have made these industries more competitive in global markets for their products, and perhaps retained such industries in-country rather than moving them to lower-cost locations.

In addition, Workshop participants suggested that wherever deregulation of this and other economic sectors has occurred, there seems to have been no instance where full re-regulation, franchising or monopoly systems have been reinstated. While some revision of regulations can be expected, at least thus far there has been general agreement that the benefits of deregulation outweigh problems experienced in the deregulation process.

The discussions at this Workshop suggested that while the theoretical values were not disputed, there were concerns about the impacts of making the transition from national monopoly electricity sector systems to deregulated and/or privatized entities. The potential negative impacts that were of concern to some included the following:

1. Reductions in employment levels where the electric system had been utilized as a tool for employment enhancement. While such practices were recognized as adding substantially to costs of electricity, any reductions in employee levels would have to be done very gradually in order not to increase unemployment sharply.
2. Loss of sectoral subsidies embedded in current systems, resulting in price increases to some classes of service. Because such cross-subsidies may have been in place for many decades, it is politically difficult to make rapid changes in such policies—though it was widely recognized that such price-distorting policies will need to be phased out.
3. Concern about how to shift social policy goals from the electric sector to other government mechanisms. In addition to the cross-subsidy problems noted above, the national electric sectors may have been used to implement other policy goals such as extending service to remote areas at highly subsidized rates, lower rates for certain age groups or public institutions such as hospitals, schools, government entities, and so on. While appreciating that such public goals may be laudable, it was also noted that such implicit subsidies distort price/cost signals in the electric sector and reduce efficiency in various degrees of severity, and perhaps might be better implemented through other government programs.
4. Concerns about foreign domination in this sector. For some economies, deregulation and the opening of the electric sector introduced the possibility of a large foreign presence in this sector, which previously had been a government activity. Though this prospect was noted as a concern by some, the experience in most economies was that such external investment had not been a negative factor.

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6. Concerns that deregulation might have less desirable environmental outcomes than would occur in a regulated structure. Some comments during the discussions indicated concern that a loss of government control of the electricity sector may bring negative environmental effects as competitive forces looked to reduce costs. However, it was generally agreed that environmental standards were the province of the government in each economy, and that a deregulated electric sector must work within whatever environmental standards were established for air and water quality, effluent controls, waste disposal and other environmental concerns.

An additional complication to deregulation was noted in several of the economies where all or most fuels were imported. In order to encourage new entrants for the purposes of competition in the electric sector, it is necessary that any potential new entrant have access to generation fuels under comparable price and volume conditions as all others competing in the field. If incumbent organizations have preferential access, then competition will be thwarted. Of course, this is a condition that would be necessary whether or not the fuels are imported. A level playing field in both price and access to fuels (as well as fairly priced access to transmission and/or distribution facilities) is necessary if true competition is to be successful. Preferential access to these key inputs will distort competition and lower (or even deny) the benefits of such deregulation.

Finally, participants noted that there are differing motivations for the process of restructuring across the region. In the case of some economies, the motivation is primarily access to external capital resources. The rapid growth of electricity demand has outstripped the capacity of the governments to expand generation, transmission and distribution facilities. Further, the existing tariff structure is inadequate to fund such needed facilities growth. In such instances, the need for restructuring both for greater efficiency and for capital to carry out required facility expansion has been a key motivation. In other economies, external capital is not as important, so the need

for more competitive and efficient systems has been the key driver for deregulation.

Deregulation or privatization or restructuring of the electricity sector in the Pacific Rim region is not a new phenomenon, but the process has accelerated in the past two years or so. Indeed, it was striking to observe the very detailed planning for restructuring in this sector by virtually all economies in this key area of the world. While the financial crisis may have added some motivation, in some instances it also has caused timetables to be delayed, and some plans to be further refined—but there was little evidence of turning away from the process. While such major changes might be expected to take longer than originally planned due to complex political and other such causes, it appeared as though the benefits were widely seen as worth the effort and time required to carry out such plans. The reasons for this steady and even quickening pace are varied, but among them such matters as the following were pointed out in the discussions:

1. Financial crises in the Asia region, and requirements of IMF-imposed structural reforms. For those economies that accepted IMF loans during the financial upheavals of the past 2 or 3 years, various agreements were made to increase deregulation in the electricity sectors. While these reforms were imposed by external requirements, most of these economies have agreed with the inherent benefits that may be obtained.
2. Government concerns about inefficiencies in monopoly electric sectors. As mentioned earlier, many economies recognized the need to upgrade the quality and efficiency of this key sector. While there are lingering concerns about making a transition from the social goals that have been embedded in the electric system, there was general agreement about the need to upgrade efficiencies in this sector.
3. Increased international competitiveness requiring more efficient and lower cost electricity in domestic economies. As discussed in the section on the reasons for deregulation, there is

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wide recognition that inefficiencies in this sector can have a serious negative impact on international competitiveness of domestic industries, particularly those which are highly electricity intensive. The financial crisis magnified the awareness of this factor.

Finally, the discussions suggested that deregulation and privatization of the electricity sector are occurring simultaneously with rapid technology, financial, political and social changes in economies throughout the Asia-Pacific region. The changes in the electricity sector are not being carried out in isolation, and are affected by structural alterations within each economy. As a result of these complex changes, it is not unreasonable to expect that the pace and outcomes of electricity deregulation will not be uniform throughout the region. While each economy may find a somewhat different path, there seemed to be little doubt that implementation of some form of deregulation of this sector would continue across the region.

Energy Trade and Infrastructure

Crude and Product Markets

Other energy sectors in the region are also facing complex challenges as local economies begin the process of recovery from the financial crisis. Oil and product demand plummeted over the past two years, putting strong pressure on refining margins in the region. And even though demand is now increasing and additions to refining capacity are underway, it is expected that there will be increasingly strong cost competition from Middle East product exports into the Asia-Pacific area. Finally, crude oil imports will continue to increase into this region, a trend that is expected to accelerate over the next decade. While such competition from product import activity may put pressure on local refineries, such price competition likely represents good news for users of oil products throughout the regions. Because economies in the region span the range of major oil and oil product producers to major importers, there was a wide variance of views among participants on the recent price increases.

Natural Gas

Natural gas supplies, whether transported as LNG or via pipeline, are of substantial interest to economies in the region. This interest is based on the relatively short lead time of gas combined cycle power plants to enable early increases in generation capacity, and on the relative cleanliness of natural gas combustion, which can help to relieve severe air quality problems in many major cities in the region.

However, the cost of LNG appears to be a barrier to rapid growth of this form of transport, and has given impetus to interest in an expanded natural gas pipeline system in the region. This pipeline system would not only interconnect supply sources within the region, but would tap into reserves in continental Russia, offshore Russia, and other nations of the former Soviet Union with massive gas reserves remote from other demand centers. The cost of such pipeline systems is still rather speculative, but some may be feasible under longer-term contract arrangements. However, there remains concern about the security of such systems, especially regarding third country transit. There appears to be no body of international law that covers such pipeline transit arrangements, but it also is not clear there is a basis for serious concerns in view of the history of such transit arrangements. When agreed bills are paid, and in the absence of war, no instance could be cited where such transit arrangements have been disrupted.

Coal

Despite the stated enthusiasm for natural gas, coal usage for electric power generation in the region continues to increase at a steady pace. There has been a steady growth of both domestic and imported coal use for the past 15 years, and this rate of growth is expected to continue for the foreseeable future. While some uncertainty about global rules on greenhouse gas emissions remains, efficiency gains in coal-fired plants give the prospect for reductions in all emission levels. If pipeline gas is available in sufficient quantities and at competitive prices, it can be a serious competitor for fuel choice in new generation facilities in some locations—especially where load-following is important. But it is expected that total coal use will continue to increase in any event.

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Electricity Interconnections

Interest in regional gas pipeline infrastructure is paralleled by an increased interest in expanding electricity interconnections across the Asia-Pacific region. Experience in the U.S. suggests that the widest possible transmission network encourages system reliability, efficiency and economies of scale. Asia-Pacific economies could benefit from such system gains as well, plus taking advantage of potential generation sites, including several hydropower options, more favorably located across national boundaries. Again, while the theoretical benefits were noted, concerns about security of such transmission supply lines remained to be resolved.

Review of Individual Economies

Reviews of electricity deregulation and related energy matters in the economies of the region suggested that progress toward a range of goals was continuing. The economic crisis necessitated delays in the timetables for achieving goals for restructuring, but in most instances the goals were not compromised in significant ways. Globalization of economic activity acts as a continued pressure to achieve high levels of efficiency in all domestic sectors, even while governments are seeking to preserve key cultural and social values. Though tensions arise in these processes of transition, it appears as though economies of the Asia-Pacific region remain optimistic about future success in economic progress while retaining important social value systems.

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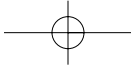
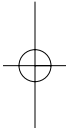
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Program on Energy, the Environment, and the Economy

The mission of **The Aspen Institute** is to enhance the quality of leadership through informed dialogue about the timeless ideas and values of the world's great cultures and traditions as they relate to the challenges facing societies, organizations, and individuals. The Seminar Programs enable leaders to draw on these values to enrich their understanding of contemporary issues. The Policy Programs frame the choices that democratic societies face in terms of the enduring ideas and values derived from those traditions.

The **Program on Energy, the Environment, and the Economy** provides neutral ground for dialogue among diverse participants from the energy industry, government, environmental and other public interest groups, research institutions, and elsewhere. Meetings in a non-adversarial setting encourage positive, candid interaction and seek areas of consensus or improved mutual understanding. Recent activities of this Program are listed below.

The annual **Energy Policy Forum** is the flagship of the Program. Now in its 23rd year, its high level participation, lively discussion, and congenial setting cause some of the most thoughtful and influential leaders in the energy sector to return again and again to grapple with timely topics facing energy policy makers. Session chairs and speakers serve only as discussion starters; participants with different perspectives contribute to and enrich the dialogue, with the goal of enhanced understanding and, where possible, consensus on policy recommendations.

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The **Pacific Rim Series**, founded in 1983, consists of annual workshops for experts from industry, government, and other institutions to discuss Asian energy issues.

The **Series on the Environment in the 21st Century** is a continuing dialogue among business, environmental, and government leaders about developing a new, less prescriptive, and more effective environmental protection system for the United States. In its most recent phase, participants considered new ways to deal with natural resources and systems.

Valuing Environmental Performance, a dialogue among corporations and financial institutions, sought ways for corporations to better communicate the strategic value of their environmental behavior and for financial markets to recognize and reward improvements.

A series on **Disposition and Storage of Nuclear Waste—Implications for Nonproliferation and the Environment** is meeting periodically to allow a small number of experts and advocates from government, industry, academia, and public interest organizations to seek consensus on—and improve communication and understanding among adversaries regarding—civilian and defense nuclear waste.

The Mexico-US Border Environment and Economy is a dialogue among private and public sector leaders to identify for both Presidents factors that make a difference in managing growth at the border and ways of dealing with those factors.

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