

ENERGY FOR  
SOUTH ASIA

# Case Studies of Regional Energy Cooperation Programs: APEC and ASEAN

January 2005

Prepared by



Contract No. 386-C-00-03-00135-00

Prepared for

**USAID SARI/Energy Program**

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APEC and ASEAN**

**for  
United States Agency for International Development  
under  
South Asia Regional Initiative for Energy**

**Prepared by  
Small-Scale Sustainable Infrastructure Development Fund (S<sup>3</sup>IDF) and Nexant Inc.  
for  
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**January 2005**

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## List of Acronyms

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ABAC	APEC Business Advisory Council
ANMED	APEC Network Of Minerals And Energy Data
APEC	Asia-Pacific Economic Cooperation
APEREC	Asia-Pacific Energy Research Center
ASEAN	Association Of Southeast Asian Nations
AAECP	ASEAN-Australian Economic Cooperation Program
ACE	ASEAN Center For Energy
AEBF	ASEAN Energy Business Forum
AEMMTRC	ASEAN-EC Energy Management Training And Research Center
AEMEC	ASEAN Economic Ministers on Energy Cooperation (AMEM, after 1995)
AERF	ASEAN Energy Reporting Format
AFOC	ASEAN Forum On Coal
AGC	ASCOPE Gas Center
AGCC	ASEAN Gas Consultative Council
AIMS-WG	ASEAN Interconnection Master Plan Study Working Group
AMEM	ASEAN Ministers On Energy Meeting, Formerly AEMEC Before 1995
AMMST	ASEAN Ministerial Meeting On Science & Technology
APAEC	ASEAN Plan Of Action For Energy Cooperation
APG	ASEAN Power Grid
APSA	ASEAN Petroleum Security Agreement
ASCOPE	ASEAN Council On Petroleum
ASEM	Asia-Europe Meeting
ASEM	GR-IPP Net ASEM Green Independent Power Producers Network
ASREP	ASEAN Small-Scale Renewable Energy And Environment Program
BIMP	Brunei, Indonesia, Malaysia, Philippines Sub region
COST	Committee On Science & Technology
CAP	Collective Action Plan
EAEF	EC-ASEAN Energy Facility
EE&C-SSN	Energy Efficiency And Conservation Sub-Sector Network
Ecotech	Economic And Technical Cooperation
EBN	Energy Working Group Business Network
EGAT	Electricity Generating Authority of Thailand
EGCFE	Expert Group on Clean Fossil Energy
EGEDA	Expert Group on Energy Data and Analysis
EGEEC	Expert Group on Energy Efficiency And Conservation
EGNRET	Expert Group on New and Renewable Energy Technologies
ERF	Energy Regulators' Forum
ESI	Energy Security Initiative
EWG	Energy Working Group
FY	Fiscal Year
GEMEED	Expert Group On Minerals And Energy Exploration And Development
GMS	Greater Mekong Subregion
HAPUA	Heads of ASEAN Power Utilities/Authorities
IAI	Initiative For ASEAN Integration
IAP	Individual Action Plan
IFAT	Implementation Facilitation Assistance Teams

JMP	Joint ASEAN Mini-Hydro Project (Swiss/German)
PECC	Pacific Economic Cooperation Council
RTEIS	Real-Time Emergency Information Sharing System
SARI	South Asia Regional Initiative
SARI/E	South Asia Regional Initiative On Energy
SPF	South Pacific Forum
NRSE-SSN	New And Renewable Sources Of Energy – Sub-Sector Network
PRESSEA	Promotion Of Renewable Energy Sources In Southeast Asia
PROMEEC	The Promotion Of Energy Efficiency And Conservation
REPP-SSN	Regional Energy Policy and Planning Sub-Sector Network (Formerly ESSPA)
SCNER	Sub-Committee On Non-Renewable Energy Research
SOE	State Owned Enterprise
SOME	Senior Officials Meeting On Energy
TAGP	Trans-ASEAN Gas Pipeline
TILF	Trade And Investment Liberalization Facilitation
USA	United States
USAID	United States Agency For International Development

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## Executive Summary

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The APEC Energy Working Group (EWG) and the ASEAN Center on Energy (ACE) have had significant positive impacts on the development of the energy sector in the Asia Pacific and Southeast Asian regions. Their success is due to sustained commitment to energy cooperation by their members, as reflected in continuing high-level support and active participation by member governments; regular allocation of significant administrative resources and project funding; and implementation of well designed strategies and programs.

In order to understand the two energy cooperation programs and evaluate their impact, it is essential to understand the context in which they operate. The EWG and ACE are small but strategic players in an enormous sector. Energy demand and growth in Asia is massive, cooperation is relatively new in both regions, and the two organizations lack, by design, regulatory authority. As a result, their accomplishments have been in coordination, facilitation, data collection, research, policy coordination, fund raising, and harmonization of standards, as well as joint implementation of cooperative projects. They have:

- Served as the primary platform for regional energy activities
- Helped to create a uniform approach to energy among member countries at the level of regional policy, country energy governance, and infrastructure
- Broadened access to information on energy and collected data that effectively serves as the best source for regional energy planning
- Built capacity in a large number of member country representatives at policy and technical levels
- Connected energy development to broader economic and political developments in the region

There are many similarities between the two organizations at strategic, management and implementation levels. EWG and ACE are led by country members but have permanent support staff that enable the organizations to maintain momentum between meetings. Strategic direction is provided by ministers from member countries. For both organizations, senior officials, usually at the permanent secretary level, oversee operations and projects. Both organizations conduct much of their work through subcommittees comprised of country representatives, usually government officials. And both organizations have five-year plans that provide vision for the programs and set their goals, activities and indicators.

EWG and ACE are both also categorized by “Soft”, consensus-based management systems. Unlike organizations such as the WTO or the UN, decisions must be agreed on unanimously by members and agreements are either non-binding or not enforced. While a soft management system can impede project implementation, it has proven essential in binding these diverse nations together in cogent long-term energy initiatives.

While both programs have some degree of autonomy from their parent organization, they present two quite different approaches. EWG is essentially an arm of APEC, although it does have a separate secretariat and research branch. EWG’s primary focus is carrying out the APEC mandate of free and unrestricted trade and investment as it applies to the energy sector. ACE operates more like an independent regional energy cooperation organization with its own office,

staff, and budget. Its mission is consistent with the overall ASEAN objective of accelerating the economic growth, social progress and cultural development in the region through joint ventures.

Funding for energy programs in both organizations comes through three different channels:

- **Internal funds** from parent organizations and energy program budgets that cover project and administrative costs
- **Direct spending by country members**, which does not pass through the energy programs, accounts for the majority of costs involved with member participation. This funding typically covers travel, organizing events, and co-funding of projects.
- Finally, both organizations get most of their funds from **contributions by external partner** although these are usually dedicated to specific purposes.

The way in which the organizations provide funds to their energy programs, however, is different. EWG is treated as an arm of APEC, like any of its 10 other working groups. APEC supports EWG activities on a project basis. There are no direct administrative funds for it. EWG does, however, have two unique and important forms of financial support. First, Australia has housed and supported a three person Secretariat since EWG's inception in 1990. Second, Japan funds and houses a substantive research program, the Asia Pacific Energy Research Center (APEREC). In 2003, Japan's contributions to APEREC exceeded \$7 million.

ASEAN ACE is funded more like an autonomous entity. ASEAN provides funding support for operations and projects, but on a longer-term basis. ACE also oversees an ASEAN Energy Endowment created through contributions from member countries and now worth nearly \$5 million. Donor support has been the largest source of funds for ACE activities since its beginning; the 2003 alone amounting to over \$8.5 million. The main international providers of funding include Japan, the EU, Germany, Switzerland, and Australia.

Both organizations conduct a range of activities in areas such as energy policy, fossil fuel use, energy efficiency, renewable energy, infrastructure financing, private sector cooperation, and data sharing. EWG also assists its members on liberalization issues through expert teams. In addition, is a new energy security initiative and EWG conducts a substantial amount of energy research. ASEAN maintains a strong focus on physical interconnection of power grids and gas pipelines. Major interest areas for both are indicated by their mix of subcommittees, which are the key operational units for project implementation.

For the EWG these subcommittees are:

- Expert Group on Clean Fossil Energy (EGCFE)
- Expert Group on Energy Efficiency and Conservation (EGEEC)
- Expert Group on Energy Data and Analysis (EGEDA)
- Expert Group on New and Renewable Energy Technologies (EGNRET)
- Expert Group on Minerals and Energy Exploration and Development (GEMEED)
- Asia Pacific Research Center (APEREC) – overseen by EGEDA
- Expert Subgroup on Environmental Cooperation (ESEC) – overseen by GEMEED
- Energy Business Network (EBN)
- Energy Regulators' Forum (ERF).

And for ACE, the subcommittees are:

- Heads of ASEAN Power Utilities/Authorities Forum (HAPUA)
- ASEAN Forum on Coal (AFOC)
- Energy Efficiency and Conservation Sub-Sector Network (EE&C-SSN)
- New and Renewable Sources of Energy Sub-Sector Network (RE-SSN)
- Regional Energy Policy and Planning Sub-Sector Network (REPP-SSN, formerly the Energy Supply Security Planning Project of ASEAN--ESSPPA).
- ASEAN Energy Business Forum

Taken together, EWG and ACE have almost 50 years of experience in energy cooperation. Their experience provides numerous observations or “lessons” for organizations in other regions seeking to develop regional energy cooperation. These observations include:

- Regional energy issues have diverse aspects and interlinkages, so a regional cooperation organization is strengthened by covering a broad range of issues;
- A “soft” consensus-based management system is well suited to the challenges and sensitivities inherent in regional energy issues;
- Officials from member countries can provide effective leadership at management and technical levels, but permanent staff facilitate coordination and strengthen continuity;
- The consistently high level of participation by member countries, from both senior and functional officials, is a key factor in the successful regional cooperation;
- Integrating policy and technical issues facilitates tangible progress on a range of small issues, and enhances efforts at progress on big issues;
- International donor support is relatively easy to obtain for regional energy cooperation efforts, but this needs to be balanced by commitments of member countries and regional stakeholders;
- Capacity building activities can make significant contributions to member countries, while building relationships and understanding for regional cooperation and collaboration;
- Each member country has successful energy programs and “best practices”, and sharing these helps to strengthen regional cooperation.

It may also be observed that ASEAN represents region that is smaller, more similar and cohesive region in geography, economy, and culture. Also, ACE has significant autonomy from the general ASEAN organization and is to some degree insulated from non-energy issues. The ACE structure allows continuity and stability, and ACE has developed a track record of progress in physical interconnection and energy trade.

Finally, it also appears that for the individual member countries and for the regions as a whole, there is complementarity rather than competition between the two regional programs. There is little formal coordination between the two regional energy groups. But despite considerable overlap in membership, the different regional groupings, the differing objectives of their parent organizations, and their differences in organization, style, and program do not appear to cause conflict or redundancy but rather reinforce further cooperation and the mutual benefits that come from it. Indeed, with the recent beginnings for energy cooperation in the Bangladesh-India-Myanmar-Sri Lanka-Thailand -- Economic Co-operation (BIMST-EC) and Greater Mekong Subregion Energy Sector activities, commitment to regional energy cooperation continues to expand.

Two regional energy cooperation programs, the APEC Energy Working Group (EWG) and ASEAN Center on Energy (ACE), have played a valuable role in energy sector development in the Asia Pacific and Southeast Asian regions respectively. During this time, they have brought together an impressive roster of country representatives, raised a large amount of funding and conducted dozens of practical projects.

The following reports provide a detailed and comprehensive overview of EWG and ACE as well as a comparative assessment of the two programs and observations on their accomplishments. It also provides short overviews of energy cooperation in the Bangladesh-India-Myanmar-Sri Lanka-Thailand – Economic Co-operation (BIMST-EC) and Greater Mekong Subregion Energy Sector Activities (GMS), two smaller efforts in Asia.

The report consists of the following documents:

- Executive Summary
- Comparative Assessment of Energy Cooperation in ASEAN and APEC
- Report on ASEAN Center on Energy
- Report APEC Energy Working Group
- Overview of BIMST-EC and GMS Energy Programs
- Presentation on Energy Cooperation in APEC and ASEAN

These reports provide a great level of detail on the activities and accomplishments of EWG and ACE. However, the work of the two organizations is vast and cannot be completely documented in one report. Readers interested in detail beyond that provided are recommended to refer to the extensive websites of both organizations. By following links on these websites, the reader will be able to find an extensive reservoir of documents and specific websites for many of the subgroups.

- APEC EWG: [www.apecenergy.org.au](http://www.apecenergy.org.au)
- ASEAN ACE: [www.aseanenergy.org](http://www.aseanenergy.org)

EWG and ACE are unique organizations, which makes it difficult to benchmark or compare their results against other organizations. The geographic regions of the two organizations span a large portion of the globe and contain a huge amount of economic activity. Within these regions energy sector development is a top economic priority. In this regard, the challenges facing small energy cooperation program budgets are vast.

These reports detail the many successes achieved by EWG and ACE and show the impact these have had on regional energy development. It concludes that the payback from the resources committed to the organizations has been great. EWG and ACE provide two proven models for leveraging limited resources to create real accomplishments in the important area of energy development. It is hoped that their examples will assist other regions in developing similar programs.

This document, Comparative Assessment and Observations on Energy Cooperation in APEC and ASEAN, provides a descriptive and analytical overview of the operations and accomplishments of the APEC Energy Working Group (EWG) and ASEAN Center on Energy (ACE). It is divided into two main subsections:

- The **Comparative Assessment** provides a concise side-by-side overview of the similarities and differences of approach, management and accomplishments in EWG and ACE.
- The **Observations** section that follows it highlights 11 key points that illuminate aspects that define the energy programs in the two organizations and could serve as guideposts for other organizations with similar objectives.

While these two documents are designed to function as stand-alone pieces, they depend on the separate reports on Energy Cooperation in APEC and ASEAN for detailed background and documentation.

Before attempting to evaluate the impact of APEC and ASEAN energy programs, it is important to understand the context that these organizations operate in and the scale of their role.

- The Asia Pacific is not a cohesive region in terms of historical, cultural or geographical considerations. Cooperation among these nations is a relatively new phenomenon.
- The importance of energy to the future of the Asia-Pacific region cannot be overstated. To maintain rapid economic growth, particularly in East Asia, a large portion of the region's combined GDP will be spent on energy infrastructure and imported fuel stocks. According to APEC, US\$ 3.4 to 4.4 trillion will be needed to develop new energy infrastructure in the Asia-Pacific region between 2000 and 2020.
- Both regional organizations are comparatively small, under-funded and without real authority, or rule-making ability. Even within member countries, capacity and institutions are relatively weak.

The Comparative Assessment and Observations sections that follow, take into consideration the scale of the task that EWG and ACE face, the resources available to them and the potential impacts that a regional energy organization could have. In this regard, there are a limited number of things a regional energy cooperation organization could reasonably be expected to accomplish. These include:

- Facilitate high-level forum that guide the regional energy developments
- Establish mechanisms for exchanging data and information on energy issues
- Cooperate to evaluate energy technologies and policies
- Coordinate funding of projects and activities
- Create forum for communication between regional stakeholders
- Harmonize standards, regulations, and policies
- Act as a regional unit with common positions
- Unify regional input into global discussions
- Mediate bilateral disputes
- Coordinate regional integration
- Develop an integrated regional energy strategy

- Serve as a platform for cooperation with other organizations
- Provide capacity building and technical assistance to member countries
- Facilitating trade, investment and open markets

### **Assessment Criteria**

This assessment reviews the overall impact of energy cooperation in ASEAN and APEC using the following criteria:

- What were the overall successes, accomplishments, and impacts of the energy subgroups?
- What was successful and what was not? What enabled the organizations to accomplish results?
- Were these accomplishments cost-effective in terms of financial and other resource inputs?
- What specific lessons can be drawn from energy cooperation in APEC and ASEAN that could aid SARI/SAARC in developing regional energy cooperation in South Asia?

This report concludes that EWG and ACE have been successful programs that contributed to the development of the energy sector in their respective regions and within member countries. Both programs fill a crucial niche that is not served by any other program and provide a broad range of tangible and intangible benefits. The ASEAN Center on Energy has been better able to operate as an autonomous energy organization, features closer to cooperation among a body of similar countries and is less subject to influence by its parent organization or powerful member countries. For these reasons, it serves as the better model for regional energy cooperation.

## **COMPARATIVE ASSESSMENT**

This Comparative Assessment is a descriptive overview of the functions of EWG and ACE drawn directly from the detailed reports on each organization. It follows the order and contents of those reports to facilitate cross-referencing.

### **1. The Creation and Purpose of Energy Subgroup**

Energy is among the central challenges to development for countries in the Asia Pacific and Southeast Asian regions. EWG and ACE are the de facto lead organizations on energy dialogue in these regions and as such play a key role that otherwise goes unfilled. Without their efforts, energy would get much less attention at regional, and in many cases, national levels.

EWG and ACE were established based on specific objectives in the context of global developments at the time of their creation. Detailed timelines at the beginning of the APEC and ASEAN Reports provide the best insight into this process. Currently energy programs in the two organizations are broad. Both regard energy security and economic aspects of energy cooperation not only as important, but also to some degree as integrated issues. Programs in both organizations revolve primarily around these two themes.

Table 2.1 Purposes Of APEC &amp; ASEAN And Their Energy Programs

APEC	ASEAN <sup>1</sup>
<u>Vision</u> : Free and unrestricted trade and investment	<u>Mission</u> : To accelerate the economic growth, social progress and cultural development in the region through joint ventures
APEC EWG	ASEAN ACE
To harness the energy sector's potential as a driver for achieving APEC's core goals: economic growth and social well being in the APEC region	To serve as a catalyst for regional economic growth and development by initiating, coordinating and facilitating national as well as joint and collective activities on energy

**APEC Energy Working Group:** EWG was founded in 1990 against the backdrop of rapid economic growth in Asia, and to a lesser degree in other developing member countries in the Asia-Pacific region. Given the enormous, optimistic projection of Asian energy infrastructure requirements in the early 1990s it is not surprising that APEC saw a synergy between regional investment needs and its liberalization mandate. In the last few years, and increasingly after 9/11, APEC has put a strong emphasis on energy security and its Energy Security Initiative (ESI) is promoted as a lead activity. However, energy security still concentrates on supply issues more than terrorism and is consistent with APEC's economic focus. Additionally, there is a tension within APEC EWG between the overall APEC mission of "free and unrestricted trade" and the needs of member countries in developing their energy sectors.

**ASEAN Center for Energy:** ASEAN took serious steps to address petroleum issues in the late 1970s, but did not embrace broader energy considerations at a ministerial level until 1980. These efforts were driven by member country's exposure to the global energy crisis and so initially focused on security and cooperation. This was consistent with the organization's early role as a regional security platform. As regional security considerations faded and economic growth boomed, ASEAN energy work, looked increasingly to the economic aspects of energy and the possibility of physical integration of energy infrastructure. The addition of Vietnam, Laos, Cambodia, and Myanmar brought less developed countries into the mix and added the imperative of capacity building to bring these countries up to the developmental level of other members. Key to this was the reduced anxiety over energy supply, the rapid growth of ASEAN member countries and the increased attention to economic issues within ASEAN itself.

## 2. Management and Operations

The concept of a "soft" decision-making style is central to APEC and ASEAN and extends to EWG and ACE. This is clear at two levels. First, decisions within the organizations are made by consensus, rather than by vote or the direction of an empowered manager. Second, formal agreements entered into by the organizations are either non-binding in the case of APEC, or loosely enforced in the case of ASEAN. New plans or projects can only be advanced by unanimous agreement. Country members rather than permanent staff play the key roles in defining and leading the energy programs. Strategic direction is provided by ministerial-level officials at annual meetings and in formal five year plans. Program implementation lies with

<sup>1</sup> ASEAN has vision and mission statements, which are detailed in the ASEAN report.

technical level subgroups. For this reason, the most effective way to understand specific aspects of the work of the two organizations is to refer directly to the subgroup responsible. The APEC and ASEAN reports provide much detail on these subgroups as well as links to relevant subgroup websites.

**APEC EWG:** The APEC EWG was established as one of eleven APEC working groups primarily to spread APEC trade liberalization goals to the energy sector. In this regard, its organizational arrangement is a reflection of APEC's overall structure. EWG does not function as a separate entity from APEC. Work is conducted based on APEC's two main areas of concentration: Trade & Investment and Economic Cooperation. However, APEC EWG is able to maintain a degree of autonomy and continuity through two longer-term operations with external resource support: a three-person EWG Secretariat in Australia and the Asia Pacific Research Center (APERC) in Japan. There is currently active discussion within APEC about the ongoing utility of its soft management style. It is clear however that this cumbersome organization of 21 disparate members could not have had made as much progress as it did without considerable flexibility.

**ASEAN ACE:** The ASEAN Center on Energy is more autonomous and to some degree acts as an independent energy cooperation organization attached to ASEAN. ACE has its own facilities, operating expenses, and a staff of 15 people. The organization and its committees have the luxury of focusing on regional energy issues without the potential for clashing with a conflicting focus at the organizational level. This level of autonomy appears to be a crucial strength in development and organization that responds to a broad base of members on energy specific issues.

### 3. Budget

Both EWG and ACE draw funds from their parent organizations on an annual basis for core operations and project work. Member countries directly fund the organized costs of meeting and the travel costs of their representative. This accounts for a large portion of funding in both organizations, but is not recorded. Additional projects funds come from a range of external partners. For this reason, it is very difficult to obtain a comprehensive estimate of total funds available to energy programs in the two organizations. The table below provides an estimated breakdown for comparison purposes.

Table 2.2 Annual Expenditures of Energy Cooperation Programs in APEC and ASEAN

	APEC 2003	ASEAN 2003
<b>Internal Budget</b>	\$508, 929	\$497,717
<b>Country Contributions</b>	Neither organization tracks individual expenditures from country budgets, although this must be a significant portion of overall resources. A rough estimate would put it somewhere in the same range as the total internal budget for each organization.	
<b>Third party / donor</b>	<ul style="list-style-type: none"> <li>▪ ¥743 million (approx. \$ 7,000,000) from Japan for the Asia-Pacific Energy Research Center (APERC)</li> <li>▪ Operations of secretariat in Australia</li> </ul>	\$8,509,000 from Europe, Japan, and Australia for specific projects

**Notes:**

1. Budget is spread over 21 countries in APEC and 10 in ASEAN
2. The Internal Budget line item for ACE includes significant operational funding for ACE. Internal Funds for APEC are only project funds. Administrative support is provided by the APEC Secretariat and Australian EWG Secretariat.
3. Australia's contribution to maintaining the three person EWG Secretariat is unavailable.

**APEC EWG:** APEC member countries make one annual contribution to APEC, which is in turn allocated by the Budget and Management Committee of the APEC Secretariat to individual working groups including EWG. This is done by matching project proposals from the working groups with APEC priorities. The budget of the Energy Working Group can vary by as much as **20%** on a year-to-year basis and in theory no budget could be allocated to energy projects in a given year. A small additional set of resources comes in the form of project funding that is committed by member countries or the private sector. Long-term contributions of funding, staff and space are provided by host countries for the APEC Energy Research Center (APEREC) in Japan, as well as funding for a permanent three person Secretariat in Australia. It is important to note the portion of member country's contributions that are spent on energy program activities is extremely small. Nine member countries, including ASEAN members Indonesia, Malaysia, the Philippines, Thailand and Vietnam contribute only \$50,070 each annually to all APEC activities of which roughly \$6,500 goes to energy.

**ASEAN ACE:** Consistent with its managerial relationship to the ASEAN Secretariat, ACE has greater budgetary autonomy. While the bulk of ASEAN energy funds do come through centralized mechanisms, partial funding comes through interest from an ASEAN Energy Endowment, with a principal of almost \$5 million. The endowment was set up through one-time contributions of \$528,000 by member countries and is directly overseen by ACE. Annual funding for energy projects is decided by the ASEAN Meeting of Energy Ministers, which makes it more likely that project funds are allocated on energy criteria. The majority of project funds are contributed by donor organizations, especially the EU, specific European countries and Japan. Donor funds are also coordinated through ACE.

#### 4. Programs and Initiatives

ACE and EWG are both involved in a broad range of activities that span the energy spectrum from exploration and production to fuel use, power generation, energy end use, environment and regulatory policies. Both organizations have a similar list of activities and on the surface it is difficult to distinguish between the two. EWG and ACE organize their programs under specifically designed subgroups. For example work on energy efficiency is conducted under the Energy Efficiency and Conservation Sub-sector Network in ASEAN and the Expert Group on Energy Efficiency and Conservation (EGEEC) in APEC. These programs and subgroups are covered in detail in the APEC and ASEAN reports.

Broadly speaking, the work of the two organizations can be divided into two categories: Policy and Technical. Policy work covers areas such as trade and investment, regulatory reform, infrastructure integration, and energy security. Technical work covers fuel issues, energy efficiency, renewable energy, energy information, and a range of capacity building programs. At the technical level, the work of the two organizations is similar. Significant differences exist in their policy emphasis.

**APEC:** APEC's overarching mission of opening markets to trade and investment extends to almost every activity in which it engages. EWG concentrates much of its top-level efforts on two areas consistent with the APEC mission: promoting trade and investment; and liberalizing energy national sectors. EWG created a top tier committee, the APEC Regulators Forum, for the specific purpose of promoting sector reform in member countries. EWG also emphasizes its role in regional energy research, which is conducted through the Asia Pacific Energy Research Center (APEREC), which is funded by and located in Japan. APEREC produces an impressive amount of research on key energy issues facing the Asia Pacific region. Regional energy integration is viewed in terms of data sharing, uniformity of approach and integration of business/financial architecture. Physical integration of infrastructure across a majority of APEC members would be impossible.

**ASEAN:** ASEAN's approach has been to serve as a regional organization that integrates regional energy systems and serves as a forum where member countries can gain the benefits of economies of scale in energy cooperation. Given the geographical proximity of ASEAN countries, physical integration of gas and power systems, based on bilateral connections, has been a key priority. Energy sector reform and restructuring clearly take a back seat to supply issues in ASEAN. This is shown by the fact that the organization most closely involved with industry structure, Forum of the Heads of ASEAN Power Utilities/Authorities (HAPUA), is a group of utilities, the very organizations that would have to be restructured and would be the most resistant to reform. HAPUA does not mention sector restructuring among their major activities. Research is conducted by ACE, but is not regarded as a priority.

Table 2.3 Comparison Of Initiatives And Emphasis

Initiative	ACE	EWG		
Trade and Investment	**	*****		
Sector Reform and Restructuring	*	****		
Capacity Building	****	***		
Regional Integration	*****	**		
Energy Security	****	****		
Research	*	****		
Clean Fossil Energy / Coal	***	***		
Energy Efficiency and Conservation	***	***		
Energy Data and Analysis	***	***		
New and Renewable Technologies	***	***		
<b>Minerals and Energy Exploration and Development</b>	**	***		
Private Sector Cooperation	**	*****		
Environmental Cooperation	*	**		
*****	****	***		
Priority	Important	Moderate	Limited	Low priority

## 5. Results, Accomplishments and Impact

The Chart below lists the Major Accomplishments of EWG and ACE. These are covered in detail in the EWG and ACE reports. This report focuses on the broad, enduring impacts of the two organizations rather than the large number of successful projects that have been

implemented. ASEAN did prepare a list of project level achievements that are included in the Appendix of the ASEAN Report.

**Table 2.4 Major Accomplishments of EWG and ACE**

EWG	ACE
<ol style="list-style-type: none"> <li>1. Created an institution that serves as a primary forum for energy cooperation in the Asia Pacific region</li> <li>2. Made progress towards unifying member's approach to energy sector development</li> <li>3. Created mechanisms to deliver information resources and technical support to members</li> <li>4. Has been able to maintain an economically focused and de-politicized entity despite disparate membership</li> <li>5. Brought the private sector into the regional energy dialogue in a constructive way</li> <li>6. Developed research capacity that helps to shape regional energy dialogue and planning</li> <li>7. Developed a balanced program of technical and policy level cooperation</li> <li>8. Proved significant cooperation can be achieved within a modest budget</li> <li>9. Established a forum to advance energy security issues</li> </ol>	<ol style="list-style-type: none"> <li>1. Created an institution that is regarded by members as a key part of regional energy development and has expanded to include other Asian Countries</li> <li>2. Served as a platform for raising significant amounts of donors funds for energy work</li> <li>3. Developed capacity building functions that are valued by members</li> <li>4. Has been able to leverage the cooperative forum to create real activities that will shape the future of regional energy</li> <li>5. Facilitated agreements amongst members bilateral and multilateral levels that draw on the advantages of both</li> <li>6. Created significant region capability to implement energy efficiency, conservation and renewable energy projects</li> <li>7. Created a framework for physical energy integration and interconnections</li> </ol>

## **OBSERVATIONS ON ENERGY COOPERATION PROGRAMS IN APEC AND ASEAN**

### **1. APEC and ASEAN energy programs both fill a clear regional need that is not addressed in any other way**

Energy is of profound importance to the countries of Southeast Asia and the Asia Pacific. As countries struggle to develop infrastructure and policy frameworks, they clearly benefit from joint approaches to issues on a regional scale and at a country level. Both EWG and ACE have had a high level of country participation, created valuable programs and serve as the primary forum for energy cooperation in their respective regions.

### **2. Regional energy issues are broad and a regional cooperation organization needs to cover a wide range of issues that are important to members.**

The energy sector encompasses a huge range of issues, many of crucial importance to the countries of Asia Pacific and Southeast Asia. In this regard, it is natural that the activities of EWG and ACE span from exploration and production through end use, and cover energy security, regulatory reform, trade and investment and physical integration of infrastructure. This broad scope can make it difficult for an organization to focus its work, measure progress, and

communicate achievements. A set of goals that are more realistic, achievable, measurable, and consistent with abilities of the organizations would make it easier to communicate results to stakeholders. However, this might be difficult in practice. It would be impossible for either organization to focus narrowly on a limited range of issues, such as power generation, interconnection, or trade. The organizations also need to retain the ability to act in response to current issues.

### **3. A “soft”, consensus-based management system is well suited to the challenges facing regional energy cooperation organizations**

There is an inevitable tension between “soft” management and the ability to focus efforts and implement programs. However, energy cooperation between a set of countries is as much diplomacy as management. In assessing the effectiveness of the two organizations, it is essential to understand that they are by design “toothless,” and can only achieve results by building agreement among members and gradually encouraging them towards implementation. It is tempting to think that the two organizations could be made more effective by developing firmer management and enforcing agreements. However, such moves to centralize decision-making and authority might introduce new tensions that could lead to conflict among members. While there is a case to be made for balance, “soft” management has been one of the key reasons for their respective successes so far and a more directive style could endanger cooperation.

### **4. The relationship between a regional energy program and the parent organization that hosts it is an important consideration**

Putting energy cooperation programs in APEC and ASEAN appears to have been effective. Both EWG and ACE have benefited from the parent’s infrastructure, while being able to achieve a fair level of autonomy. EWG and ACE have been able to maintain a primary focus on energy and their leadership has come primarily from energy ministers, senior energy officials, and representatives of working groups. However, it is clear that there is a potential divergence between the mission of a parent organization and an energy subgroup attached to it. To some degree the organizations need to make a choice as to whether the primary focus of the subgroup is to carry out the mission of its parent, or to pursue its own independent mission. As noted in the Comparative Assessment, ACE’s greater autonomy has helped it to focus directly on the energy needs of its members.

### **5. Officials from member countries can effectively provide leadership at management and technical levels, but permanent staff is needed to facilitate coordination and ensure continuity**

In both organizations, officials from member countries play key leadership and operational roles, with permanent staff providing support and coordination functions. The most important functions in both organizations are conducted by working groups led by member country officials. Putting country representatives at the forefront is crucial. Member countries must perceive direction as coming from mutual agreement rather than from a bureaucracy. Additionally, putting members in the lead keeps them directly engaged; and ensures the relevance of activities. The core efforts of the two organizations are conducted by rotating groups of government representative in a series of infrequent meetings. Additionally turnover at the political level in countries can lead to changing representation at a ministerial level. Moving and shifting location and oversight of various bodies has benefits but can make continuity difficult. Both EWG and ACE have developed mechanisms that promote continuity and keep momentum despite this fluid backdrop. While these aspects of the programs get little notice, it is

safe to say that without this infrastructure the work of EWG and ACE would be less effective. Neither organization has large numbers of bureaucratic staff or elaborate and restrictive regulations. The bureaucracy is kept small and its function supportive.

#### **6. The high level of participation by member countries has been a key part of the success of EWG and ACE**

One of the most impressive features of both EWG and ACE is the level of effort put in by representatives of member countries. Members believe that EWG and ACE benefit the region, the members and individual participants and are willing to make contributions to the whole. In addition to the larger formal meetings held by EWG and ACE, there are dozens of smaller meetings, seminars, and workshops that are organized and attended by each of the various subgroups. Members take these meetings seriously, prepare for them and consider the meetings beneficial. A large portion of the funding is contributed from annual country budgets for staff travel and hosting events, on a voluntary basis. In many ways, this set of informal contributions is as important as the central funding support.

#### **7. Both organizations integrate policy and technical issues in way that enables them to make steady progress on a range of small issues, while working gradually on big ones**

Influencing regional energy policy and development is clearly the ultimate objective of regional cooperation. However, focusing only at this level could put the emphasis on a small number of difficult and possibly controversial objectives. Market access, restructuring and sharing of natural gas resources may be more complex and could better be introduced after a platform of agreement has been established. Senior officials, at the ministerial or top civil service levels, work on policy level issues and provide direction to working groups that are responsible for the bulk of the organization's work. Work at the technical level helps to build relations between technical experts from different countries and track records as well as give the organizations small, but consistent successes.

#### **8. EWG and ACE have been effective vehicles for raising and coordinating external funds and resources, but the organizations would benefit by broadening their involvement with stakeholders**

EWG and ACE have been able to magnify their impact greatly by raising and coordinating outside resources. The two organizations have served as a platform for regional work by donor organizations, international agencies, individual countries and the private sector. One of the great successes of both organizations has been that they have been able to raise external funds far greater than their own budgetary allocations. In addition to the benefits of additional funding, this cooperation has raised their stature as the primary platforms for regional energy development. However, government agencies remain at the heart of energy work in both cases. The academic, scientific and non-governmental organization (NGO) communities could play an important and positive role in regional energy development and should be brought into the dialogue. A logical next step would be bringing these groups into their activities.

#### **9. Both organizations have effective and dedicated capacity building functions that benefit members on an ongoing basis**

Capacity building, through training, best practices, technology evaluations and other joint activities, is one of the main benefits that member countries gain from these organizations. It appears clear in both organizations that the range of capacity building programs combine with technical programs to form the glue that holds the organizations together. In these activities,

members see clear benefits that motivate active participation actively in the organization's activities. While a country may be committed to participation at a national level, the level of participation in individual working groups depends directly on perceived benefits, especially as funding for travel, or hosting events, comes from country budgets. The willingness of government to commit significant resources to their events and the quality of participation indicate that this type of activity is a success.

#### **10. EWG and ACE have made accomplishments that contribute to regional energy development and would not have happened in their absence**

As suggested in the Comparative Assessment, there are a set of functions that a regional organization can do effectively, and some for which they are less well suited. Large portions of the energy sector are a competitive market sector or controlled by actors over which EWG and ACE have little influence. Additionally, as described in the Comparative Assessment, EWG and ACE are only able to play a limited and specialized role in the vast context of regional energy development. Despite these limitations, EWG and ACE have both been ambitious in pursuing a wide range of activities and can claim an impressive set of accomplishments. These are covered in great detail in the two reports and outlined in the Accomplishments and Remaining Challenges in the Comparative Assessment section above. In broad terms the main accomplishments of the two organizations can be categorized as:

- Served as the primary platform for regional energy activities
- Helped to create a uniform approach to energy among member countries at the level of regional policy, country energy governance, and infrastructure
- Broadened access to information on energy and collected data that effectively serves as the best source for regional energy planning
- Built capacity in a large number of member country representatives at policy and technical levels
- Connected energy development to broader economic and political developments in the region

#### **11. APEC and ASEAN have a considerable track record of success and present a range of best practices in all of the areas above, many of which could be adopted directly**

ASEAN and APEC do present two similar and complementary models for successful regional cooperation in energy. There is no need to reinvent the wheel. Other regions looking to broaden their cooperation could save time and money by directly adopting or modifying organizations structures, projects and research from ASEAN and APEC.

### **CONCLUSION**

Energy cooperation programs in both organizations have played an essential role in developing cooperation in a sector that is fundamental to future growth in both regions. This assessment is valid whether judged on the basis of the overall outcomes, ability to reach stated objectives, or in the intangible benefits of tightening relationships and cooperation. In addition to their success on these grounds, the results of both organizations in the energy sector are judged to be cost effective. Especially in the case of APEC, the budget committed to energy work is very small.

While there are broad lessons to be learned from both organizations, and individual lessons to be learned from each, ASEAN presents a better and more appropriate model for SARI/SAARC countries. This is true because ACE:

- Has a structure, size and objectives that more closely resemble SAARC
- Is made up of countries from one geographic region
- Operates as a semi-autonomous entity, separate from other regional issues
- Avoids issues such as trade and sector reform, which could create controversy
- Is able to focus on a coherent set of activities of relevance to members over the longer term

### 3.1 Organizational Background

#### 3.1.1 The Asia-Pacific Economic Cooperation Forum

The Asia Pacific Economic Cooperation (APEC) is a 21-country forum with the goal of creating free and unrestricted trade and investment in the Asia-Pacific region – by 2010 for developed countries and 2020 for developing countries. The motivations behind these goals are improved economic growth and social well being for the region.

APEC's ambitious goals of free and unrestricted trade and investment, referred to as "open regionalism," are implemented through two key tools:

- Policy alignment on Trade and Investment Liberalization and Facilitation (TILF); and
- Economic and Technical Cooperation ("Ecotech") between APEC member countries.<sup>2</sup>

APEC in its current form evolved from a 1989 meeting of foreign and trade ministers from twelve Asia-Pacific countries in Canberra, Australia. The meeting was organized as part of an attempt to create an East Asian economic bloc, based on the increased interdependence between Asian economies and a desire to improve economic cooperation between these economies.

Within four years of APEC's establishment, U.S. prominence within APEC was a fait accompli: at the 1993 APEC's Leaders Meeting, former President Clinton hosted visiting heads of state on Blake Island near Seattle, Washington. By displaying a U.S. commitment to APEC at the presidential level, President Clinton bolstered the forum's legitimacy and set a precedent for annual APEC leaders' meetings. This in turn led to an ongoing commitment from the top leadership of APEC member countries and strengthened APEC's status as a regional organization.

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<sup>2</sup> Asia-Pacific Economic Cooperation, Update of Activities, May 2004 and Feinburg, Richard E. and Zhao, Ye, Assessing APEC's Process, Trade Ecotech, and Institutions, 2001.

Table 3.1 APEC and EWG Timeline

1989	<p>APEC established.</p> <p>Initial members: Australia, Canada, Japan, New Zealand, South Korea, U.S. and ASEAN countries (Brunei, Indonesia, Malaysia, the Philippines, Singapore, and Thailand). Member count: 12.</p>
1990	<p>Energy Working Group (EWG) established.</p>
1991	<p>New APEC members: China, Taiwan, and Hong Kong. Member count: 15.</p> <p>Expert Group on Energy Data and Analysis (EGEDA) established (originally called Expert Group on Energy Data; revised to encompass new duties overseeing analysis and research done by APERC, which EGEDA oversees).</p>
1992	<p>Expert Group on Energy Efficiency and Conservation (EGEEC) established.</p>
1993	<p>Expert Group on New and Renewable Energy Technologies (EGNRET) established.</p> <p>New APEC members: Mexico and Papua New Guinea. Member count: 17.</p>
1994	<p>Bogor Goals: APEC endorsed fourteen non-binding policy energy principles developed by EWG (see APEC and EWG Strategic Directions section for APEC Non-binding Energy Principles).</p> <p>New APEC member: Chile. Member count: 18.</p>
1995	<p>Osaka Action Agenda: APEC plan for energy endorsed, building on EWG initiatives to that date and establishing four energy goals (see APEC and EWG Strategic Directions section for details).</p> <p>Expert Group on Minerals and Energy Exploration and Development (GEMEED) established.</p> <p>Asia-Pacific Energy Research Center (APERC) established.</p>
1996	<p>Manila Action Plan: APEC outlines trade and investment liberalization and facilitation measures (TILF) to meet Bogor goals.</p> <p>First Collective and Individual Action Plans created, clarifying how members and APEC as a whole achieve APEC goals.</p> <p>First APEC Energy Ministers' Meeting: ministers met in Sydney, Australia on the theme of "Energy: Our Energy, Our Future."</p> <p>Asia Pacific Energy Research Center (APERC) established.</p>

	Energy Regulators' Forum (ERF) established (originally Electricity Regulators' Forum; renamed to incorporate its full role in 1999).
1997	Second APEC Energy Ministers' Meeting: met in Edmonton, Canada on the theme of "Energy: Infrastructure for Sustainable Development."  APEC Network on Minerals and Energy Data (ANMED) established.  Expert Subgroup on Environmental Cooperation (ESEC) established.
1998	Third APEC Energy Ministers' Meeting: ministers met in Ginowan, Okinawa, Japan on the theme of "Energy: Driving Force for Economic Recovery and Development."  New APEC members: Peru and Vietnam. Member count: 20.
1999	Energy Business Network (EBN) established.  New APEC member: Russia. Final member count: 21.
2000	Fourth APEC Energy Ministers' Meeting: met in San Diego, California, USA on the theme of "Turning Vision Into Reality."
2001	APEC 21 <sup>st</sup> Century Renewable Energy Development Initiative launched.  Energy Security Initiative (ESI) in planning before September 11, 2001 established September 28, 2001.
2002	Fifth APEC Energy Ministers' Meeting: met in Mexico City, Mexico on the theme of "Fostering Regional Energy Cooperation: Setting Long-term Vision and Implementing Short-term Actions."  Energy Security Initiative Workshop in Taiwan: studied (a) obstacles to energy exploration and development (regulatory and financial) and possible benefits of energy market reforms, and (b) obstacles to cross-border natural gas trade with lessons taken from earlier APEC study of cross-border electricity trade.
2004	Sixth APEC Energy Ministers' Meeting: met in Manila, Philippines on the theme of "Energy Security."

### 3.1.2 The APEC Energy Working Group (EWG)

In 1990, APEC established the EWG to harness the energy sector's potential as a driver for economic growth and social well being in the APEC region. EWG works by facilitating energy cooperation between APEC members. This is accomplished primarily through the inputs and activities of stakeholders from member countries interacting under the EWG umbrella.

APEC's energy program and the work of its Energy Working Group (EWG) are considered an APEC success story.<sup>3</sup> Established in 1990 and guided by a Secretariat based in Australia from the outset, EWG resembles APEC's organizational structure and shares its market-oriented philosophy. EWG carries out a wide range of activities at both the policy and technical levels. APEC energy sector policies and technology sharing are primarily developed and conducted by EWG and its subgroups.

Loosely administered by the APEC and EWG Secretariats, EWG is principally driven by five expert groups, each with the specific energy sector focus their respective titles suggest:

- Expert Group on Clean Fossil Energy (EGCFE)
- Expert Group on Energy Efficiency and Conservation (EGEEC)
- Expert Group on Energy Data and Analysis (EGEDA)
- Expert Group on New and Renewable Energy Technologies (EGNRET)
- Expert Group on Minerals and Energy Exploration and Development (GEMEED)

EWG has two further subgroups, for energy-related research and environmental cooperation, respectively:

- Asia Pacific Research Center (APEREC) – overseen by EGEDA
- Expert Subgroup on Environmental Cooperation (ESEC) – overseen by GEMEED

Importantly, EWG maintains linkages – “creative partnerships” – with the private sector and energy regulators from member countries, through two bodies:

- Energy Business Network (EBN)
- Energy Regulators' Forum (ERF)

### 3.1.3 Regional Energy Overview

APEC member countries represent over a third of the world's population, some 2.6 billion people, and a total combined gross domestic product (GDP) of more than U.S. \$19 trillion, roughly **60%** of world GDP.<sup>4</sup> Exports from the APEC region account for half of all merchandise exports and the region created **70%** of world's economic growth in the past 10 years.

The countries in APEC make up the world's most economically vibrant region<sup>5</sup>, but future growth will depend on their ability to provide energy to their industries and citizens. Various estimates put required energy infrastructure investments for the APEC region over the next 20 years at \$3.4 trillion to \$4.4 trillion. Additionally, most APEC member countries are net importers of energy making up **60%** of world energy demand.<sup>6</sup> APEC regional gas resources are estimated to be nearly equal to demand, but overall crude oil resources are inadequate. Energy imports to the region are predicted to continue growing rapidly, particularly as the Asian newly industrialized economies (NIEs) experience rapid economic growth, industrialization, and

<sup>3</sup> Feinberg, Richard E. and Zhao, Ye, *Assessing APEC's Process, Trade Ecotech, and Institutions*, 2001.

<sup>4</sup> Asia-Pacific Economic Cooperation, *Update of Activities*, May 2004.

<sup>5</sup> *ibid.*

<sup>6</sup> Nanto, Dick K., “Asia-Pacific Economic Cooperation (APEC), Free Trade, and the 2002 Summit in Mexico,” Congressional Research Service, The Library of Congress and Bloyd, Cary, “New and Renewable Energy: An APEC Perspective for Sustainable Development,” October 2003.

urbanization – with attendant increases in energy demand. It is estimated that by 2010, APEC member countries will import approximately **55%** of their energy requirements.<sup>7</sup>

A critical development has been the shift of the “center” of energy demand from developed western countries to developing Asian economies.<sup>8</sup> China is a prime example of this shift and the focus of recent EWG study because of the enormous impact China’s growth is having on the region and world. Chinese GDP grew at **10%** per annum in 2003-2004 and average Chinese GDP growth has hovered between **6-8%** since the 1980s. Recent Chinese demand for primary commodity imports – including energy imports – has spiked international prices. This development alone makes regional energy cooperation a vital issue, if only as a means of establishing energy security.

It is within this context that APEC saw a real need to enhance energy cooperation in energy security, infrastructure investment, and regulatory reform via EWG. Prior to APEC’s establishment, there had been little multilateral cooperation on energy between the 21 APEC member countries. This is not to say energy cooperation did not exist between APEC member countries. Energy cooperation between the U.S. and Canada has been a good example of bilateral energy cooperation. Additionally, the U.S. and Mexico have gas pipeline interconnections, albeit of a smaller volume than U.S.-Canada gas trade.<sup>9</sup> But in terms of multilateral energy cooperation, APEC EWG plays a unique and valuable role in facilitating cooperation between its 21 member countries.

### 3.1.4 APEC and EWG Strategy and Planning

From the beginning, APEC adopted core principles to address the diffuse composition of its members and the lack of a precedent for an economic forum of its scale. These core principles allowed for cooperation between members spread across Europe, Asia, Oceania, and the Americas by creating a forum that is

- non-binding,
- consensus based, and
- voluntary.<sup>10</sup>

Two APEC characteristics that influence its organizational structure and working methods are, (1) its soft institutionalism and (2) its linkages with the private sector. The former – APEC’s decentralized organizational structure – allows it to accommodate the complexities of a regional organization spanning four continents. Some critics maintain APEC’s soft institutionalism was vital to keeping momentum and building consensus at the outset, but is less practical going forward.<sup>11</sup>

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<sup>7</sup> Zarsky, Lyuba, “Energy and Environment in Asia-Pacific: Regional Cooperation and Market Governance,” *The Global Environment in the Twenty-First Century: Prospects for International Cooperation*, 2000.

<sup>8</sup> Pritchard, Robert, “Searching for Sustainable Solutions to Energy Security Concerns in APEC Economies,” 2000 (ResourcesLaw International).

<sup>9</sup> Greater U.S.-Canada trade in gas is partly the result of deregulation of natural gas industries in both countries (“APEC: Energy Issues and Trends,” Energy Information Administration, U.S. Department of Energy, May 2000.)

<sup>10</sup> Feinberg, Richard E. and Zhao, Ye, *Assessing APEC’s Process, Trade Ecotech, and Institutions*, 2001.

<sup>11</sup> Ibid.

According to a 2001 study by the APEC International Assessment Network (APIAN),<sup>12</sup> to understand APEC's institutional organization, it is crucial to recognize APEC is intentionally a "soft institution" that lacks an

- executive board (such as the World Bank or International Monetary Fund or IMF have),
- "expert bureaucracy" that pushes policy originating within APEC (unlike the Organization for European Cooperation and Development or OECD), and
- "internal capacity to monitor and evaluate the implementation of APEC programs (whereas the Association for Southeast Asian Nations does)."<sup>13</sup>

APEC stresses its economic, non-political nature, and APEC terminology reflects this: member countries are called "member economies." Although political leaders attend APEC Leaders' Meetings, the forum is meant as a way for representatives from both the public and private sectors to meet and exchange ideas, experiences, and concerns in order to promote mutually agreed to and beneficial goals.<sup>14</sup>

EWG is in many ways a subcomponent of APEC. It operates in the same soft management style and shares APEC objectives of market oriented energy development. EWG does have a clear and distinct vision for the energy sector, which has been set out in an iterative fashion in annual meetings of senior energy officials of APEC members. Meetings play a crucial role in developing policy for EWG and are discussed in more detail below.

The fundamental components of APEC's energy strategy were developed in the mid 1990's at a series of three influential annual meetings. Subsequent meetings continue to refine this strategy.

Three core components are discussed below:

- EWG's fourteen "non-binding energy policy principles" developed at the 1994 Leaders' Meeting in Bogor, Indonesia.
- The codification fourteen "non-binding energy policy principles" through the Osaka Action Program for Energy at the 1995 APEC Leaders' Meeting, which became APEC's energy plan.<sup>15</sup>
- EWG Future Directions Strategic Plan of 2001.

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<sup>12</sup> An organization of academics that follows and analyzes the design and implementation of APEC initiatives, as well as recommends ways for APEC to improve its operations.

<sup>13</sup> Feinberg, Richard E. and Zhao, Ye, *Assessing APEC's Process, Trade Ecotech, and Institutions*, 2001.

<sup>14</sup> <http://www.apec.org/apec.html>

<sup>15</sup> <http://www.apec.org/apec.html>.

**The 14 Non-Binding Energy Policy Principles developed at the 1994 Bogor, Indonesia Leaders' Meeting<sup>16</sup>:**

1. Emphasize the need to ensure energy issues are addressed in a manner that gives full consideration to harmonization 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 form of APEC to remove impediments to the achievement of these ends.
4. Recognize 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 judgment of individual economies.
5. Consider reducing energy subsidies progressively and promote implementation of pricing practices that reflect the economic cost of supplying and using energy across the full energy cycle, having regard to environmental costs.
6. Promote regular exchange of experience on the various policies being used by Member countries to achieve 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 demonstrations 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 that improve the efficiency with which energy is used but reduce greenhouse gases as part of a suggested regional response to greenhouse gas emissions.
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.

**The Osaka Action Agenda:** 1995 EWG's strategic direction – a liberal and reformist platform – is summed up by the four energy-related goals agreed to and codified at the Osaka Leaders' Meeting and based on the fourteen energy principles from Bogor:

<sup>16</sup> Zarsky, Lyuba, "Energy and Environment in Asia-Pacific: Regional Cooperation and Market Governance," *The Global Environment in the Twenty-First Century: Prospects for International Cooperation*, 2000

- improvements in public and private sector understanding of energy markets to advance better policy and business decisions;
- decreases in regulatory and institutional barriers to trade and investment in energy infrastructure, products and services;
- lessening environmental degradation due to energy production, delivery, and consumption via better access to energy technology, training in new techniques, better services, and improved investment in energy infrastructure; and
- cost decreases for public and private sectors through agreement on ‘equivalence of accreditation’ and better harmonization of standards for energy products, appliances, and services.<sup>17</sup>

**The Future Directions Strategic Plan:** In 2001, EWG recommitted itself to what it refers to as the “three E’s:” Economic growth, Energy security, and Environmental protection. This was done through the Future Directions Strategic Plan, which has these objectives:

- strengthen the security and reliability of affordable energy to members of the APEC community;
- promote clean and efficient technologies, and the efficient use of energy to achieve economic gains and environmental enhancement;
- achieve environmental improvement of energy production, use and mineral extraction within the APEC community; and
- harness all expertise available to the EWG to affect the above (three) objectives.<sup>18</sup>

Two key programs created as part of the Future Directions Strategic Plan are the Energy Security Initiative (ESI) and Implementation Facilitation Assistance Teams (IFATs), both of which are detailed below in the Energy Focus Areas and Program Initiatives section.

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<sup>17</sup> Zarsky, Lyuba, “Energy and Environment in Asia-Pacific: Regional Cooperation and Market Governance,” *The Global Environment in the Twenty-First Century: Prospects for International Cooperation*, 2000.

<sup>18</sup> <http://www.apecenergy.org.au/welcome/background/objectives/index.html>.

## 3.2 Organizational Analysis

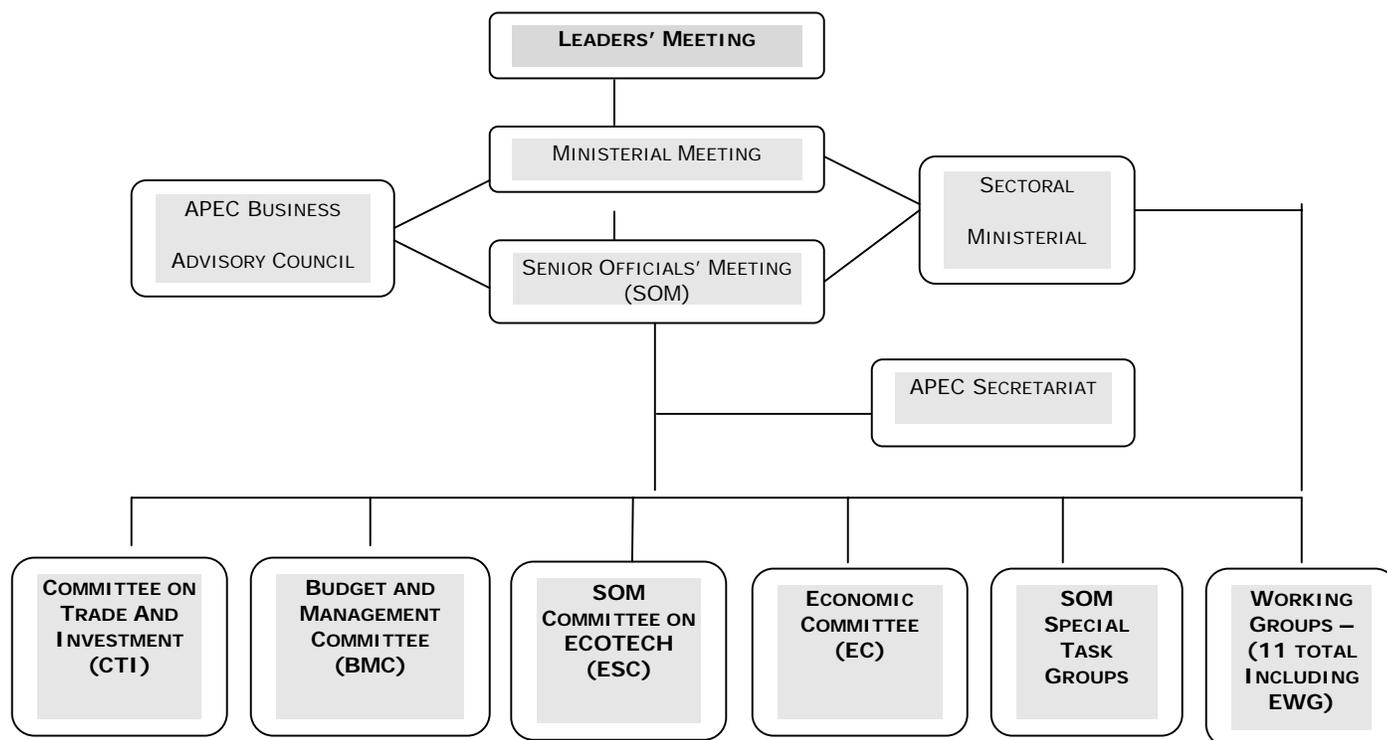


Figure 3.1 APEC Organizational Diagram

### 3.2.1 APEC Organizational Structure

Decentralized in structure and bureaucratically small by design, APEC accomplishes its mission not through a centralized and powerful secretariat, but through eleven working groups and four committees – led by representatives from member countries.

APEC itself is loosely administered by the APEC Secretariat, which was created in 1993 and is based in Singapore. A local executive director leads a team of 23 officials seconded from member countries and supported by roughly the same number of locally hired support staff. As noted earlier the EWG is unique in that it is headed by its own separate, permanent Secretariat in Sydney, Australia.

Four committees, eleven working groups, and various supporting subgroups execute projects within specific APEC economic areas. Each working group, for example, focuses on a specific area, including, among others, telecommunications and information, fisheries, industrial science and technology, and – the focus of this report – energy.

APEC's four committees are:

- the Committee on Trade and Investment (CTI),
- the Budget and Management Committee,
- the Senior Officials' Meeting Committee on Ecotech (ESC), and

- the Economic Committee (EC).<sup>19</sup>

The eleven APEC Working Groups are:

- Agricultural Technical Cooperation Working Group
- Energy Working Group
- Fisheries Working Group
- Human Resources Working Group
- Industrial Science and Technology Working Group
- Marine Resources Conservation Working Group
- Small and Medium Enterprises Working Group
- Telecommunications and Information Working Group
- Tourism Working Group
- Trade Promotion Working Group
- Transportation Working Group<sup>20</sup>

APEC's linkages with the private sector are reflected in the APEC Business Advisory Council (ABAC). Formed in 1995, ABAC is made up of a maximum of three members from each member country (one of the representatives is usually from a small and medium enterprise or SME) and gives counsel on business-related issues.<sup>21</sup> ABAC was responsible for organizing the APEC Chief Executive Officers (CEO) Forum, a chance for CEOs from APEC member countries and APEC Leaders to meet. In 2003, 500 CEOs representing companies from all APEC's 21 member countries attended the CEO Forum in Thailand.<sup>22</sup>

The Energy Business Network is another important APEC link to the private sector and will be described in the EWG Subgroups section.

### 3.2.2 EWG Organizational Structure

In many regards, EWG's decentralized structure and operations resemble those of APEC. Energy initiatives, however, are largely driven by EWG subgroups. However, by having a permanent administrative Secretariat in Australia, EWG gains an institutional consistency and stability.

Like other APEC working groups, EWG affords representatives from member countries opportunities to meet, exchange experiences, and create programs. In this forum, technical experts, policy makers, representatives from the private sector, and energy regulatory officials exchange practical information for the creation of programs. This provides a way for APEC member countries to pool expertise and experience in a systematic and cost-effective manner. It also means EWG projects are both policy-driven and technically focused. Because EWG's also provides linkages to the private sector and energy regulators – via EBN and ERF – EWG also benefits from inputs from both these groups.

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<sup>19</sup> [http://www.apec.org/apec/about\\_apec/structure.html](http://www.apec.org/apec/about_apec/structure.html)

<sup>20</sup> [http://www.apec.org/apec/about\\_apec/structure.html](http://www.apec.org/apec/about_apec/structure.html)

<sup>21</sup> [http://www.apec.org/apec/about\\_apec/structure.html](http://www.apec.org/apec/about_apec/structure.html)

<sup>22</sup> [http://www.apec.org/apec/apec\\_groups.html](http://www.apec.org/apec/apec_groups.html)

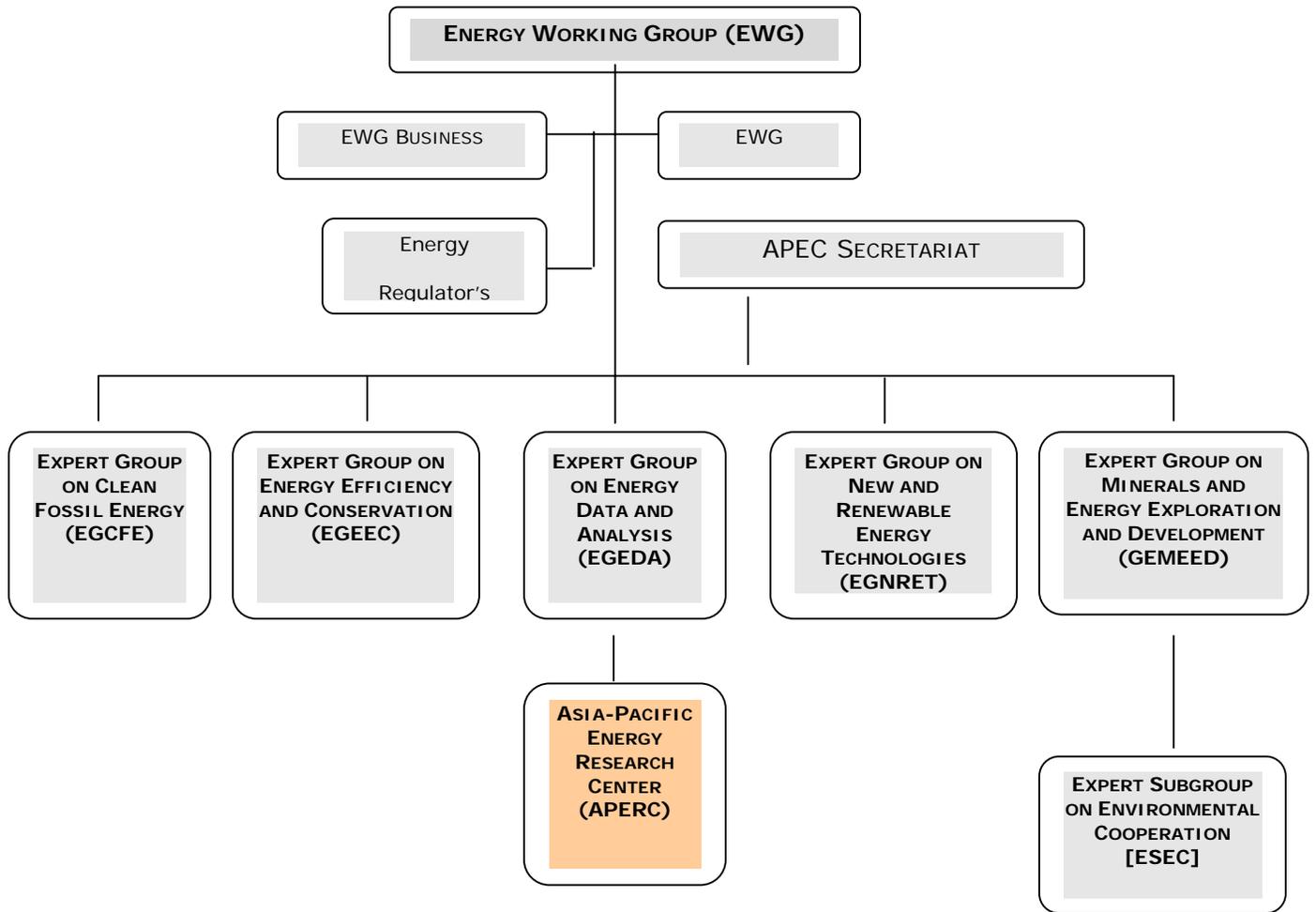


Figure 3.2 EWG Organizational Diagram

### 3.2.3 APEC and EWG Budget and Funding

APEC Budget and Funding: Funding for APEC operations comes from the APEC member countries and follows the APEC formula of basing member contributions on the size of that member's economy. As shown below, the majority of members contribute less than \$100, 000 per year and the top six contributing members give more than **65%** of total contributions.

Table 3.2 Member Economy Contributions to APEC in 2003

Member Economy	Amount (US\$)	Percentage of Total
USA	600, 840	<b>18 %</b>
Japan	600,840	<b>18 %</b>
Canada	305,427	<b>9.07 %</b>
PRC	260,698	<b>7.74 %</b>
Australia	225,649	<b>6.70 %</b>
S. Korea	187,929	<b>5.95 %</b>
Chinese Taipei	159,556	<b>4.73 %</b>

Russia	135,857	<b>4.04 %</b>
Mexico	135,189	<b>4.02 %</b>
Hong Kong, PRC	91,795	<b>2.75 %</b>
New Zealand	91,795	<b>2.75 %</b>
Singapore	91,795	<b>2.75 %</b>
Brunei	50,070	<b>1.50 %</b>
Chile	50,070	<b>1.50 %</b>
Indonesia	50,070	<b>1.50 %</b>
Malaysia	50,070	<b>1.50 %</b>
Papua New Guinea	50,070	<b>1.50 %</b>
Peru	50,070	<b>1.50 %</b>
Philippines	50,070	<b>1.50 %</b>
Thailand	50,070	<b>1.50 %</b>
Vietnam	50,070	<b>1.50 %</b>
<b>TOTAL</b>	3,338,000	

In 2003, member contributions to APEC were a modest \$3.338 million, which seems to indicate a regional cooperation such as APEC requires nominal contributions by members to cover its basic operations. These low operational costs seem to be the result of two factors:

- APEC does not have a large bureaucracy (e.g., the APEC Secretariat in Singapore is comprised of a staff slightly more than 20)
- Portions of APEC spending are in reality self-funded by members, yet these projects still fall within the aegis of APEC.

APEC funding is organized into three accounts and allocated as follows:

- APEC Administrative Account for APEC Secretariat administrative costs,
- APEC Operational Account for APEC project costs, and
- APEC Trade and Investment Liberalization Fund (TILF) – for APEC projects in support of trade and investment liberalization and facilitation.

Operational Account funds require matching contributions of **50%** from the countries that propose projects. The TILF funds, designed for activities that directly support trade liberalization, do not currently require matching funds, although they may in the future. Japan provides all of the TILF funds, which in 2003 supported projects worth 4,177,417. Administrative Funds are used by the APEC Secretariat for central purposes and are not allocated to working groups.

For overall APEC project expenditure breakdowns in 2003, please see Appendix 3.

Strictly speaking, EWG does not have its own budget as it is not considered independent of APEC. APEC does provide funding to EWG, like other working groups, for specific projects that are proposed annually to the APEC Budget and Management Committee. In 2003, these funds totaled US\$679,710. Of this \$192,800 came from the APEC Operational Fund and \$486,910 came from the TILF Fund. However, this amount can vary considerably by year and the total was as low as US\$508,929 in 2001. Traditionally, funding for EWG projects has been the second largest among working groups after the Committee on Trade and Investment. This

EWG reflects APEC's commitment to EWG and belief that its energy agenda is among the most important issues facing the region.

Unique among APEC working groups, EWG does have additional support, and a degree of organizational autonomy through financial support for a long-term Secretariat in Australia and a permanent Asia Pacific Research Center (APERC). APERC, covered in detail later in this report, has an annual budget of ¥743 million (approximately \$ 7,000,000), all provided by the Japanese government.

### 3.2.4 APEC and EWG Meetings and Events

Because APEC initiatives are not Secretariat driven, the regularly scheduled meetings of country members is at the heart of managing the organization. APEC meetings provide an opportunity for working group and committee representatives to meet regularly and make decisions on program directions. This is especially true at the working group level.

Additionally, once former President Clinton created a precedent for country leaders to attend APEC meetings in 1993, Leaders' Meetings became a forum for both bilateral talks between APEC member countries and talks regarding APEC business. Major meetings are listed in Appendix 2.

APEC and EWG milestones are often reflected by initiatives named for these meetings. In this regard, APEC resembles the World Trade Organization (WTO). Examples of key meetings that have driven APEC agendas are:

- the 1994 Bogor Leaders' Meeting and Bogor Goals, which declared the goal of making APEC a free trade and investment region by 2020;
- the 1995 Osaka Leaders' Meeting and Osaka Action Agenda, which asserted APEC's main work areas: trade and investment liberalization and trade facilitation (TILF), and economic and technical cooperation (Ecotech); and
- the 1996 Manila Leaders' Meeting and Manila Action Plan, which enhanced and added to the Bogor Goals and the Osaka Action Agenda, part of which was the Individual and Collective Action Plans (IAPs and CAPs).<sup>23</sup>

EWG holds regularly scheduled meetings with specific purposes twice a year. Both include EWG Expert Group Chairs and representatives from the 21 APEC member countries. Expert Group meetings are sponsored on a revolving basis by APEC member countries.

**Business Meetings** are the first of the two annual meetings and held in the same locale as EWG seminars on technical issues. Agendas for Business Meetings include the review of technical seminars and EWG short- and long-term planning topics.<sup>24</sup>

**Planning Meetings** are the second of the two annual meetings and designed, as their title suggests, to review plans and finalize agendas of future EWG activities. Topics covered include budgeting, review of ongoing projects, and preparation for project funding proposals.<sup>25</sup>

<sup>23</sup> "What Is APEC and What Can It Do for Business?"

<sup>24</sup> Bloyd, Cary, "New and Renewable Energy: An APEC Perspective for Sustainable Development," October 2003.

<sup>25</sup> Bloyd, Cary, "New and Renewable Energy: An APEC Perspective for Sustainable Development," October 2003.

In the past several years, it has become common for representatives from the EWG Energy Business Network (EBN) and the Energy Regulators' Forum (ERF) to attend Expert Group meetings. Official observers at EWG meetings include representatives from the Pacific Economic Cooperation Council (PECC) Energy Forum and the South Pacific Forum.

The Expert Groups additionally host meetings and workshops throughout the year, as do EBN and ERF on a less frequent basis. A complete listing of EWG events, to include all meetings for 2002, 2003, and (partially) for 2004, may be found in Appendix 2.

A number of outside groups have participated in APEC meetings:

- Regional organizations that have been invited to participate in EWG meetings as official observers include
- the Secretariat of the Association of Southeast Asian Nations (ASEAN),
- the Pacific Economic Cooperation Forum (PECC), and
- the South Pacific Forum (SPF).

Other guests have included:

- representatives from the Pakistan Ministry of Water and Power,
- the Bangladesh Ministry of Power, Energy, and Mineral Resources, and
- the Venezuela Ministry of Energy and Mines.

### 3.2.5 EWG Subgroups

EWG activities are best described through its subgroups because the EWG subgroups drive most EWG initiatives. The subgroups provide policy and technical support for member economies in their respective energy areas, as well as conduct research, organize workshops, and direct other energy-relevant initiatives.

Described below are the five Expert Groups, as well as APERC, EBN, ERF, and the Expert Subgroup on Environmental Cooperation (ESEC). Official observers and guests of EWG are also listed.

#### **The Five Expert Groups:**

**1) Expert Group on Clean Fossil Energy (EGCFE):** EGCFE collects and disseminates data and information concerning the technical, economic and policy aspects of clean fossil energy, clean technologies, and oil and gas within the APEC region. EGCFE is currently chaired by the U.S and has four initiative areas:

- the Energy Security Initiative (ESI),
- the Independent Power Production (IPP) Initiative,
- the Natural Gas Initiative, and
- the Environmental Initiative.

Within those four initiative areas, EGCFE has three program areas, each with a number of sub-programs. These programs, sub-programs, (and sources of funding for sub-programs in parenthesis) are noted below. Types of funding sources are detailed in the Budget and Funding section.

- The Oil and Gas Program:
  - Alternative Transport Fuels Study (centrally funded),
  - Clean Transport Supply Security Study (TILF fund),
  - Oil Stockpile (centrally funded),
  - Oil Market Information Sharing (centrally funded), and
  - Natural Gas as a Clean Energy Source (no funding information).
  
- The Clean Fossil Energy (CFE) Technology Program:
  - Coal Mine Gas Project in China (self funded),
  - CO<sub>2</sub> Geologic Sequestration (centrally funded),
  - Power Plant Upgrading and Refurbishing Study (TILF funded),
  - CO<sub>2</sub> Reduction Options Study (both centrally and TILF funded), and
  - CFE Technology Seminar (no funding information).
  
- The Clean Fossil Energy Policy Program:
  - Coal Flow Seminar (self funded),
  - TILF Seminar (TILF funded), and
  - CFE Technical and Policy Seminar (self funded)

**2) Expert Group on Energy Efficiency and Conservation (EGEEC):** The role of EGEEC is to promote trade in clean energy technology as it relates to energy efficiency and conservation. This includes policies and programs that promote energy conservation and the application of energy-efficient technologies. EGEEC is chaired by Taiwan (Chinese Taipei). The U.S. is vice-chair.

**3) Expert Group on Energy Data and Analysis (EGEDA):** EGEDA collects energy supply and demand data for use in policy formulation for the APEC region and manages the operation of the APEC Energy Data Base. EGEDA is chaired by Japan and oversees the Asia Pacific Energy Research Center (APEREC). Specific activities include:

- APEC Energy database
- Information on APEC member countries' energy and economies
  - APEC Energy Statistics (annual)
  - APEC Energy Handbook (annual)
  - APEC Historical Energy Statistics 1980-1992
- Joint Oil Data Initiative (JODI), a monthly oil data and analysis, which will be described in Energy Focus Areas and Program Initiatives section.

**4) Expert Group on New and Renewable Energy Technologies (EGNRET):** EGNRET's role is to facilitate dissemination of new and renewable energy technologies within the APEC region. The eventual goal is that this effort will facilitate a similar, self-replicating mechanism in member countries that reflects their respective socio-economic, political, and geographic situations. EGNRET also provides technical support for member country development and promotes clean energy technology trade.

EGNRET conducts research projects, workshops, and APEC energy initiatives relevant to new and renewable energy technologies and is chaired by the U.S. Appendix 6, Energy Focus Areas and Program Initiatives provides more details on past and present EGNRET projects.

**5) Expert Group on Minerals and Energy Exploration and Development (GEMEED):** GEMEED covers the mining industry and issues relevant to energy exploration and development, as well as supply and demand for minerals and metals. This includes topics related to technical, trade, investment, environmental, exploration and development aspects and policies for mining minerals and metals. GEMEED was established in 1996. It was proposed by Chile and South Korea and is chaired by Chile. The GEMEED Secretariat is located at the Chilean Ministry of Minerals. GEMEED additionally oversees the Expert Subgroup on Environmental Cooperation (ESEC), which is led by Japan and located in Tokyo, Japan. More information is available on the GEMEED website at [www.gemeed.cl](http://www.gemeed.cl)

GEMEED projects include the following:

- APEC Network on Minerals and Energy Data (ANMED), established in 1997,
- Survey of Factors Influencing Demand for Minerals and Metals in the APEC Region, and
- APEC Environmental Cooperation Workshops (including ECOW97, ECOW98, and ECOW99)

#### **Other EWG Subgroups:**

**1) Asia-Pacific Energy Research Center (APERC):** APERC is research body designed to improve understanding among APEC member countries about

- energy supply and demand and relevant policy issues,
- energy security,
- development of energy infrastructure,
- energy sector regulatory reform, and
- environmental degradation as a result of energy production and use.

APERC has been chaired and principally funded by Japan from its creation and is overseen by the Expert Group on Energy Data and Analysis (EGEDA). APERC performs research on all APEC energy issues and – importantly – provides APEC and EWG institutionalized research capacity. A large number of quality reports on regional energy issues are available from the APERC website: [www.ieej.or.jp/aperc/](http://www.ieej.or.jp/aperc/)

APERC is responsible for much of the research necessary for the Joint Oil Data Initiative (JODI) and in 2002 conducted a successful Sea Lane Disruption Exercise, which is detailed in the Energy Focus Areas and Program Initiatives section.

**2) Energy Business Network (EBN):** EBN provides EWG with private sector perspective on energy issues. EWG was the first of the APEC working groups to create this type of “public-private sector dialogue.” APEC member countries nominate two representatives from the business community in their countries to serve as EBN representatives. Typically representatives are energy company chief executives. EBN is chaired by the U.S.

In March 2004, EBN hosted a Workshop on Financing Energy Infrastructure in Hong Kong, which is described in more detail in the Energy Focus Areas and Program Initiatives section.

**3) Energy Regulators’ Forum (ERF):** ERF works to develop more efficient energy practices and encourage investment in energy infrastructure in the APEC region. ERF’s three priorities are to (1) assess, (2) advise, and (3) report on the energy regulation projects in EWG. ERF also

reviews regulatory practices in member countries, to compare practices that lead to more efficient development of energy markets in member countries.

ERF is chaired by Australia and staffed by government regulators from the energy sector in respective member countries. ERF meets twice a year in tandem with EWG meetings.

**4) Expert Subgroup on Environmental Cooperation (ESEC):** ESEC studies the energy sector's impact on the environment. It was established as a result of the first APEC Environmental Cooperation Workshop in 1997 (ECOW97) and overseen by the Expert Group on Minerals and Energy Exploration and Development (GEMEED). ESEC has organized subsequent APEC Environmental Cooperation Workshops annually on topics related to environmental aspects of energy exploration and production, as well as mining. Japan chairs ESEC.

### 3.3 Energy Focus Areas and Program Initiatives

As noted earlier, EWG programs are led by working groups. Because APEC member countries range from the developed to the developing, many APEC energy issues assume different a context depending on whether electricity reform is planned for Japan or Indonesia. Simultaneously, much of APEC energy direction reflects developed member countries transmitting technology and processes to developing member countries. To give some idea of APEC energy programs, several of the main energy areas and program initiatives are described below.

#### 3.3.1 Energy Security

**Energy Security Initiative (ESI):** While a range of APEC activities had energy security implications, this area took a secondary role to APEC's more commercially driven work. However, rising energy demand and prices in the mid-to-late 1990s led to more scrutiny and planning to counter supply disruptions (such as the oil shocks of the 1970s). Then within weeks of the September 11, 2001 terrorist attacks in the U.S., ESI was adopted. What had been a means to counter supply disruptions expanded in scope to become both a strategic measure to avoid supply interruption as well as focusing on counter-terrorism.

Given the current political and economic context of terrorism and high oil prices, ESI has become one of EWG's priorities. It covers oil, gas, coal and other forms of energy resources and has five objectives

- encourage expansion of energy production;
- allow more flexible fuel choices;
- prepare for energy supply disruptions;
- promote energy reforms; and
- develop trans-border energy delivery infrastructure.

Some examples of ESI in implementation include the following:

- *Joint Oil Data Initiative (JODI):* Please see a description of JODI in the Energy Sharing and Integration section.

- *The Emergency Energy Response Agreements:* These agreements specify “recommendations and actions regarding emergency response issues” to include (1) knowledge sharing and (2) related workshops on emergency response issues.
- *The Real-time Emergency Information Sharing System (RTEIS):* The operational phase of which is due to begin once EWG member countries have finished final preparatory steps. RTEIS was developed by Japan and tested between South Korea and the Philippines; a second trial took place in February 2004. Information used by RTEIS comes from the Joint Oil Data Initiative (JODI)
- *The Framework for the Discussion of Nuclear Energy within the EWG:* South Korea and Mexico created this framework and it was approved in February 2004 by all of APEC’s members. An EWG Nuclear Energy Training Program attended by nine APEC Members was held in Pusan, South Korea in April and May 2004. Implementation of the framework will be led by South Korea and Mexico.
- *The APERC April 2002 Sea-Lane Disruption Exercise:* The exercise resulted in securing an agreement from the International Maritime Organization to give technical assistance to improve navigation in the Straits of Sunda and Lombok off the coast of Indonesia.
- *Interim Framework Document on Hydrogen and Fuel Cells*
- *Best Practices on Liquefied Natural Gas (LNG) Trade*
- *Strategic Oil Stocks*
- Even domestic energy issues, such electricity reform, are considered aspects of energy security. EWG’s focus in developed countries has been to improve efficiency and in developing countries the emphases are broader and the solutions more involved:<sup>26</sup>
  - insufficient supply to meet demand;
  - rural electrification; and
  - lack of proper investment in energy infrastructure.

### 3.3.2 Energy Sharing and Integration

With 21 member countries spread over four continents, physical integration of energy infrastructure is not a realistic consideration for APEC. Instead integration refers to creating a common platform of understanding, capabilities, approach to market structure, sharing of information and openness to trade and investment.

**Joint Oil Data Initiative (JODI):** EWG has managed through the Joint Oil Data Initiative (JODI) to (1) aggregate energy data in a single database and (2) create a platform of uniformity for describing energy. JODI is an important step towards creating greater transparency of and access to oil data, but some energy data reporting remains prone to inaccuracies. Nonetheless, through JODI, APEC collects and harmonizes reporting methodology among APEC members, as well as non-APEC countries: 80 countries representing approximately **95%** of global oil production now report oil data to JODI.<sup>27</sup> Additionally, the International Energy Agency (IEA), the Organization of Petroleum Producing Countries (OPEC), the Statistical Office of the European Union (Eurostat), the Latin American Energy Organization (OLADE), and the United Nations (UN) have adopted JODI.

<sup>26</sup> Peter Smiles & Associates, *Electricity Reform in APEC Economies – The Way Ahead*, November 2003.

<sup>27</sup> <http://www.apecenergy.org.au/>

**Cross-Asia Gas Pipeline Study:** During the March 2004 Financing Energy Infrastructure Workshop hosted by EBN in Hong Kong, one of the topics covered was The Asian Gas Grid: A Cross-Border Gas Pipeline to meet Northeast Asian Gas Demand. The study described a proposed route for an Asian gas pipeline network, which would transport of gas from the Natuna Field off the coast of Indonesia to Shanghai, China. The presentation outlined the challenge of building an Asian gas pipeline, due to determining sites for pipeline, as well as the economic, technical, and political impediments involved. However, the study did suggest the project was feasible and set tentative dates for construction between 2006 and 2010.<sup>28</sup>

### 3.3.3 Renewable Energy and Energy Efficiency

**Renewable Energy:** Through the Expert Group on New and Renewable Energy Technologies (EGNRET), EWG has engaged in research, programs, and seminars, as well as created guidebooks, and organized workshops, all with the aim of reducing barriers to new and renewable energy technologies. Examples of these activities include:

- creating renewable energy resource studies;
- espousing the commercialization, i.e., privatization, of renewable energy technologies;
- developing renewable energy technologies and the services infrastructure supporting renewable technologies;
- identifying and motivating private and public sector financing;
- providing technical assistance and educational programs;
- developing policy recommendations for introducing renewable energy in members' domestic energy plans and avoiding blocks to renewable technologies usage.<sup>29</sup>

The largest and most recent EGNRET activity has been the *APEC 21<sup>st</sup> Century Renewable Energy Development Initiative*, a multi-year project with support from both developed and developing APEC member countries.<sup>30</sup> The initiative was launched in 2000 at the APEC energy ministers meeting and is designed to promote renewable energy technologies as a means to achieve sustainable economic development and growth in the APEC region.

For the first stage, in 2000 EGNRET distributed a survey among APEC energy officials, *Survey of APEC Member Economies' Renewable Energy-Based Priority Needs and Issues Relating to Sustainable Development*, to pool experiences and determine specific energy challenges of individual APEC member countries.

In 2001, EGNRET held the APEC Private Sector Renewable Energy Forum in Oregon to (a) review the survey results to create necessary add-on projects and (b) encourage private sector involvement in renewable energy projects developed at the forum. The latter reflects EWG's emphasis on energy project financing.<sup>31</sup> The forum has conducted eight collaborative projects on the following topics:

- Stakeholder Dialogues, Outreach Forums, and Symposiums, with the U.S. as lead;
- Micro-Business Development with the U.S. as lead;

<sup>28</sup> Ibid.

<sup>29</sup> Bloyd, Cary, "New And Renewable Energy: An APEC Perspective for Sustainable Development," APERC Mid-Year Workshop, October 2003.

<sup>30</sup> Bloyd, Cary, "New And Renewable Energy: An APEC Perspective for Sustainable Development," APERC Mid-Year Workshop, October 2003.

<sup>31</sup> Bloyd, Cary, "Review of APEC Expert Group on New and Renewable Energy Technologies (EGNRET) Activities," Scaling Up Renewable Energy Financing and Investment in the Asia Pacific Economic Cooperation (APEC) Region, May 2004.

- Renewable Energy Training and Certification Network with Australia as lead;
- Renewable Energy Standards with China as lead;
- Distributed Energy Resources with New Zealand as lead;
- Renewable Energy Applications with the U.S. as lead;
- Web-Based Renewable Energy Information Dissemination with New Zealand as lead economy; and
- Financing with Mexico as lead.

Some of the collaborative efforts have created renewable energy guides, accessible to other APEC members on an EWG Web-based portal; others are centralized information sources with the aim of making future harmonization between APEC member countries possible. Still other collaborative efforts assess the training and certification needs of member countries.<sup>32</sup>

**Energy Efficiency:** One example of EWG energy efficiency work was the February 2004 EWG Financing Energy Efficient Project workshop, held in Melbourne, Australia. It was the first of three workshops planned in 2004 on the subject of energy efficiency financing and created to

- involve both public and private sector stakeholders to relate various experiences and perspectives regarding financing energy efficiency project financing in the APEC region; and
- recommend best practices for strengthening attempts to encourage finance energy efficiency projects in the region.<sup>33</sup>

### 3.3.4 Energy Sector Reform and Restructuring

EWG has engaged in various activities to assess the need for reform and restructuring across the APEC region and in individual APEC member countries. The results of these efforts have been reports defining best practices and guides that serve as roadmaps for reform and liberalization. In most cases, EWG has additionally organized workshops as part of the assessment and definition stages. EWG's early effort to create linkages with the private sector and with member countries energy regulators supports APEC's philosophy on trade and investment liberalization; hence the need to engage the private sector and regulatory expertise to create a policy environment conducive to attracting investment in the energy sector. Some recent and illustrative EWG activities in that vein are described below.

The Implementation Facilitation Assistance Teams (IFATs): Inaugurated in 1999, the IFAT program is EWG's strategy for phasing energy initiatives into actual programs in APEC member countries. The Energy Business Network (EBN) played a big role in its lobbying for the implementation of IFATs, signaling private sector considerations are given real credence within APEC and EWG.

At the request of member countries, EWG assembles teams of experts from member countries, including representatives from EBN and ERF, to visit the inviting country. These teams "share expertise, experience, and give advice" regarding energy market reform.<sup>34</sup> Expert team recommendations are meant as a "non-prescriptive" way to assist a country with its core energy

<sup>32</sup> Bloyd, Cary, "New And Renewable Energy: An APEC Perspective for Sustainable Development," APERC Mid-Year Workshop, October 2003.

<sup>33</sup> <http://www.apecenergy.org.au/welcome/publications/Report.doc>

<sup>34</sup> <http://www.apecenergy.org.au/welcome/activities/projects/assets/IFATFlyer.pdf>

issues; benefits are intended for both the member countries as well as business.<sup>35</sup> Some perceived benefits for member countries include opportunities to:

- create energy market reforms tailored to their country's needs;
- benefit from the experiences of experts from other APEC countries who have undergone similar reform processes; and
- create linkages between stakeholders who might otherwise not have such an opportunity to discuss various viewpoints relevant to energy market reform.<sup>36</sup>

In turn, perceived benefits for businesses include opportunities to:

- review reforms from a private sector standpoint;
- learn about energy markets (i.e., investment potential) throughout the APEC region; and
- build contacts in the respective country's government and in its energy sector.<sup>37</sup>

There have been four IFAT visits to date:

- In 1999, Thailand invited an IFAT to study natural gas reforms in Thailand and conduct a related workshop. Issues discussed included Third-Party Access to the Natural gas Pipeline System and Power Pool Establishment by 2003.<sup>38</sup> Thailand invited a second IFAT in 2000 for a follow-up visit, which also included a study of electricity sector reform.
- Peru and the Philippines began the invitation process for IFATs to visit their countries in 2002 to study relevant energy market reforms.

**Individual and Collective Action Plans (IAPs and CAPs):** In addition to IFATs, within the larger APEC context, there are Individual and Collective Action Plans (IAPs and CAPs). IAPs and CAPs, respectively benchmark how APEC members and APEC as a whole implement actions to create free and open trade and investment in the region. IAPs are presented annually by member countries as records of actions taken and as a delineation of that country's timeline for meeting its APEC goals. CAPs record progress for APEC as a whole. Some of these areas touch on the energy sector and are thus relevant to IFATs and energy sector reform in APEC member countries:

- tariffs,
- non-tariff measures,
- services,
- investment,
- standards and conformance,
- customs procedures,
- intellectual property,
- competition policy,
- government procurement,
- deregulation and regulatory review,
- World Trade Organization (WTO) obligations, to include Rules of Origin,
- dispute mediation,
- mobility of businesspeople, and
- information gathering and analysis.<sup>39</sup>

<sup>35</sup> IFAT Brochure (<http://www.apecenergy.org.au/welcome/activities/projects/implementation.html>).

<sup>36</sup> Ibid.

<sup>37</sup> IFAT Brochure (<http://www.apecenergy.org.au/welcome/activities/projects/implementation.html>).

<sup>38</sup> IFAT Brochure (<http://www.apecenergy.org.au/welcome/activities/projects/implementation.html>).

<sup>39</sup> IFAT Brochure (<http://www.apecenergy.org.au/welcome/activities/projects/implementation.html>).

**Energy Business Network (EBN) Workshop on Financing Energy Infrastructure:** The APEC Energy Ministers at their July 2000 meeting directed EWG to develop ways to work with financial institutions to mobilize infrastructure development in the APEC region. Part of the result of that directive was the EBN-hosted Financing Energy Infrastructure Workshop in Hong Kong in March 2004. The workshop was designed to improve understanding of long-term energy infrastructure investment needs, as well as improve linkages between government officials, energy business representatives and finance sector representatives – all of whom were represented at the workshop. Best practices were drawn-up at the workshop and these were developed further in the interim between the workshop and the 6<sup>th</sup> APEC Energy Ministers' Meeting in June 2004. Ten priorities for financing energy infrastructure projects in the APEC region were determined at the workshop; these priorities address the need for better means of mobilizing private sector and other international resources. See Appendix 7 for a list of the ten priorities.

### 3.4 Accomplishments and Remaining Challenges

EWG has had many successful projects with small, but tangible outputs. However the enduring impact of the organization on the regional energy sector is broader and harder to define. The energy sector in the Asia Pacific is vast and EWG is a small organization. EWG is involved in a large number of activities in most aspects of energy in the Asia Pacific region and has contributed to developments in many areas.

It is clear that the energy sector presents APEC member countries with one of the greatest threats to their sustained growth. Member countries will need to commit massive country resources to building energy infrastructure and procuring energy supplies. The following sections explain the value of the role APEC has played in helping them to do this and some of the challenges the organization will face to continuing to be of value.

#### 3.4.1 APEC and EWG Accomplishments

- **Created an institutional structure and permanent forum for addressing the crucial energy issues facing Asia Pacific countries:** APEC created in itself an institution in which a large number of disparate countries have worked beneficially on economic and – the focus of this report – energy issues. One key factor has been Australia's lead role in EWG since its inception. This seems to have given EWG a greater deal of institutional consistency – rather than switching chairs on an annual basis in the effort to achieve fairness, while creating additional bureaucratic costs and learning time implied.
- **EWG developed a movement towards unifying the approach to energy sector development within member countries:** EWG has brought member countries together on energy issues in three main ways: sharing of information, training in common areas and by developing best practices or guidelines sector management and reform.
- **Developed the ability to deliver technical support to members:** Through the activities of working groups, implementation of joint projects, and the publications of APERC, EWG has been able to create products of value to members. Most important are those that improve the ability of member countries to manage their own energy systems. The Implementation

Facilitation Assistance Teams (IFATs) is a good example of a creative way to transfer policy and technical assistance between member countries.

- **Maintained an economically focused and de-politicized entity:** The non-political organizational philosophy of APEC allows economic cooperation (or in the case of EWG, energy cooperation) that competing political imperatives of members might otherwise make impossible. An example of the effectiveness of the strategy is that China and Taiwan have allowed their officials to attend meetings hosted in the other country, something otherwise difficult to achieve. In a similar vein, summits are referred to as meetings to allow the inclusion of non-sovereign states, such as Hong Kong and Taiwan.<sup>40</sup>
- **Established linkages with the private sector that benefit all parties:** APEC has included the private sector in decision-making and the provision of technical input: APEC's ABAC and CEO Forum, as well as EWG's EBN have shown an awareness that public-private sector dialogues and partnerships are valued and useful. EBN, for example, has given private sector insight to EWG and helped develop market mechanisms to draw much needed investment into energy infrastructure. This private-public linkage has meant that market forces, as well as energy business concerns and insights are reflected in what would have otherwise been a public-sector organization.
- **Developed a significant research capacity:** Japan's funding of APERC and research performed by the expert groups have added to regional understanding of energy issues and set in motion a stream of valuable research.<sup>41</sup> This institutionalization of research capacity<sup>42</sup> has meant there are adequate funds for energy research (e.g., through Japan's funding of APERC) and research is systematic and integrated with policy and technology dissemination.
- **Established a technical-policy fusion:** Expert Groups and other subgroups (e.g. APERC) drive technical transfers and developments through joint projects in coordination with policy visions. This provides the organization with a platform of success, an ability to benefit members and opportunities to develop deep relationships across countries. This prevents EWG from serving as a strictly policy-focused organization, which could lead to irrelevance.
- **Proved significant cooperation can be achieved within a modest budget:** APEC and EWG have developed the ability to conduct programs of value for member countries at a surprisingly low cost. This is of particular value to member countries with developing economies. Some long-term commitments make this possible (e.g. funding and leadership for APERC from Japan and for EWG from Australia). Two other factors are influential in constraining the budget: (1) APEC has purposely kept its bureaucracy small and (2) many projects are funded under the aegis of APEC or the EWG but self-funded by wealthier APEC members.

<sup>40</sup> Bergsten, C. Fred, ed. *Whither APEC?* Washington, Institute for International Economics, 1997 and Nanto, Dick K., "Asia-Pacific Economic Cooperation (APEC), Free Trade, and the 2002 Summit in Mexico," Congressional Research Service, The Library of Congress.

<sup>41</sup> Feinberg, Richard E. and Zhao, Ye, *Assessing APEC's Process, Trade Ecotech, and Institutions*, 2001.

<sup>42</sup> Feinberg, Richard E. and Zhao, Ye, *Assessing APEC's Process, Trade Ecotech, and Institutions*, 2001.

- **Established a forum to advance energy security issues:** The Energy Security Initiative (ESI) has provided a short- and long-term response to energy supply disruptions as well as the other energy challenges APEC faces.<sup>43</sup> These include
  - the Joint Oil Data Initiative (JODI),
  - the Emergency Energy Response Agreements,
  - the Real-time Emergency Information Sharing System (RTEIS),
  - the Framework for the Discussion of Nuclear Energy, and
  - the APERC Sea Lane Disruption Exercise.

### 3.4.2 Remaining Challenges for APEC and EWG

- **Keeping APEC nonpolitical:** Since 1997, major crises, such as the Asian financial crisis or the terrorist attacks of 2001 have influenced APEC's direction. APEC leaders' meetings also seem to have gained standing vis-à-vis trade ministers' meetings, perhaps an indicating that political issues are gaining and may eventually eclipse economic issues."<sup>44</sup>
- **Reconciling the tension between “soft management” and clear direction:** The consensus-based decision-making process can be slow and unwieldy. As result, a lack of progress may lead member countries to opt for bilateral trade or energy agreements because of their comparative simplicity and speed;<sup>45</sup> arguably, this is not necessarily a negative consequence. APEC may choose to guard against this soft institutionalism because institutional sprawl could be a direct consequence.<sup>46</sup> Of course, one of the strengths of APEC – and one of the reasons given for its success in bringing together such a disparate and large group of member countries in one forum – may be its non-binding characteristic. Possibly, how APEC began by necessity, in a gradualist way as a non-binding forum, does not mean APEC should not evolve into a binding, legalistic organization in order to succeed in the long term.
- **Balancing the needs of the developed and developing member countries:** SubAPEC (e.g., bilateral) trading agreements may benefit members unequally by according preferential treatment to the most economically powerful countries among APEC.
- **Improving quality of data collected for Joint Oil Data Initiative (JODI):** As with other global efforts to collect energy data, EWG has experienced difficulty in collecting information and assessing its accuracy. Though actively functional since 2002, JODI continues to be a logistical challenge for some APEC members, in terms of respective abilities and in some case intention to make timely and complete reports of oil data.<sup>47</sup>
- **Improving information dissemination and public relations capacity:** EWG Web sites suffer from a lack of regular updating and maintenance. The quality of expert group Web sites also varies, which is perhaps a reflection of APEC member oversees the expert group in question.<sup>48</sup>

<sup>43</sup> <http://www.apecenergy.org.au/>

<sup>44</sup> Kelsey, Jane, Comments on the APEC meeting from Los Cabos in Mexico, University of Auckland, and a member of the Action, Research and Education Network of Aotearoa (ARENA).

<sup>45</sup> Nanto, Dick K., “Asia-Pacific Economic Cooperation (APEC), Free Trade, and the 2002 Summit in Mexico,” Congressional Research Service, The Library of Congress.

<sup>46</sup> Feinberg, Richard E. and Zhao, Ye, *Assessing APEC's Process, Trade Ecotech, and Institutions*, 2001.

<sup>47</sup> Interview with APEC EWG staff.

<sup>48</sup> Feinberg, Richard E. and Zhao, Ye, *Assessing APEC's Process, Trade Ecotech, and Institutions*, 2001.

The following is a summary of the major milestones, agreements, declarations, plans, and organizational creations in the field of ASEAN energy cooperation. This list does not contain references to the regular meetings of AMEM, SOME, ASCOPE, etc.

Table 4.1 Historical Timeline of ASEAN Energy Cooperation

1967	ASEAN founded through signing of Bangkok Declaration
1975	ASCOPE founded
1976	Declaration of ASEAN Concord, which called for increased energy cooperation (1 <sup>st</sup> ASEAN Summit, Bali)
1977	ASCOPE Emergency Petroleum Sharing Scheme
1980	ASEAN Economic Ministers for Energy Cooperation (AEMEC) first meets. Known as ASEAN Ministers on Energy Meetings (AMEM) after 1995
1981	Heads of ASEAN Power Utilities/Authorities (HAPUA) first meets
1983	ASEAN Emergency Petroleum Sharing Scheme (supplementary to ASCOPE's)
1986	ASEAN Petroleum Security Agreement
1986	ASEAN Energy Cooperation Agreement
1987	Philippine-Indonesian Coal Cooperation Agreement (bi-lateral)
1988	ASEAN-EC Energy Management Training Center (AEEMTRC) established (1 <sup>st</sup> energy agreement with non-ASEAN partner)
1988	“Potential of Natural Gas Pipeline Connection in the ASEAN Region” study launched by ASCOPE
1990	Thailand-Indonesia Coal Cooperation Agreement (bi-lateral)
1991	Program of Action for Enhancement of ASEAN Cooperation in Energy – 1 <sup>st</sup> ASEAN action plan for energy
1992	Singapore Declaration establishing the ASEAN Free Trade Area (AFTA), a series of tariff reductions to be phased in over fifteen years (energy not specifically mentioned)
1993	Masterplan on Natural Gas Development and Utilization in the ASEAN Region launched by AEEMTRC and conducted by European Companies SNAM, Gaz de France and Trans Energy
1995	Bangkok Protocol Amending the Agreement on ASEAN Energy Cooperation – expanded the general provisions of the original agreement
1995	ASEAN Medium-Term Program of Action on Energy Cooperation (1995-1999)
1997	ASEAN Vision 2020: Resolved to “establish interconnecting arrangements in the field of energy and utilities...through the ASEAN Power Grid and a Trans-ASEAN Gas Pipeline and Water Pipeline, and promote cooperation in energy efficiency and conservation, as well as the development of new and renewable energy sources.”
1999	Hanoi Plan of Action & ASEAN Plan of Action for Energy Cooperation (1999-2004). Plan included six program areas: ASEAN Power Grid (APG), Trans-ASEAN Gas Pipeline (TAGP), Coal, Energy Efficiency and Conservation (EE&C); New and Renewable Sources of Energy (NRSE) and Regional Energy Outlook, Energy Policy and Environmental Analysis
1999	AEEMTRC becomes the ASEAN Center for Energy (ACE) on January 1, to be jointly funded by ASEAN member nations, and “with a purpose to serve as a catalyst for the economic growth and development of the ASEAN region by initiating, coordinating and facilitating national as well as joint and collective activities on energy.”
1999	ASEAN Energy Bulletin begins publication by ACE four times per year
1999	ASEAN Plan of Action for Energy Cooperation – 1999-2004
2000	ASEAN Forum on Coal (AFOC) founded and first meeting held
2000	ASCOPE TAGP Masterplan completed – identified seven gas pipeline interconnections for implementation

2000	SOME-METI Consultations begin – Cooperation venture between ASEAN Senior Officials Meeting on Energy and Japanese Ministry of Economy, Trade and Industry
2001	1 <sup>st</sup> Annual ASEAN Energy Awards – Awards for energy efficient buildings
2002	Memorandum of Understanding (MOU) on Trans-ASEAN Gas Pipeline
2002	EC-ASEAN Energy Facility (EAEF) launched – cooperation program between the EC and ASEAN to facilitate joint projects in market awareness, institutional frameworks, feasibility studies and demonstration projects.
2002	1 <sup>st</sup> SOME+3 Meeting – The first meeting of SOME with energy officials from China, the Republic of Korea and Japan present.
2002	Initiative for Energy Cooperation among Japan, China, Korea and ASEAN. A cooperation framework that recommends: (a) creation of emergency network; (b) development of oil stockpiling; (c) joint studies on the ASEAN oil market; (d) improvement of natural gas development; and (e) improvement of energy efficiency and renewable energy.
2003	ASEAN Interconnection Master Plan Study (AIMS) completed by HAPUA – recommended implementation of 11 bilateral interconnection projects by the year 2019 toward the goal of an integrated ASEAN Power Grid.
2003	ASCOPE Gas Center established – Center will be headquartered in Malaysia and will serve as the strategic technical and information resource and capacity building center in the facilitation and implementation of the TAGP and other gas development programs.
2003	Regional Energy Policy and Planning Sub-sector Network (REPP-SSN) replaces the Working Group on Energy Supply Security and Planning for ASEAN (ESSPA)
2004	ASEAN Plan of Action for Energy Cooperation (APAEC) 2004-2009

## 4.1 Organizational Background

### 4.1.1 Introduction

ASEAN was founded in 1967 by the governments of Indonesia, Malaysia, the Philippines, Singapore and Thailand. The formative Bangkok Declaration wrote “that in an increasingly interdependent world, the cherished ideals of peace, freedom, social justice and economic well-being are best attained by fostering...meaningful cooperation among the countries of the region.” ASEAN’s mission was “to accelerate the economic growth, social progress and cultural development in the region through joint ventures.” The Association retained its original configuration until the 1984 admission of Brunei Darussalam, and it was more than a decade before Vietnam’s entry in 1995. Laos and Myanmar joined in 1997, and Cambodia finalized the current membership with its accession in 1999. ASEAN today has a combined population of over 520 million, GDP of over \$600 billion, economic growth of over **4%** per annum, and is the United States’ fourth largest trading partner.

With an aspiration to become not only a regional but also an international economic powerhouse, ASEAN needs to leverage its energy endowments to ensure its future growth. According to ASEAN’s Center on Energy (ACE), ASEAN’s energy requirements will increase about **8%** per year for the next two decades. To satisfy this demand, the ten ASEAN member countries<sup>49</sup> together have reserves of 22 billion barrels of oil, 227 trillion cubic feet of natural gas, 46 billion tons of coal, 234 gigawatts of hydropower potential, and 20 gigawatts of potential geothermal capacity. Yet, ASEAN is a net importer of oil, and many of the region’s resources are yet to be developed.

<sup>49</sup> Indonesia, Thailand, Philippines, Malaysia, Singapore, Myanmar, Cambodia, Laos, Vietnam, Brunei

Understanding the centrality of sound energy policy to economic success, ASEAN has made energy sector cooperation a major emphasis in its action plans over the past quarter century. As the Association now heads toward its fourth decade and attempts to realize its “Vision 2020”,<sup>50</sup> other organizations that seek to engage in their own cooperative energy policies will benefit from a dispassionate review of ASEAN’s energy structures, successes and the challenges it continues to face.

#### 4.1.2 The Birth of ASEAN Energy Cooperation

While the cooperative ideal was at the center of ASEAN’s mission, the stimuli that truly drove the member countries toward inter-governmental and regional energy cooperation were the exogenous dual oil crises of the 1970s. The economic disruptions from the 1973 oil shock and the quest for greater oil security led ASEAN in 1975 to establish its first instrument for regional energy cooperation, the Council on Petroleum (ASCOPE). ASCOPE, described further in Part II below, was created as an independent identity with its own secretariat, and its first success would be a petroleum sharing agreement adopted in 1977.

In 1976, on the heels of the ASCOPE agreement, Indonesia, Malaysia, the Philippines, Singapore and Thailand signed the Declaration of ASEAN Concord. This would be the first of many accords to expand on the aspiration for broader cooperation in the political, economic, social, cultural and security fields. One of its provisions urged states to take cooperative action in their national and regional development programs and intensify cooperation in energy production, thus addressing similar concerns to those that had led to ASCOPE’s creation.

Over the ensuing decades, ASEAN continued to expand and deepen its commitment to energy cooperation through a number of both bi-lateral and regional agreements, protocols and organizational instruments (See ASEAN Energy Cooperation Timeline in the section above). This report will summarize those achievements, examine their operations, and analyze their effectiveness in order to learn lessons that could be transferable to the SARI-SAARC framework.

#### 4.1.3 ASEAN’s Energy Mission and Vision

The various energy groups and subgroups within ASEAN each have their own specific mission, yet the motivation for organizational energy cooperation is expressed in Article 2 of the ACE Charter, which states that Center’s purpose is “to serve as a catalyst for regional economic growth and development by initiating, coordinating and facilitating national as well as joint and collective activities on energy.” While energy security is not explicitly mentioned; this should not be interpreted as evidence that ASEAN does not consider energy security to be a primary concern. Since the UNDP defines energy security as “the availability of energy at all times in various forms, in sufficient quantities, and at affordable prices.”<sup>51</sup>, nearly all the iterations of ASEAN energy cooperation fall under the security rubric.

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<sup>50</sup> ASEAN’s Vision 2020 strategic planning document was adopted on in 1997 and the subsequent Hanoi Plan of Action was produced in 1999

<sup>51</sup> Balce, Guillermo. “Energy Security and Sustainable Development – ASEAN Region.” ASEAN Center for Energy. 2001

The six main energy cooperation program areas detailed in the 2004-2009 Action Plan for ASEAN Energy Cooperation (APAEC)<sup>52</sup> are:

- the ASEAN Power Grid (APG)
- the Trans-ASEAN Gas Pipeline (TAGP)
- Coal
- Energy Efficiency and Conservation (EE&C)
- New and Renewable Sources of Energy (NRSE)
- Regional Energy Outlook, Energy Policy and Environmental Analysis

All six support the goal of energy security as well as economic cooperation.

#### 4.1.4 Southeast Asian Bi-Lateral Energy Cooperation: Past and Present

Energy cooperation at the regional level is not mutually exclusive of bi-lateral collaborations. Rather, much of what ASEAN has done, as an association is to build on past bi-lateral arrangements while facilitating present and future ones. For instance, Indonesia maintains cooperative coal committees with both the Philippines and Thailand. In the power sector, several member states such as Thailand, Myanmar, Laos, Cambodia and Vietnam have signed memorandums of understanding (MOUs) with one or more of their neighbors to purchase or sell electricity. This nascent energy trade is a possible precursor to the considerably more ambitious aspiration to create an ASEAN Power Grid (APG) – one of Vision 2020’s stated priorities. Similar bi-lateral agreements have been made for the cross-border trade of natural gas. Natural gas pipelines connect Malaysia with Singapore, Burma with Thailand, and Indonesia with Singapore and Malaysia. Policymakers hope that these agreements presage the realization of the Trans-ASEAN Gas Pipeline (TAGP), another of the region’s foremost energy goals.

With the exception of Laos, Cambodia and Myanmar, all ASEAN member nations also belong to APEC, and they thus are also involved in that association’s energy cooperation initiatives. Furthermore, since 1992, Cambodia, Laos, Myanmar, Thailand and Vietnam (in addition to China’s Yunnan province) have belonged to the Greater Mekong Subregion (GMS), an Asian Development Bank (ADB) funded program for economic and infrastructure cooperation in the Mekong River corridor. In 2003, these countries signed their own agreement to work toward an interconnected power grid that would connect hydropower dams in China, Myanmar and Laos to markets in Vietnam and Thailand. The grid is expected to cost US\$4.5 billion, and the last of the 32 constituent projects is not foreseen to be completed until 2019.<sup>53</sup> All ASEAN nations except for Myanmar, Cambodia and Laos also belong to the Asia-Europe Meeting (ASEM), which aims to provide a connection between those two continents similar to what APEC has done for the Pacific Rim. ASEM currently is responsible for the Green Independent Power Producer Project (GIPPP), a cooperative effort that aims to transfer sustainable IPP technology from Europe to Asia. ACE is a partner in the GIPPP, maintaining responsibility for its website and newsletter. Other sub-regional groups include the BIMP East ASEAN Growth Area, which includes Brunei, Indonesia, Malaysia, and the Philippines. Finally, Thailand and Myanmar are members of BIMST-EC, a regional organization that also includes India, Bangladesh, Sri Lanka, Bhutan, and

<sup>52</sup> The ASEAN Plan of Action for Energy Cooperation (APAEC) is a 33-page long-term strategy document that is updated every five years. The current APAEC ran from 1999-2004, while the current APAEC runs from 2004-2009. The full-text PDF version may be found at <<http://www.aseansec.org/pdf/APAEC0409.pdf>>

<sup>53</sup> “ASEAN Leaders Back Huge Projects for Mekong.” Associated Press. March 26, 2003. Energy Probe Research Foundation Website. <<http://www.eprf.ca>>

Nepal. In summary, bilateral and sub-regional agreements will continue to be a critical element in building a regional energy architecture, not in spite of wider ASEAN goals, but rather in support of them.

## 4.2 Organizational Analysis

### 4.2.1 ASEAN Organizational & Energy Cooperation Structure Overview

The ASEAN Secretariat and Secretary General are at the top of the organization's structural hierarchy; however, their role is generally limited to providing facilitation, coordination and advisory support to the more specialized groups and their activities. It is the Meetings of official representatives that serve as the central forum for ASEAN cooperation. The most senior level meetings are the ASEAN Summits, at which the leaders of member nations confer. Ministerial Meetings, which are attended by the ministers of the area concerned (e.g. energy ministers for energy cooperation), form a second tier, followed by the Senior Officials Meetings (SOM). The next tier contains the forums (Forum on Coal, e.g.), which in turn are more formal than networks. Finally come the sub-sector networks, sub-committees and working groups.

For the ASEAN energy sector, the ASEAN Ministers on Energy Meeting (AMEM) provides the issues and concerns of common interest and sets policy and program directions for energy cooperation. The Senior Officials on Energy Meeting (SOME) has the overall responsibility for the supervision, coordination and implementation of ASEAN cooperation programs, projects and activities.

In the recent ASEAN Plan of Action for Energy Cooperation 2004-2009 (APAEC), SOME is given the following specific responsibilities:

- Undertake all measures for the APAEC's implementation, including determining priorities, carrying out periodic reviews, and the approval of the necessary cooperating programs, projects and activities;
- Serve as the principal coordinating body to address all issues relating to APAEC's implementation;
- Identify financial support and assistance, as well as relevant technologies from within and outside ASEAN, to include but not limited to the private sector, the ASEAN Dialogue Partners and relevant international and regional organizations; and
- Report on the overall implementation progress to the annual ASEAN Ministers on Energy Meetings (AMEM).<sup>54</sup>

The **ASEAN Center for Energy (ACE)**, established in 1999, acts as a facilitator, coordinator and information clearinghouse to enable the implementation of SOME and AMEM policy. ACE and the ASEAN Secretariat jointly prepare regular implementation progress reports for submission to the annual SOME/AMEM meetings.

The **ASEAN Council on Petroleum (ASCOPE)**, formed in 1975, is an independent body that reports, but is not accountable, to the AMEM (this relationship is represented in the chart below by the broken line).

<sup>54</sup> ASEAN Plan of Action for Energy Cooperation 2004-2009. <<http://www.aseansec.org/pdf/APAEC0409.pdf>>

There are six other specialized bodies, forums and sub-sector networks that are involved in the formulation and implementation of ASEAN energy cooperation activities, and which report to SOME/ACE (Details on these groups may be found in the following section):

- Heads of ASEAN Power Utilities/Authorities Forum (HAPUA)
- ASEAN Forum on Coal (AFOC)
- Energy Efficiency and Conservation Sub-Sector Network (EE&C-SSN)
- New and Renewable Sources of Energy Sub-Sector Network (RE-SSN)
- Regional Energy Policy and Planning Sub-Sector Network (REPP-SSN, formerly the Energy Supply Security Planning Project of ASEAN--ESSPPA).
- ASEAN Energy Business Forum

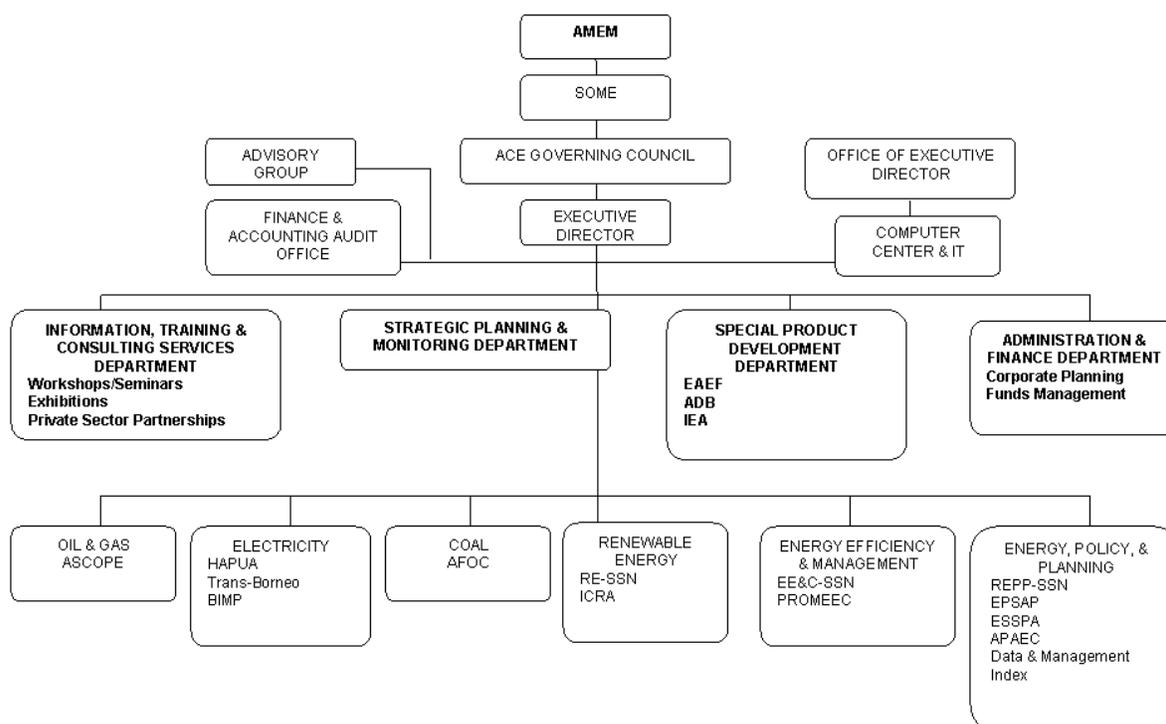


Figure 4.1 AMEM Organizational Diagram

These sub-groups convene their respective meetings as necessary, but generally at least once per year, in order to determine and implement their own priorities based on APAEC's guidelines, and to prepare the necessary project proposals and documents. Detailed descriptions of these bodies are presented in the following section.

Finally, the Sub-Committee on Non-Renewable Energy Research (SCNER) neither is connected to the NRSE-SSN nor is it under the SOME/AMEM/ACE regime. Rather, it operates under the ASEAN Committee on Science and Technology (COST) of the ASEAN Ministerial Meeting on Science & Technology. This relationship can be seen on the chart at the beginning of this section.

#### 4.2.2 ASEAN Energy Bodies

## ASEAN Center for Energy (ACE)

### ACE Overview

ACE was founded in 1999 as the replacement for the ASEAN-EC Energy Management Training and Research Center (AEEMTRC), which had been in operation since 1988. AEEMTRC's purpose had been to strengthen energy cooperation both within ASEAN and between ASEAN and the EC in order "to secure energy supply for economic and social development."<sup>55</sup> It had operated both as a training center, an information clearinghouse, and a focal point for ASEAN-EC cooperative projects. AEEMTRC's budget was primarily paid by the EC, with ASEAN only furnishing facilities and paying for general office expenses and local auxiliary staff. The original agreement was amended in 1995 so that ASEAN agreed to cover a portion of the Center's non-auxiliary staff salaries.<sup>56</sup>

In 1996, SOME recommended and AMEM approved the transformation of the AEEMTRC to an ASEAN Center for Energy, which would have its seat in Jakarta and would be given the juridical capacity to conclude agreements with states and local/international organizations, contract with other parties and be take part in legal proceedings.<sup>57</sup> As mentioned in the *ASEAN's Energy Mission* section above, ACE's stated purpose was "to serve as a catalyst for the economic growth and development of the ASEAN region by initiating, coordinating and facilitating national as well as joint and collective activities on energy." This was a subtle move away from the energy security mandate given to AEEMTRC a decade earlier.

ACE, which currently has a full-time staff of sixteen (16) and two advisors, is administered by a governing council, which is made up of the leaders of the Senior Officials on Energy of ASEAN and chaired by SOME's chairperson. Appendix IV contains an abridged version of The Consolidated Rules and Procedures of ACE and the ACE Governing Council, which explains ACE's structure and fiscal management in greater detail. The complete 100+ page document can be found at [HTTP://WWW.ASEANENERGY.ORG/ACE/CONSOLIDATED\\_RULES.HTM](HTTP://WWW.ASEANENERGY.ORG/ACE/CONSOLIDATED_RULES.HTM).

### ACE Vision, Mission, Goals & Strategy<sup>58</sup>

#### Vision

The ASEAN Center for Energy will be a catalyst for the economic growth and development of the ASEAN region by initiating, coordinating and facilitating regional as well as joint and collective activities on energy.

#### Mission

The ASEAN Center for Energy will accelerate the integration of energy strategies within ASEAN by providing relevant information, state-of-the-art technology and expertise to ensure that over the long term, necessary energy development policies and programs are in harmony with the economic growth and the environmental sustainability of the region.

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<sup>55</sup> Agreement on the Establishment of the ASEAN-EC Energy Management Training and Research Center. 1988. <<http://www.aseansec.org/925.htm>>

<sup>56</sup> Protocol Amending the Agreement on the Establishment of the AEEMTRC. 1995. <<http://www.aseansec.org/6573>>

<sup>57</sup> Agreement on the Establishment of the ASEAN Center for Energy. 1998. <<http://www.aseansec.org/2297.htm>>

<sup>58</sup> From the Introduction on the ACE Website. <<http://www.aseanenergy.org/ace/background.htm>>

## Goals

- To establish the Center as a regional institution of excellence in the initiation, coordination and facilitation of ASEAN programs in energy.
- To strengthen the region's capability in addressing global and regional issues in energy by enhancing the coordination of energy strategies of the ASEAN Member Countries.
- To facilitate intra-regional trade in energy through the establishment of interconnecting arrangements for electricity and natural gas within ASEAN such as the proposed Power Grid and Trans-ASEAN Gas Pipeline.
- To promote ASEAN cooperation in energy efficiency and conservation as effective mechanisms for demand-side management.
- To promote the development of new and renewable energy resources in the ASEAN as an instrument towards sustainable energy development in the ASEAN Member Countries over the long term.
- To serve as an energy information network and exchange center at both regional and global scales.
- To enhance the development of ASEAN expertise in energy development and management.
- To promote private sector investment and participation in energy activities of the region.

## Strategies

- Maintain a competent human resource complement
- Establish an effective and efficient organization
- Ensure sound fiscal management of the Center
- Pursue externally funded projects
- Facilitate regular high-level policy dialogues
- Establish nodal networking
- Institutionalize information networking
- Pursue energy interconnection
- Pursue sustainable energy development

## ACE Main Program Areas

Due to its central coordinating role, ACE is involved in most of ASEAN's energy cooperation initiatives, and it works with all of the subgroups and is represented at each their meetings. While these programs will be examined in greater detail throughout the remainder of the document, the following is a brief and non-exhaustive list of ACE's major roles and accomplishments in the past couple of years.

- Maintenance of the ACE website as an information clearinghouse for all ASEAN's energy related activities and subgroups
- Focal point for international cooperation partners
- Maintenance of the ASEAN Energy Database on the ACE website (in cooperation with the SOME-METI Consultations)
- Implementation of the projects conducted with the EU-ASEAN Energy Facility (EAEF), such as Cogen III, and coordinating Calls for Proposals
- Coordination of the ASEAN Energy Awards
- Publication of ASEAN Energy Bulletin four times per year and the ACE Mid-week News on the internet
- Establishment of the Green IPP Program website and newsletter

- Coordination of workshops, trainings and meetings
- Representation of ASEAN as an official observer at the Energy Charter Conference in Brussels
- Coordination of the ASEAN Energy Business Forum

### ACE Budget

Article 7 of the *Agreement on the Establishment of the ASEAN Center for Energy* states that the Center shall be partially funded by all member countries through the establishment of an ASEAN Energy Endowment Fund. Each member country contributed an equal share of US\$528,000 to the fund, and any new ASEAN member must contribute the same amount upon entry into the Association. At the end of 2002, the balance in the endowment stood at \$4,834,927.99. ACE pursues other funding sources both from within and outside ASEAN to augment this endowment. The European Union is by far the largest contributor, with Japan providing the second highest amount.

In 2003, the ASEAN Center for Energy's budget was divided according to the seven program areas in the 1999-2004 Plan of Action for Energy Cooperation. They were as follows:

Table 4.2 ASEAN Center for Energy General Budget CY 2003

AREA	ASEAN	PARTNER CONTRIBUTION	TOTAL
ASEAN Power Grid	\$5,000		\$5,000
Trans-ASEAN Gas Pipeline	\$8,000		\$8,000
Coal	\$8,000		\$8,000
Energy Efficiency & Conservation	\$58,600	\$85,000 Japan (METI) for PROMEEC	\$143,600
Renewable Energy	\$34,200	\$500K from Germany for JAMHP \$500K from Switzerland for JAMHP; \$24K from EU for Green IPP Network	\$1,058,200
Regional Energy Outlook, Policy & Environmental Concerns	\$51,200	\$180,000 from Japan for ESSPA \$20,000 from Australia	\$251,200
General, Administrative & EAEF	\$288,917		\$232,717
EAEF	\$43,800	\$7,200,000 from EU	\$7,243,800
<b>TOTAL</b>	<b>\$497,717</b>	<b>\$8,509,000</b>	<b>\$9,006,717</b>

(See Appendix III for full Audited Cash Flow Statement from 2002, the most recent available and Appendix IV for further information on ACE budget procedure)

### ASEAN Council on Petroleum (ASCOPE)

**Overview:** A council of ASEAN member countries' national oil companies, founded on an initiative by Indonesia's Pertamina in 1975. Today ASCOPE serves as the focal point for collaboration and assistance in the development, marketing and efficient use of petroleum and natural gas. It spearheads training and research, information exchange and cooperation with other organizations. Laos is the only ASEAN country that is not represented in ASCOPE, while Indonesia, Malaysia, Brunei and Vietnam are the only oil-producing members.

**Structure:** ASCOPE operates independently of ASEAN and maintains its own secretariat. The ASCOPE Council, which meets once per year, is the highest authority within the organization. Each member country operates a national committee that meets twice per year, and working committees may meet more often. The ASCOPE Secretariat, based at the Petronas Malaysia head office, coordinates administrative activities, represents ASCOPE externally and acts as an information clearinghouse.

**Key Projects:** Projects include:

- Since 1999 has taken the lead on the TAGP, both in drafting the Masterplan and carrying out the MOU
- The ASCOPE Gas Center (AGC) will carry out the new five year work program for the TAGP
- Updating of the 1986 Petroleum Sharing Agreement
- Focal point for the EAEF project “IEA/ASEAN Cooperation on ASEAN Oil Security and Emergency Preparedness”
- Development of Coordinated Emergency Response Measures (CERM)<sup>59</sup>
- 8<sup>th</sup> ASCOPE Conference & Exhibition, Nov./Dec. 2005

**Forum of the Heads of ASEAN Power Utilities/Authorities (HAPUA)**<sup>60</sup>

**Overview:** Founded in 1981, HAPUA is a forum where the top management and experts from the ASEAN power utilities gather to discuss strategic issues on regional sector developments. Its recent focus has been on the ASEAN Interconnection Master Plan Study (AIMS), completed in 2003, and the realization of the ASEAN Power Grid (APG) – a long-term objective.

**Structure:** The 22<sup>nd</sup> AMEM in June 2004 accepted the structural reorganization of the HAPUA Forum to a HAPUA Council, which will report to AMEM for the purposes of policy guidance and direction. A HAPUA Secretariat, which will be hosted on a three-year rotational basis, has been established in Indonesia.<sup>61</sup>

**Key Projects:** HAPUA’s latest reorganization establishes the following eight working groups and country coordinators:

- Generation – Malaysia
- Transmission – Thailand
- Distribution – Indonesia
- Renewable Energy and Environment – Vietnam
- Electric Supply Industry (ESI) & Services – Philippines
- Resource Development – Thailand
- Power Reliability and Quality – Singapore
- Human Resources – Malaysia

Power-related projects under the EU-ASEAN Environment Facility (EAEF)<sup>62</sup>:

- Trans-Borneo Power Grid Development Study

<sup>59</sup> For a more complete report, see “The Current Status of the ASEAN Petroleum Security Agreement, the Coordinated Emergency Response Measures and Associated Interim Steps” on the ASCOPE website, <http://www.ascope.com.my>

<sup>60</sup> For more information on these projects, see the *Minutes of the 19<sup>th</sup> Meeting of HAPUA*. June 2003. <<http://www.aseanenergy.org>>

<sup>61</sup> Report of the SOME of the 22<sup>nd</sup> AMEM. June 7, 2004.

<sup>62</sup> See description of the EAEF in the International Partners section below

- Capacity Building Program for the Power Industry of Cambodia, Lao PDR, Vietnam and Thailand
- Capacity Building Program for Power Transmission System
- Study Tour and Workshop on Power Pooling in Europe for GMS/ASEAN Interconnection Program
- Role of Regulators and Regulatory Framework
- Optimized Street Lighting in SE Asia
- Development of Strategic Environmental Assessment Platform for the Power Sector

Another power related project is the *Study on Preparing for Electricity Trading in ASEAN*, which was initiated by the ASEAN Secretariat with assistance from the Australia Development Cooperation Program. The study aims to promote greater understanding on the concept of electricity trading in ASEAN, its challenges, opportunities and options, as well as to guide the formulation of common policy for regional power interconnection and trade.

### **ASEAN Forum on Coal (AFOC)**

**Overview:** Established in 2000 “to cooperate and promote sustainable development and utilization of coal while addressing environmental issues and facilitating intra-ASEAN coal-related issues.” AFOC was preceded by an Experts Group on Coal founded in 1981 (EGC), which subsequently transitioned into the Coal Sub-Sector Network. These previous incarnations held two intra-ASEAN “coal workshops” aimed at increasing regional coal trade. A Coal Information Center was approved in the early 1980s, but it was never established. Indonesia has by far the most significant ASEAN coal endowment with a 38,000 metric ton reserve. Indonesia has signed two bi-lateral coal trade agreements with Thailand and the Philippines.

**Structure:** National Committees exist in member countries with the exception of Brunei, Laos and Vietnam. AFOC meets annually, although attendance appears to be irregular.

**Key Projects:** Recent projects and priorities include:

- Provide assistance to member countries in policy reviews
- Promote Clean Coal Technology (CCT)
- With ACE, organize seminars, technical visits, feasibility studies, technical training
- Feasibility Study for use of CCT in rural electrification
- Promote intra-ASEAN coal trade
- Facilitate feasibility study on an ASEAN coal commodity market
- Maintain updated coal database on ACE website
- Promote private sector investments through seminars and feasibility studies and coal business forums
- Provide environmental assessment of coal projects

### **New & Renewable Sources of Energy Sub-sector Network (NRSE SSN)**

**Overview:** Founded in 1995 pursuant to the Medium-Term Program of Action on Energy Cooperation with the objective of instituting and maintaining sustainable development through the use of renewable energy and its technologies. NRSE advocates the goal of achieving a **10%** share of electricity production from renewable energy (RE) by 2020.

**Structure:** Generally meets once per year, with meetings attended by ACE representatives.

**Key projects:** Include:

- ASEAN Energy Awards – New and renewable energy project competition
  - 13 entries received in 2003 (See details in key successes section)
  - NRSE-SSN Meeting judges the entries in this area and picks the winners based on a one country-one vote system.
- Joint ASEAN Minihydro Program
- ASEAN Small-Scale Renewable Energy Program (ASREP)
- ASEAN Energy Business Forum (jointly with EE&C SSN)

**Energy Efficiency and Conservation Sub-sector Network (EE&C SSN)**

**Overview:** Founded in 1995 pursuant to the Medium-Term Program of Action on Energy Cooperation 1995-1999, with the goal of expanding cooperation in EE&C through building institutions, increasing private sector involvement, enhancing public and industry awareness, and expanding markets for energy efficient products.

**Structure:** Meets annually with subcommittees meeting as needed. The Project on the Promotion of Energy Efficiency and Conservation (PROMEEC), which is split into “Buildings” and “Industries” subgroups, operates under the ASEAN-Japan SOME-METI Program, but it reports to the EE&C.

**Key Projects:** Recent/ongoing projects include:

- EE&C Best Practices Competition/ASEAN Energy Awards, in the Energy efficient buildings category
- ASEAN Energy Standards and Labeling Program
- Energy Efficiency Benchmarking in Buildings Project
- Energy Audits (together with ACE and PROMEEC)
- Capacity Building
- Establish energy audit procedures and training
- Technology transfer workshops
- Promotion of energy efficiency in the transport sector
- ASEAN Energy Business Forum (jointly with NRSE-SSN)

**Sub-Committee on Non-Conventional Energy Research (SCNCER)**

**Overview:** SCNCER concentrates its activities in three areas: cogeneration technology, natural gas and drying technology.

**Structure:** A subcommittee of the Committee on Science and Technology of the ASEAN Ministerial Meeting on Science and Technology. This is the only subgroup not under the AMEM or ACE.

**Key Projects:** Include:

- Implementation of the EC-ASEAN COGEN Program Phase III
- Drying Technology and its applications to food, agricultural and forest products. Training workshops are being conducted by SCNCER to develop expertise in the region in the design

and operation of active low drying technology. The project is supported by ASEAN Foundation.

- ASEAN-New Zealand Project on Natural Gas Technology – Training and Technology Transfer in Natural Gas Distribution Systems. SCNCER operates training sessions on gas sector development and promotion, gas application technology and gas distribution systems.

### **Regional Energy Policy and Planning Sub-sector Network (REPP SSN) (formerly ESSPA)**

**Overview:** Formerly the Working Group on Energy Supply Security and Planning for ASEAN (ESSPA), which operated under the SOME-METI work program. REPP-SSN has the role of facilitating, monitoring and participating in the SOME+3 Energy Policy Governing Group (EPGG) as required. The APAEC 2004-2009 identifies eight focal areas for REPP-SSN:

- energy policy and supply security information sharing
- capacity building in energy policy planning, supply security assessment and database development
- incorporation of environmental and sustainable development concern in regional policy formulation
- analysis and preparation of regional energy policy and outlook
- strengthen collaboration/cooperation among national and regional institutions in energy policy planning
- address energy issues pertaining to ASEAN dialogue partners
- pursue studies on evolving regional energy policy reform/issues; and
- monitoring and evaluation of the progress of the ASEAN Plan of Action for Energy Cooperation

**Structure:** Meets once per year, and ACE serves as its secretariat

**Key Projects:** Selected projects from APAEC 2004-2009:

- Updating of the ASEAN Energy Database
- Creation of an REPP Infonet
- Regular training, joint studies and technical exchanges in energy policy analysis, database maintenance and supply security assessment
- Information networking on environmental data related to energy development with entities such as the Climate Change Information Center (CCIC) of the Philippines, the Center for Energy and Environment Resources Development (CEERD) of Thailand, and the Pusat Tenaga Malaysia (PTM).
- The Institute of Energy Economics, Japan (IEEJ) is assisting in developing energy outlook models of each member country using econometric approach and Microfit software.

### **ASEAN Energy Business Forum (AEBF)**

**Overview:** ASEAN will require at least US\$100 billion to meet increasing energy demand over the next decade, and US\$7 billion for the realization of the gas pipeline networks. Private-sector investment will play a key role in carrying out these projects.<sup>63</sup> AEBF is a venue where policymakers and other stakeholders can meet to discuss potential private-public partnerships, and learn about opportunities in energy financing. Despite having the label of Forum, which

<sup>63</sup> Yong, Ong Keng. "Integrating Southeast Asian Economies: Challenges for ASEAN." Remarks at the AEBR 2004; Manila, Philippines, 8 June 2004.

connotes a higher-level organization within ASEAN, AEBF has only begun to meet with regularity within the past couple of years.

**Structure:** The AEBF has convened irregularly, with the last meeting being held in conjunction with the 22<sup>nd</sup> AMEM in June 2004. The event was co-organized by ACE, Interfama International, Leverage International, Copper Development Center, Foundation for the Use of Sustainable Energy Inc., and RISO National Laboratories. The next meeting will take place June/July 2005 in conjunction with the 23<sup>rd</sup> AMEM, which may signal a move to a more regular yearly schedule.

**Key Projects:** AEBF meetings include an exhibition area, the ASEAN Energy Awards night, and plenary sessions. At the 4<sup>th</sup> AEBF in October 2002, those sessions included:

- Future growth of energy demand and investment requirements
- Meeting long-term energy demand growth through interconnection
- More opportunities for renewables and energy efficiency and conservation
- In the midst of deregulation and regulatory reforms
- Energy, climate change and sustainable development
- ASEAN energy industry's potential for e-commerce

The theme of the AEBF 2004 was “The Rapidly Growing Market for Energy.” Session topics included:

- The energy sector in an integrated Southeast Asian market
- Investment opportunities in the light of rapidly growing energy market: oil and gas
- ASEAN Energy Awards Night
- Investment opportunities: power sector
- Investment opportunities: coal
- Investment opportunities: renewable energy
- Investment opportunities: energy efficiency
- Investment opportunities: clean development mechanism
- Seminar on wind energy development
- CEO-Ministers dialogue on investment opportunities

#### 4.2.3 ASEAN Energy Cooperation External Partners<sup>64</sup>

##### ASEAN-EU

Europe is ASEAN's oldest and most important international energy cooperation partner. The following are the collaboration's key programs:

- The ASEAN-EU Energy Management Training and Research Center (AEEMTRC) acted as the main ASEAN energy cooperation organization until its transition to ACE in 1999.
- The EC-ASEAN Energy Facility (EAEF) (<http://www.aseanenergy.org/eaef>) was launched in 2002 to facilitate partnerships between ASEAN and EU. It helps to develop and fund specific joint projects in four categories:
  - market awareness

<sup>64</sup> This section draws primarily from the ASEAN Plan of Action for Energy Cooperation (APAEC) 2004-2009, and the websites for the various cooperation programs.

- institutional frameworks
- feasibility studies
- demonstration projects

The EAEF has had three calls for proposals (CFP):

- 1<sup>st</sup> CFP conducted in 2002 (see Appendix III for detailed listing)
  - 15 projects with co-financing of Euro 2.88 million
- 2<sup>nd</sup> CFP in 2003
  - 27 projects with co-financing of Euro 5.5 million
- 3<sup>rd</sup> CFP ongoing until September 2004.
  - 25 projects with co-financing of Euro 5 million
- EC-ASEAN COGEN Program Phase III (COGEN III)
  - A program to create and promote business opportunities for the use of industrial process heat to cogenerate electricity that aims to create a partnership between ASEAN industries and European equipment suppliers.
- ASEAN Minihydro Program – operated with assistance from the German Technical Cooperation Agency (GTZ) and the State Secretariat of Economic Affairs of Switzerland (SECO). In addition, European equipment suppliers provide parts for these demonstration projects.
- Green IPP Program Network & Greater Mekong Subregion Interconnections – The Asia-Europe Meeting (ASEM) partially funds these development projects.

### **ASEAN + 3**

- The first consultations between ASEAN and the “+3” countries: China, Korea, and Japan took place in 2002.
- The Energy Cooperation Among Japan, China, Korea and ASEAN Initiative is a five-point program with the following components:
  - Creation of an emergency network
  - Development of oil stockpiling
  - Joint studies on the ASEAN oil market
  - Improvement of natural gas development
  - Improvement of energy efficiency and renewable energy
- Forthcoming ASEAN +3 Forums:
  - 2<sup>nd</sup> Natural Gas Forum - September 2004
  - 1<sup>st</sup> Renewable Energy Forum - September 2004
  - 2<sup>nd</sup> Energy Security Forum - December 2004
  - Joint meeting of the ASEAN +3 Oil Market and Oil Stockpiling Forums - 1<sup>st</sup> Quarter 2005

### **ASEAN-Japan**

- SOME-METI (Ministry of Economy, Trade and Industry) Consultations established in 2000
  - Projects include (around \$200,000/year METI contribution):
    - Regional Energy Policy and Planning Sub-sector Network (REPP SSN), formerly named Energy Supply Security Planning in ASEAN (ESSPA)

- Development of the ASEAN Energy Database (AED) on the ACE website, through which one can access and search historical energy reporting formats and energy balances of member countries
- ASEAN Demand-supply energy analysis
- Seminar on Energy Security in Asia held in Tokyo, March 2002
- ASEAN+3/International Energy Agency Joint Workshop, Tokyo, December 2002
- Program for the Promotion of Energy Efficiency and Conservation (PROMEEC) in Buildings and Industries
  - PROMEEC Buildings:
    - Workshops, building energy surveys and audits
      - Nomination of buildings to the ASEAN Energy Awards competition for energy efficient buildings
    - ASEAN Working Group for Benchmarking and Audit Guideline Development Project
    - 10-day study tour in Japan for Group members on benchmarking techniques and energy conservation technologies applied in modern construction
  - PROMEEC Industries
    - Covers the following industries and countries:
      - Singapore: Food
      - Thailand: Caustic Soda (chemical)
      - Brunei: Cement
      - Cambodia: Garments
      - Indonesia: Pulp and Paper
      - Laos: Power Generation
      - Malaysia: Textiles
      - Myanmar: Oil Refining
      - Philippines: Steel
      - Vietnam: Porcelain
    - Activities include:
      - Energy audits
      - On-the-job training of local personnel
      - Local workshops on energy conservation technologies
      - Development of a database and benchmarking system
- Clean Development Mechanism: Japan is considering potential CDM projects as well as joint activities for R&D in fuel cells and hydrogen energy.

### **ASEAN-Australia**

- Cooperation programs directed by the ASEAN-Australia Economic Cooperation Program (AAECP), now in Phase III, and the ASEAN-Australia Development Cooperation Program - Regional Partnership Scheme (AADCP-RPS)
- Energy Policy and Systems Analysis Project (EPSAP) - aims to enhance the capacity of ASEAN energy policy makers to assess the impacts and cost effectiveness of alternative energy options.
  - EPSAP operates in Indonesia, Malaysia, Philippines, Thailand, Vietnam, Cambodia, Laos and Myanmar
  - Analysis reports have been completed, with one in the pipeline:

- Indonesia – Gas utilization: National Gas Pipelines, Alternative Fuel Mix for Power Plant and Demand Sectors
- Malaysia – Fuel Diversification: Economic and Environmental Impact of Alternative Fuel Mix Targets
- Philippines – Impact of Natural Gas Market Expansion
- Thailand – Removing the Subsidy on LPG and Implementing a Policy to Increase the Use of CNG in Transport
- Vietnam – The Strategy Orientation for Electricity Supply.
- Regional study – The Trans-ASEAN Energy Network
- Study on Preparing for Electricity Trading in ASEAN - coordinated with the ASEAN Secretariat. The study aims to promote greater understanding on the concept of electricity trading in ASEAN, its challenges, opportunities and options, as well as to guide the formulation of common policy for regional power interconnection and trade

### **ASEAN -United States**

While there is currently no direct cooperation between the United States and ASEAN with regard to energy cooperation, such cooperation did exist to some extent primarily before 1990.

- 1977: 1<sup>st</sup> ASEAN-US Dialogue
- 1978: 2<sup>nd</sup> ASEAN-US Dialogue agrees to a joint working group on energy.
- 1980: 3<sup>rd</sup> ASEAN-US Dialogue. ASEAN and the United States agreed on a program of technical assistance, professional development, and formal exchange.. The U.S. proposed establishment of an ASEAN-U.S. consultative group on energy, which leads to signing of First ASEAN-US Cooperation Agreement in Energy.
- 1982: 4<sup>th</sup> ASEAN-US Dialogue. Second ASEAN-US Cooperation Agreement in Energy signed. The Agreement provides for one million dollars over three years for assistance in coal/lignite substitution, energy conservation, and research and development of new and renewable energy technology.
- 1983: 5<sup>th</sup> ASEAN-US Dialogue. The US indicated that approval in principle has been given to further AID funding for the energy conservation buildings project and agreed to consider the extension of the coal training activity.

After the early 1980s, development cooperation between the US and ASEAN increasingly focused on agriculture, health and the environment. In 1989, the US began the Private Investment and Trade Opportunities Program (PITO), and stated that future cooperation would emphasize this approach, which aimed at enhancing the development of ASEAN and providing benefits to US firms through increased trade and investment activities. In 1992, USAID committed \$17.5 million over six years to the ASEAN Environment Improvement Program (EIP), yet this program did not have any specific energy component. During the 11th ASEAN-US Dialogue in Brunei Darussalam in May 1993, the US indicated that its assistance to ASEAN would be carried out solely through PITO and EIP.

### **ASEAN-India**

The 3<sup>rd</sup> ASEAN-India Summit will take place in November 2004 at which the Declaration on ASEAN-India Vision 2020 will be up for adoption. The Plan proposes the following cooperation activities in the energy sector:

- Establishment of an ASEAN-India Gas Grid

- Establishment of an ASEAN-India Association of Oil and Gas Companies
- Harmonization of electricity grids for optimum utilization of electricity
- Cooperation in non-conventional energy

### **ASEAN-Energy Charter Secretariat, Brussels**

- ASEAN became an official observer to the Energy Charter Secretariat in Brussels in December 2003
- ACE is the ASEAN focal point and may attend all meetings of the Energy Charter Conference and its subsidiary bodies, and it will receive all Energy Charter documentation.
- ASEAN hopes to observe best practices that will aid in the implementation of the ASEAN Power Grid and Trans-ASEAN Gas Pipeline

### **Other Partners**

ASEAN conducts various individual projects with international organizations such as:

- World Bank
- United Nations Development Project
- Asian Development Bank (ADB)
  - ADB is currently funding a major series of energy-related projects in the Greater Mekong Sub-region
- International Energy Agency
  - Joint project: “Role of Regulators and Regulatory Frameworks in ASEAN Electricity and Gas Sector Reform: a Comparative Examination of National and Regional Models.” (Outlined below in Part III, Energy Sharing/Integration: Sector Reform and Restructuring).
    - IEA/ASEAN Study Tour on “European Electricity and Gas Regulators”, an eight day tour for Southeast Asian experts to examine working regulatory models
    - Framework Drafting Meeting for an ASEAN Forum for Energy Regulators
    - IEA/ASEAN Cooperation on ASEAN Oil Security and Emergency Preparedness (Outlined below in Part III, Energy Sharing/Integration: Sector Reform and Restructuring)

## **4.3 ASEAN’s Energy Focus Areas**

### **4.3.1 Energy Security**

The creation of ASCOPE in 1975, ASEAN’s subsequent petroleum sharing agreements and bilateral coal agreements have all indicated the importance of energy security to the member nations. Over the years, however, ASEAN energy cooperation has evolved to the point at which today there is generally a less explicit focus on energy security. For instance, when the ASEAN-EC Energy Management Training and Research Center was established in 1988, its mission was to strengthen energy cooperation in order “to secure energy supply for economic and social development.” Yet when ACE was chartered in 1999, its mission did not include any language specifically relating to energy security. Furthermore, the Working Group on Energy Supply Security and Planning for ASEAN (ESSPA) just recently changed its title to the Regional Energy Policy and Planning Sub-sector Network (REPP SSN). While REPP-SSN does still conduct projects relating to energy supply security assessment and database development, the removal of

“Supply Security” from the working group’s title suggests that energy security is now seen as an element of the larger policy planning program.

Be that as it may, the current rise in crude oil prices has caused ASEAN to become increasingly attentive to the economic risks of Middle Eastern oil dependence, and one of ACE’s current mottos is “Toward Energy Security and Sustainable Energy in ASEAN”. Southeast Asia now has fewer oil reserves than Europe, and only Malaysia and Brunei produce more oil than they consume. Indonesia, ASEAN’s largest oil producer and only OPEC member, this year became a net oil importer for the first time.<sup>65</sup> In response to these concerns, AMEM once again encouraged research into clean coal technology, the increase of renewables to **10%** of energy supply, and a greater effort in energy efficiency and conservation. The June 2004 ASEAN+3 consultations discussed oil stockpiling, increasing regional oil and natural gas exploration, and expanding the use of renewable energy. The consultations also agreed on the “need to enhance the regional capacity for timely emergency response by sharing information under the Joint Oil Data Initiative (JODI) through the energy security communication system on a voluntary basis.”<sup>66</sup> ASCOPE and SOME have also worked to update the 1986 Petroleum Security Agreement, and a draft of new Coordinated Emergency Response Measures (CERM) has been created. The CERM would assist an ASEAN member country facing an oil shortage with an aggregate amount equal to an increase of **10%** of its normal domestic requirement.

ASEAN has also partnered with the IEA on an EAEF-funded program, “ASEAN oil security and Emergency Preparedness.”<sup>67</sup> The activities under this project have included:

- IEA/ASCOPE “Asian Oil and Energy Security” Seminar, 2000, Kuala Lumpur
- Japan-ASEAN “Energy Supply Security Planning Workshop 2001”, Bangkok, 2001
- APEC EWG “Energy Security Initiative” Workshop, Bangkok, 2001
- Detailed review of the 1985 ASEAN Petroleum Security Agreement (APSA)
- IEA/ASEAN/ASCOPE “Oil Stocks and Emergency Response Measures” Workshop and Site Visits, 1-5 September, Europe
- APEC EWG “Energy Security Initiative” Workshop, Seoul, 2003
- IEA/ASEAN/ASCOPE Workshop “Oil Supply Disruption Management Issues”, 5-8 April 2004, Siem Reap, Cambodia

It is clear that energy security concerns have not disappeared, rather they have evolved. This report’s introduction noted that the UNDP defines energy security as “the availability of energy at all times in various forms, in sufficient quantities, and at affordable prices.”<sup>68</sup> When one considers the issue with this broad understanding, nearly all iterations of ASEAN energy cooperation can be seen as falling under the security rubric. The six main program areas of APAEC 2004-2009: the ASEAN Power Grid (APG), the Trans-ASEAN Gas Pipeline (TAGP), Coal, Energy Efficiency and Conservation (EE&C), New and Renewable Sources of Energy (NRSE), and Regional Energy Policy and Planning, all support the goal of energy security as well as economic cooperation. The recent refocusing on oil security underscores the importance these issues.

<sup>65</sup> Arnold, Wayne. “Southeast Asia Worries About Oil.” *International Herald Tribune*. June 11, 2004.

<sup>66</sup> Joint Ministerial Statement, AMEM + 3. “Forging Closer ASEAN + 3 Energy Partnership.” June 9, 2004.

<sup>67</sup> A full report can be found at <<http://library.iea.org/dbtw-wpd/textbase/work/2004/cambodia/background.pdf>>

<sup>68</sup> Balce, Guillermo. “Energy Security and Sustainable Development – ASEAN Region.” ASEAN Center for Energy. 2001

### 4.3.2 Energy Sharing/Integration

Integrating regional infrastructure is one of ASEAN's biggest challenges, because of the economic, development and geographical diversity of its member countries. For instance, Indonesia and Malaysia are massive archipelagos, the Philippines is an island nation, and even many of ASEAN's contiguous members are separated by mountain ranges or large rivers. In addition to these challenges, infrastructure will take massive financial investments, the majority of which will need to be borne by member countries or the private sector. Since ASEAN members must rely primarily on their own national resources to build infrastructure, ASEAN's role is to ensure cooperation and coordination between its member countries' projects, and to help lift economic and political barriers to such cooperation.<sup>69</sup>

The disparities between member countries have led to the Initiative for ASEAN Integration (IAI), which is designed to reduce the development gap between the new and old ASEAN members. Out of the IAI's 54 current projects, seven are EAIEF-funded infrastructure ventures with a total budget of approximately \$2 million. Out of these, the four projects below specifically deal with capacity building, which will be a critical prerequisite to any future regional interconnections:

- Power Industry Capacity Building
- Capacity Building Program for Power Transmission System Personnel in Cambodia
- Study Tour and Workshop on Power Pooling in Europe for Greater Mekong Subregion/ASEAN Power Interconnection Program
  - Institutional Strengthening and Capacity Building in the Oil and Gas Sectors

Energy sharing and integration can be seen as falling into two broad categories: soft integration, which includes databases, meetings, etc. and hard integration, which involves infrastructure projects.

#### 4.3.2.1 "Soft" Integration: Meetings, Databases & Information Sharing

The creation of the ASEAN Center for Energy was a key advance toward the goal of regional energy policy integration. ACE acts not only as a project facilitator and as a representative at energy related meetings, but also as an important information clearinghouse. It is an online host for the ASEAN Energy Database, the REPP Infonet and the Green IPP Program Network database. The ACE website (<http://www.aseanenergy.org>) also carries updated regional energy news stories, back copies of the ASEAN Energy Bulletin publication, and links to the various energy bodies, networks and forums. ACE also aids information sharing and integration in its role as focal point for non-ASEAN international cooperation program partners.

Beyond ACE, the main forum for energy sharing and integration is through the meetings and forums of the various ASEAN energy groups. These meetings provide positive externalities and intangible benefits through the exchange of ideas and expansion of ASEAN's energy knowledge base.

Bi-lateral and multi-lateral accords between member countries, such as the oil and coal security agreements, are another manner of integrating national economies. Attempts at coordinating

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<sup>69</sup> Ibid.

energy sector reform and rationalizing or eliminating tariffs through an ASEAN Free Trade Area have a similar purpose.

The ASEAN Energy Awards, as well as the programs aiming to create an ASEAN-wide energy efficiency labeling and benchmarking standards are yet another method of sharing best practices and integrating member countries' efficiency and conservation programs. The Energy Awards will be detailed further in Section IV below.

#### 4.3.2.2 "Hard" Integration: Infrastructure<sup>70</sup>

ASEAN's boldest and most ambitious energy cooperation goals are in infrastructure interconnections. ASEAN's Vision 2020 and the subsequent Hanoi Plan of Action and Plans of Action for Energy Cooperation all have stated that an ASEAN Power Grid and a Trans-ASEAN Gas Pipeline are among the organization's main priorities.

##### **ASEAN Power Grid**

The ASEAN Interconnection Masterplan (AIMS) was completed by HAPUA in March 2003, and it identified 14 possible interconnection projects. The AIMS determined that it would not be economical to fully integrate the power systems of all 10 ASEAN countries. It recommended instead that the power system be split into two systems: East and West, with 11 interconnections. AMEM has approved these 11 projects, of which only two are currently operational. Two other projects are scheduled to be commissioned by 2007, with three others to be begun by 2009. The remaining projects would commence after 2009, with the goal of all interconnections being operational by 2020.

HAPUA has been tasked to implement the ASEAN Power Grid program, which includes the goals of optimizing the generation sub-sector, encouraging critical private sector participation and addressing barriers to interconnections.

Other power interconnections are being pursued on either a bilateral or sub-regional level. These include

- Greater Mekong Sub-region Interconnection
- Brunei, Indonesia, Malaysia, Philippines Interconnection (BIMP)
- Trans-Borneo Power Grid
- Indonesia-Malaysia-Thailand Growth Triangle Power Connections

##### **Trans-ASEAN Gas Pipeline (TAGP)<sup>71</sup>**

The TAGP is to natural gas what the ASEAN Power Grid is to electricity, and it is the second program under APAEC 2004-2009. A Memorandum of Understanding (MOU) was signed by the 20<sup>th</sup> AMEM in July 2002, which sets out the cooperation framework for greater public-private partnership and collaboration in the implementation of the TAGP.

According to APAEC 2004-2009, member countries can initiate individual and/or joint studies, either on a bilateral or multilateral basis, to support and encourage the production, utilization,

<sup>70</sup> Much of this overview is taken from a report on infrastructure that can be found on the ASEAN Secretariat website. <<http://www.aseansec.org/13656.htm>>

<sup>71</sup> Much of this section is edited from the APAEC 2004-2009.

distribution, marketing and sales of natural gas among ASEAN member countries. They should also undertake both a national and regional assessment of the legal and institutional frameworks for cross-border natural gas pipeline issues such as: commercial and economic feasibility, construction, financing, pipeline operation and maintenance, supply transportation and distribution. Pursuant to the MOU, studies on the following must be conducted:

- Financing
- Technical Specifications
- Access and Use
- Supply Security and Emergency Supply Arrangements
- Health, Safety and Environment
- Transit Rights
- Taxation and Tariffs
- Abandonment of Pipelines
- Jurisdiction

The TAGP master plan concluded that there are enough gas supplies within ASEAN to meet the future growing demand for the region. These supply points could economically be connected to the demand centers through pipelines that would have to pass through national borders and meet certain economic, technical and regulatory standards. Furthermore, the Study concluded that the sustainability of the TAGP interconnection project will rely on the discovery and development of potential gas resources in the region. It was also noted that the development of the East Natuna gas field in Indonesia will greatly influence the timing, occurrence and realization of the TAGP project.

ASCOPE has reviewed and submitted to the ASEAN Secretariat the "Roadmap for Integration of ASEAN: Trans-ASEAN Gas Pipeline Implementation," in which Seven (7) gas interconnection projects have been identified for implementation. Among these projects, firm commitments have been secured for the gas pipeline interconnection projects between Sumatra, Indonesia and Singapore and W. Natuna (Indonesia - Duyong (Malaysia)). Ratification of the TAGP MOU by all member countries is a key factor in the implementation of this infrastructure project.

The ASCOPE Gas Center (AGC) and the ASEAN Gas Consultative Council (AGCC) have been tasked with the implementation of the approved 5-year TAGP work program. For further detailed information on the TAGP, the TAGP Masterplan and Interconnection projects, you may visit the ACE website.

### 4.3.3 Sector Reform and Restructuring

Power sector reform and restructuring is regarded in ASEAN as primarily a domestic affair. Yet there is a role for ASEAN and ACE in aiding the coordination member countries' programs in order to expedite regional interconnections and electricity trading. ASEAN member countries have a mixture of public and private ownership of the electricity generation, transmission and distribution sectors. Singapore is the one exception, since it has a completely private electricity sector. According to ACE, Brunei, Cambodia, Laos and Myanmar currently have vertically integrated public electricity sectors and no plans to move toward privatization. The other six member countries are all moving toward full consumer choice, though their timelines differ considerably. Without a rationalized policy on sector reform, it will be considerably more

difficult for ASEAN to succeed in establishing either the Trans-ASEAN Gas Pipeline or the ASEAN Power Grid.

To aid in this effort, the International Energy Association (IEA) is partnering with ASEAN to capacity build in the arena of sector reform and restructuring. They are cooperating under the EAEP-funded project, “Role of Regulators and Regulatory Frameworks in ASEAN Electricity and Gas Sector Reform; A Comparative Examination of National and Regional Models.”

Activities include:

- “European Electricity and Gas Regulators”, an eight-day study tour to Europe for ASEAN regulators to help build capacity
- Workshop focusing on policy and models for national regulators
- Workshop focusing on regional regulatory frameworks
- Framework drafting meeting for an ASEAN Forum for Energy Regulators
  - Planning for a new Forum that would provide a venue for the exchange of ideas and the development of common goals and standards among SE Asian regulators.

#### 4.3.4 Renewable Energy, Energy Efficiency & Conservation

Renewable Energy and Energy Efficiency/Conservation are also main priorities within ASEAN energy cooperation, and they comprise Programs 4 and 5 in APAEC 2004-2009.

#### **Renewable Energy (RE)**

For renewable energy, APAEC 2004-2009 outlines the following priorities:

- *To develop a policy and institutional framework for the development of RE*
  - Recommend a regional policy on RE
  - Capacity building through transfer of technology, knowledge and skills among ASEAN countries.
  - Conduct dialogues, trainings, study tours and consultation workshops
- *To promote the development and contribution of RE in energy supply*
  - Achieve 1,500 MW capacity addition for power generation from RE, with a goal of **10%** share of generation by 2009.
  - Support financing of RE projects
  - Compile potential projects planned for implementation up to 2009
  - Increase international cooperation
- *To further strengthen information networking in RE.*
  - Continue the implementation of PRESSEA and ASEM Green Independent Power Producers Program Network
    - PRESSEA: Promotion of Renewable Energy Systems in Southeast Asia
      - Joint program of ASEAN (represented by ACE) and the EU
      - Objective: to collect and disseminate information of high importance to the public and private sector involved in RE in Southeast Asia and the EU. It also seeks to establish a renewable energy information network that facilitates information exchange between potential partners in the development, promotion, and utilization of renewable energy sources and technologies.

- Coordination of training sessions to facilitate the exchange of information on RE best practices and technology.
- *To promote Intra-ASEAN Cooperation of ASEAN-made products and services*
  - Update compilation of existing specification and standards of Member Countries in the ACE's online NRSE-SSN Infonet
  - Conduct market study on various RE technologies
  - Develop/harmonize standards for RE products
  - Strengthen local manufacturing capabilities for RE products
- *To promote the utilization of biomass-based cogeneration technology*
  - Coordinate more closely with EC-ASEAN COGEN Program
- *To promote the utilization of biofuels*
  - Facilitate technological cooperation and R&D
  - Conduct market studies to fully determine the commercial potential of bioenergy.

### **COGEN III Project<sup>72</sup>**

The COGEN III Project is a critical element in the potential success of priorities 5 and 6 in APAEC's renewable energy strategy. According to its website, COGEN 3 promotes the implementation of proven, clean and efficient biomass, coal, and gas cogeneration projects by facilitating business partnerships between ASEAN industries and EUROPEAN suppliers.

While COGEN Phase I (1991-1994) was mostly a planning phase, COGEN Phase II (1995-1998) was a demonstration phase combining technical and business expertise. The purpose of COGEN Phase II was both to demonstrate that proven European technologies were available to support biomass-based cogeneration in ASEAN countries, and to enhance EU-ASEAN economic co-operation.

COGEN II focused on 16 full-scale demonstration projects promoting real reference projects using proven biomass-based technologies. In addition, COGEN Phase II directly increased EU-ASEAN economic co-operation by:

- approximately 60 million Euro
- contributing 354 MWth/74MWe to the ASEAN energy supply
- avoiding 250,000 tons of carbon equivalent/year of emissions
- increasing ASEAN awareness of indigenous biomass resources (up to 6,000 MW total capacity)
- increasing the availability of European technologies within ASEAN
- increasing European supplier's competitiveness and the European image in the ASEAN market

COGEN 3 is the third phase of the EC-ASEAN cooperation program. It is an enlargement both in terms of new member countries within ASEAN and in terms of an expanded range of fuel. Now, in addition to biomass, coal and gas cogeneration technologies are being promoted. The program is coordinated in ASEAN by the Asian Institute of Technology (AIT), Bangkok, Thailand and in Europe by Carl Bro International AB, Sweden. COGEN 3 started its operation in January 2002 and will continue until December 2004.

<sup>72</sup> Cogen III Website: <http://www.cogen3.net>

The objective of COGEN 3 is to promote and create business opportunities for the use of cogeneration to generate power and heat using biomass, coal or gas as fuel. This will be achieved through partnerships between ASEAN industries and power producers and European equipment suppliers. The program is endowed with a team of experts covering different aspects of cogeneration, and these experts are committed to helping accelerate the implementation of cogeneration projects.

COGEN 3 also acts as a business and investment facilitator through matchmaking appropriate technology supplied by European Equipment Suppliers to ASEAN end-users. In addition, technical assistance is provided throughout the process to ensure smooth project implementation.

#### Joint-ASEAN Minihydro Program (JAMP)<sup>73</sup>

JAMP is a project conducted by ACE for the promotion of Minihydro in the ASEAN region. The project is sponsored by the State Secretariat for Economic Affairs (SECO) of Switzerland and the German Ministry for Economic Cooperation and Development (BMZ)

#### **ASEAN Energy Awards – Renewable Energy**

The ASEAN Energy Awards, which have been described elsewhere in this report, are a way to showcase success stories in RE and energy efficiency/conservation. For RE, the Awards evaluate projects in both an on-grid and off-grid category. The entries to last year's competition demonstrate the breadth of RE projects currently underway within ASEAN.

##### On-Grid Category:

- Ampohaw Mini Hydroelectric Power Project (Philippines)
- Bo Keo Hydro Electric Project (Thailand)
- Cicemet Microhydro Power Project (Indonesia)
- Integrated Photovoltaic Project, Changi Naval Base (Singapore)
- Wind Turbine Generation Project in Phuket (Thailand)

##### Off-Grid Category:

- Ricehusk-fired Cogeneration Power Project (Malaysia)
- Biogas Application for Economic and Social Development in Rural and Remote Areas Project (Vietnam)
- Integrated Renewable Energy for Small Agro-Processing Unit Project (Indonesia)
- Keck Seng (Malaysia) Berhad Integrated Palm Oil Processing Complex - Maximizing the Utilization of In-house Renewable Energy Sources Highlighting Biogas Project (Malaysia)
- Photovoltaic Battery. Charging System for Non-electrified Remote Villages in Thailand
- Solar-Wind Hybrid System Project (Singapore)
- Thai Biogas Plants-High Rate Anaerobic Fixed Film Technology for Agro-industrial Waste Water Project (Thailand)
- Three (3)-kW Baang Microhydro Power Project, Philippines

#### **Energy Efficiency & Conservation (EE&C)**

Program 4 of the APAEC sets out six priorities in EE&C.

- Information Sharing and Networking

<sup>73</sup> DeWata Minihydro Website, < [http://www.aseanenergy.org/dewata\\_mhp/](http://www.aseanenergy.org/dewata_mhp/)>

- Collection of policies, strategies and programs from member economies
- Finalization and dissemination (through ACE website) of an EE&C Directory of Products and Technologies
- Finalization and dissemination (through ACE website) of an Directory of ASEAN EE&C Resources
- Finalization and dissemination (through ACE website) of papers/studies/research on EE&C best practices.
- Increase public awareness on EE&C through media campaigns
- ASEAN Energy Standards and Labeling
  - The SOME of the 20<sup>th</sup> AMEM in Indonesia endorsed a standard label to promote awareness on ASEAN energy efficient products. The SOME requested the EE&C-SSN to identify the products to be covered by the ASEAN standard label and to formulate the required standards and procedures for certification of labeling. For this purpose, a committee for ASEAN Standards and Labeling Program was created.
- Expansion of Private Sector Involvement
  - Extension of ASEAN Best Practices Competition Awards (ASEAN Energy Awards) to include an energy efficient building category
  - Utilization of the ASEAN Business Forum to encourage private sector participation.
- Capacity Building
- Promotion of the Energy Service Company (ESCO) Business Model. ESCOs have not been widely used within ASEAN due to a lack not only of awareness, but also of a financial, institutional and legal framework. To correct these deficiencies, the APAEC recommends:
  - Development of an ASEAN-wide measurement and verification protocol
  - Development of a legal framework for energy performance contracting and a standard contract form
  - Development of project management and institutional guidelines
  - Development of energy savings benchmarks
  - E-commerce development for energy services.
- Promotion of Energy Efficiency in the Transport Sector

Please also refer to Part II's *ASEAN Energy Cooperation External Partners*, in which the section on ASEAN-Japan cooperation has a detailed description of the Program for Promotion of Energy Efficiency and Conservation in Buildings and Industries.

#### 4.3.5 Rural Electrification

Rural electrification projects within ASEAN are mostly conducted pursuant to member countries' domestic initiatives, such as the National Electrification Administration in the Philippines and the Office of Rural Electrification in Thailand.

Furthermore, rural electrification is not specifically mentioned in any of the six main programs within the APAEC, nor is it an impetus for the proposed ASEAN Power Grid. Yet, there are several projects, mostly a result of the EC-ASEAN Energy Facility (EAEF), which focus on rural electrification. These EAEF projects include:

- Rural Electrification Decentralized Energy Options
- Jegu Mini Hydro Demonstration Plant
- Standard for Mini Hydropower Planning & Design in Vietnam and its Neighboring Countries

- Feasibility study on the use of clean coal technology in rural electrification

The Joint ASEAN Minihydro Project (JAMP) is a project conducted by ACE for the promotion of minihydro, a technology that can benefit rural electrification. In partnership with the German and Swiss governments, the Dewata Tea Estate Minihydro Project has brought electricity to 1000 villagers who used to rely on the Estate's diesel generators.

#### 4.4 Accomplishments

- **ASEAN Center for Energy (ACE):** Through ACE, ASEAN has created an institution that function as the primary vehicle for addressing regional energy cooperation.

As is evident throughout this report, the creation of ACE in 1999 out of the ASEAN-EC Energy Management Training and Research Center (AEEMTRC) was a key success in establishing greater regional energy cooperation. ACE acts not only as an information clearinghouse, but also as a critical coordinator of regional programs, a liaison between the energy bodies within ASEAN, and the main focal point for international cooperation partners.

It is clear that a dedicated energy organization can play a critical role in the development of regional energy cooperation, for without ACE, regional energy cooperation within ASEAN would be vastly less effective.

- **International Cooperation Partners:** ASEAN has successfully engaged multiple international partners to help it achieve its energy goals.

ASEAN has succeeded in leveraging significant international assistance for energy cooperation projects. While the largest commitment continues to come from the European Union, which provides over 6 million euro yearly to fund projects in the EU-ASEAN Energy Facility, other nations such as Japan, Australia and New Zealand have also made significant commitments. Furthermore, ASEAN is beginning to explore cooperation with the “+3” nations of China, Japan and Korea.

International partnerships not only bring critical investment to the region, but also bring valuable technology and knowledge transfers. They also allow smaller member nations to gain economies of scale in capacity building and technology and policy evaluation.

- **Capacity Building & Best Practices:** Through a broad range of technical programs and documented best practices, ASEAN has been able to serve as an effective vehicle for delivering capacity building support to members.

ASEAN, through the meetings, project and activities of its working groups, offers its members a wide range of ways to improve the knowledge and capability of members. On their own, each country may be too small to be able to implement adequate capacity building activities, explore technologies, compare policies and learn from the experience of others. ASEAN provides the economy of scale to make this effective.

The annual ASEAN Energy Awards competition began as a showcase for best practices in the field of energy efficient buildings, but its success has led to two additional competition categories: on and off-grid renewable energy projects. In 2003, 13 entries were received for these new categories, including mini-hydro, wind and cogeneration projects.

- **Regional Energy Dialogue:** There is value to the process that some refer to as the “talk shop.”

A common conception is that regional bodies such as ASEAN are incapable of converting talk into action. While it is true that meetings, proposals, studies and agreements tend to outnumber actual on-the-ground accomplishments, it would be a mistake to relegate these activities to the realm of pointless process. The annual meetings of AMEM, SOME and the various subgroups that comprise ASEAN’s energy cooperation may not always result in immediate, tangible action, yet the cross-border dialogue on energy issues is itself valuable. Dialogue and formal agreements can have a normative effect that changes attitudes over time. This dialogue also has the effect of building a strong and enduring network of professional relationships among regional energy leaders.

When one views the evolution of ASEAN energy dialogue over the past three decades, it is evident that much has indeed changed. From the initial focus on oil security, ASEAN today has come to embrace alternative energy and efficiency in a manner that would have been impossible in 1967 given the region’s developmental state. While much progress is yet to be made, the normative effect of thirty years of multi-lateral agreements and conversation is clear, and criticism of ASEAN’s energy bodies as mere “talk shops” should be viewed in this long-term context.

- **Facilitating Bilateral as Well as Regional Agreements:** Bilateral agreements will continue to be a critical element in the building a regional energy architecture, not in spite of regional ASEAN goals, but rather in support of them.

It is unrealistic to expect that regional projects such as the Trans-ASEAN Gas Pipeline (TAGP) and the ASEAN Power Grid (APG) will be successful overnight or even in the short-term, and thus the inability to reach these goals or even meet ambitious targets should not necessarily be viewed as failure. Nor should one disparagingly view the lesson that one of ASEAN’s greatest contributions is the facilitation of bi-lateral agreements, rather than the achievement of its grand, sweeping multi-lateral aspirations. Instead, one should take away the realization that bi-lateral agreements and progress is indeed critical to future multi-lateral success. For instance, with regard to the TAGP and APG, if enough countries within ASEAN successfully complete bi-lateral cross-border interconnections of their gas pipelines and power grids, these individual actions should make the goal of fully regional interconnections more feasible.

In other words, while today’s multilateral cooperation may in fact be facilitating bilateralism, it is today’s bi-lateral agreements that are the cornerstones to future multilateral success.

- **Energy Adaptation: Increasing the Role of Energy Efficiency, Conservation and Renewables.** While ASEAN responded to the 1970s oil crises through the creation of ASCOPE, in the 1990s and 2000s, the region has continued to adapt with an increasing emphasis on efficiency and renewables.

Although oil and coal remain the staples of ASEAN's energy economy, ASEAN has made giant strides in the areas of energy efficiency, conservation and the use of renewables. With assistance from partners such as the EU-ASEAN Energy Facility and the Japanese Ministry of Economy, Trade and Industry, ASEAN has launched successful initiative such as the Joint ASEAN Minihydro Project, the Green IPP Network and the Standard Labeling Program. The success of these programs, the best of which are honored with the ASEAN Energy Awards, should continue to attract interest and investment to the region, while also creating positive environmental externalities.

- **Creating a Framework for Further Energy Integration and Interconnections:** ASEAN has made significant progress in laying the groundwork for infrastructure integration.

ASEAN has continued to update its energy security accords, such as the 1986 Petroleum Sharing Agreement, while making progress with regional databases that can be accessed through the ACE website.

With regard to hard infrastructure, the recent completion of the Trans-ASEAN Gas Pipeline Masterplan (TAGP), the signing of the MOU on the TAGP and the establishment of the ASEAN Gas Center under ASCOPE have all moved the region toward achieving a framework in which actual progress could be made. While the TAGP may never come to fruition in a complete form due to the immense costs involved, the multilateral negotiations involved in the masterplan process can be seen as a success.

#### 4.5 Remaining Challenges

- **Bureaucratization of the ASEAN Center for Energy**

While ACE will continue to play a central role in increasing the effectiveness of regional energy cooperation, as the organization grows it will become a challenge for it to remain focused on its role as facilitator, focal point and information clearinghouse without becoming a burdensome bureaucracy. The recent ACE reorganization hopefully is not a step down this path.

- **Increasing International Partnerships & Investment**

While ASEAN has been successful in creating and maintaining international energy partnerships, further opportunities could be explored. The EU-ASEAN partnership is the current benchmark for success in this area, while the United States is conspicuously absent as an ASEAN regional partner.

Furthermore, expanded international financial investment will be critical if ASEAN is to raise the \$100 billion it has been estimated will be necessary to develop energy infrastructure at the same pace as economic growth.<sup>74</sup> Since all of ASEAN's member economies are developing, the majority of these investments must come from abroad. ASEAN should be able to

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<sup>74</sup> "Infrastructure." <<http://www.aseansec.org/13656.htm>>

leverage its goal of **10%** of electricity generation from renewables into new joint ventures through the Global Environmental Facility and the Clean Development Mechanism.

- **Real integration and interconnection of the regional power grid and gas pipeline network**

The goals of the ASEAN Power Grid and the Trans-ASEAN Gas Pipeline are grand in scope, yet they are far from being realized. While it is important to have goals toward which to work, it is also important that ASEAN not expend resources on unrealistic programs. The costs involved in APG project are massive, and the transmission losses over long distances also pose a concern. Furthermore, the development disparities between ASEAN members complicate the power interconnections due to the varying reliability of the individual power systems. Even if the APG and the TAGP do not come to ultimate fruition, bi-lateral and sub-regional interconnections will likely continue, and over time these may begin to evolve into a larger, more cohesive system.

- **Funding for Energy Infrastructure**

ASEAN faces major challenges in funding energy investment, with some estimates suggesting \$100 billion will be required over the next decade to keep pace with growth. It will be impossible for member governments to provide all of this funding, so there is a critical need for an increase in private sector investment. The ASEAN Energy Business Forum, the COGEN III program, PRESSEA and the Clean Development Mechanism are all possible avenues to involve the business community in the energy field.

- **Maintaining the integrity and relevance of the ACE website and other online databases**

ACE has become a central information clearinghouse for ASEAN energy programs and data. To be most effective, however, there is a need to keep websites and databases consistently updated, with Internet links kept fresh and active. Too many pages are “under construction” on the ACE website, and recent documents and meeting minutes are slow to appear. There is also a need to improve the search functions of both the ACE websites and databases.

A broader and more consistent participation in data sharing projects would also be beneficial. Such participation might increase if participants were confident that the reported data would actually be utilized.

- **Develop a system of internal and external evaluation of programs and initiatives**

There are very few, if any, evaluations of ASEAN energy cooperation that are available on the Internet. ASEAN might consider developing a more robust and organized system of both internal and external reviews in order to ensure that ACE and the other energy bodies are operating at a high level of efficiency and effectiveness.

- **Balancing the funding of regional programs vs. funding of individual country projects**

There will inevitably always be a tension between the external funding of bi-lateral and regional development projects. It is important to note, however, that because member

countries are well connected through the many iterations of ASEAN energy cooperation, bilateral assistance between an individual member country and an external donor will likely have “trickle down” effects throughout the region.

### Case Study in the Development of an Energy Cooperation Initiative: Thailand’s “Bioenergy Revolution Strategy for Asia”

Member countries may propose new initiatives to AMEM for discussion, as Thailand’s Ministry of Energy recently did with its “Bioenergy<sup>1</sup> Revolution Strategy for Asia”. This proposal, which called for exchanging technological and market expertise in ethanol and biodiesel, was presented to the SOME of the 22<sup>nd</sup> AMEM. The proposal suggested a strategy to reduce the long-term impact of rising oil prices by shifting fuels consumption from gasoline/diesel to ethanol and biodiesel. The advantage of biofuels are that they can be produced in ASEAN in lieu of importing oil and thus enhance regional energy security.<sup>1</sup>

Thailand recommended that the Bioenergy Initiative be developed in four key areas:<sup>1</sup>

- Creation of a forum for closer and more focused cooperation, possibly at an energy sub-sector level
- Formation of a partnership to explore market opportunities and commercialization of ethanol and biodiesel in Asia
- Establishment of a linkage with the automotive and related industries in order to advance technological expertise and R&D
- Arrangement of an ASEAN or ASEAN+3 International Bioenergy Forum

This proposal was taken up by SOME, which recommended the following actions:<sup>1</sup>

- To incorporate the proposal as part of the activities of the New and Renewable Sources of Energy Sub-Sector Network (NRSE-SSN) under the APAEC 2004-2009
- To develop promotional activities such as workshops/seminars to promote the utilization of bioenergy
- To disseminate information relating to bioenergy technology and market developments
- To establish linkages with the automotive and related industries to advance R&D, and to establish an ASEAN/ASEAN+3 Bioenergy Forum.

The 22<sup>nd</sup> AMEM “considered and endorsed” the SOME Report as well as the APAEC 2004-2009 in which the Thai proposal on biofuels was included. AMEM also agreed to the greater utilization of biofuels within ASEAN.<sup>1</sup> The future of the Bioenergy Strategy is now in the hands of the RE-SSN, which will be responsible for the initiative while receiving support from ACE.

## Section 5

# Energy Sector Activities in the Bangladesh-India-Myanmar-Sri Lanka-Thailand–Economic Co-operation (BIMST-EC) and the Greater Mekong Subregion (GMS)

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The Bangladesh-India-Myanmar-Sri Lanka-Thailand – Economic Co-operation (BIMST-EC) is an economic organization that aims to link countries in region of the Bay of Bengal and the Eastern coast of the Indian Ocean through increased trade and economic cooperation. BIMST-EC was first discussed by Bangladesh, India, Sri Lanka and Thailand at a meeting in Bangkok in June 1997. A Bangkok Declaration produced on June 6, 1997 lays out its aim, purpose and principles. Myanmar joined BIMST-EC in 1997. Bhutan and Nepal followed in February 2004. According to BIMST-EC, the “inter-regional grouping will serve as a bridge between the five SAARC countries and two ASEAN countries.”

BIMST-EC states that membership is restricted by the following statement: “Countries seeking membership should satisfy the conditions of territorial contiguity to, or direct opening into, or primary dependence on the Bay of Bengal for trade and transportation purposes.” However the entry of Bhutan and Nepal strain this criteria.

BIMST-EC has an informative website at <http://www.BIMST-EC.org/> and an energy committee website at <http://www.BIMST-EC-energy.org.mm/>

BIMST-EC’s Chairmanship rotates among member countries. The sequence so far has been Bangladesh (1997 – 1999), India (2000) Myanmar (2001-2002) and Sri Lanka (2002 - 2003) and Thailand (2004 -).

At the first meeting of BIMST-EC Economic/ Trade Ministers meeting in August 1998, members decided that BIMST-EC would cooperate in the six areas. These areas and their current chairs are listed below.

- Trade & Investment – Chair country: Bangladesh
- Technology – Chair country: Sri Lanka
- Transportation and Communication – Chair country: India
- Energy – Chair country: Myanmar (since the beginning)
- Tourism – Chair country: India
- Fisheries - Thailand

Myanmar has been in charge of the Energy Committee since its creation in 1998.

There are also four Energy Sub Sector Committees:

- Enhancement of intra-regional co-operation through an action plan for the development and utilization of natural gas, wind, solar and water/ tidal waves, energy sources. Chair country: Myanmar.
- Energy infrastructure development projects (natural gas). Chair country: Thailand.
- New and renewable sources of energy projects. Chair country: India.
- Establishment of an energy information centre. Chair country: Myanmar.

Currently BIMST-EC is conducting four energy projects:

- BIMST-EC Trans-Power Exchange and Development Project (Myanmar & India & Thailand)
- Strengthening Education Infrastructure through the use of Renewable Energy Technologies (Myanmar)
- Demonstration Project for Small & Medium Scale Industries Using Biomass Gasifier System as Energy Source (India)
- Study on Reduction of Transmission and Distribution Losses, Energy Audit, Sharing of Technical and Management Expertise and Training Facilities Available in the BIMST-EC Sub region (India)

It is too early to evaluate the long-term success and impacts of BIMST-EC's energy cooperation program. It does seem to be modeled on ASEAN and does not appear to offer any new approaches that are not better represented by APEC or ASEAN.

Although the organization does include India and Bangladesh as founding members and has recently added Nepal and Bhutan, BIMST-EC is not likely to be the ideal vehicle for fostering energy cooperation in South Asia. Currently Pakistan is not a member. Published reports imply a suspicion that India is blocking Pakistan's entry on the basis that the nation does not meet the initial criteria that members be located on the Bay of Bengal. However, the inclusion of Nepal and Bhutan gives cause for skepticism. The inclusion of Thailand and Myanmar, as well as the potential entry of other non-South Asian countries may also dilute the organizations South Asia focus.

For these reasons it appears that BIMST-EC would be a less effective vehicle for developing long-term energy cooperation in South Asia than SAARC. At the same time, cooperation on energy issues within BIMST-EC would also have less positive feedback to broader regional cooperation than the same success would in SAARC.

#### Greater Mekong Subregion Energy Sector Activities

Energy sector cooperation in the Greater Mekong Subregion exists mainly through the GMS Program, which was established with support from the Asian Development Bank in 1992. The GMS Program brings together Cambodia, the People's Republic of China (PRC), Lao People's Democratic Republic (Lao PDR), Myanmar, Thailand, and Viet Nam. It has activities in ten sectors:

Agriculture	Telecommunications
Energy	Tourism
Environment	Trade
Human Resource Development	Transport
Investment	Multisector

The objective of energy cooperation is to utilize and develop the energy potential of the region by creating cross-border power transmission connections and facilitating efficient electricity trade. The GMS energy program consists of two main efforts, the Electric Power Forum (EPF), which was established in 1994, and the Experts Group on Power Interconnection and Trade (EGP). A chart of the meetings of these two forum is below. The objectives of the forum are to facilitate the integration of national networks and grids for power trading at the subregional

level. In pursuit of these objectives the two groups also focus on planning, regulatory, technical, and institutional issues. The groups also serve as a focal point for energy sector capacity building programs funded by the ADB.

In November of 2002, ministers of GMS countries signed the Inter-Governmental Agreement (IGA) on Regional Power Trade in the Greater Mekong Subregion (GMS) allow the six members to cooperate in the planning and operating of their power systems. It also created the Regional Power Trade Coordination Committee to coordinate activities aimed at promoting power trade.

More information on energy cooperation in the GMS is available at:  
<http://www.adb.org/GMS/GMS-SA-energy.asp>

Table 5.1 EPF and EGP Activities

<b>Electric Power Forum (EPF) and Experts Group on Power Interconnection and Trade (EGP) activities</b>	
November 2003	GMS Countries Chart Concrete Work Plan for Developing Cross-Border Power Trade in the Subregion
October 2002	GMS Countries Prepare for the Next Steps to Further Advance Regional Power Trade
May 2002	GMS Countries Close to Finalizing Both the Master Plan on Power Interconnection and the Agreement on Power Trade
December 2001	GMS Energy Officials and Experts Hold Back-to-back Meetings in Hanoi, Viet Nam to Review Power Interconnection Plans and to Finalize Power Trade Arrangements in the GMS
June 2001	GMS energy experts meet to review findings of the ongoing Study on the Regional Indicative Master Plan for GMS Power Interconnection, and to finalize the draft of the Inter- Governmental Agreement on Power Trade
December 2000	Seventh Meeting, 6 December 2000, Vientiane, Lao PDR
October 1999	Sixth Meeting, 28-29 October 1999, Phnom Penh, Cambodia
December 1998	Fifth Meeting, 11-12 December 1998, Bangkok, Thailand
December 1997	Fourth Meeting, 29-31 October 1997, Hanoi, Viet Nam
December 1996	Third Meeting, 12-13 December 1996, Kunming, Yunnan Province, People's Republic of China
December 1995	Second Meeting, 12-13 December 1995, Vientiane, Lao PDR
April 1995	Inception Meeting, 24-25 April 1995, Yangon, Myanmar

Unlike energy cooperation in APEC, ASEAN and BIMST-EC, the GMS is not a regional economic cooperation organization led by member countries. It does not have a formal organizational structure or dedicated budget outside of that contributed by the ADB. The primary energy focus of the GMS is power trading. The GMS energy program may be of interest to subregions in SAARC with similar geographic and economic conditions.

The following Best Practices (BPs) reviews provide a snapshot of three important developments in the energy sector in East Asia. They have been selected to provide a range of examples that highlight different approaches being taken to address key issues in the Asian energy sector. The BPs are drawn from developing countries in East Asia as these are members of ASEAN and APEC, share many characteristics with South Asian countries and build on the broader conclusions of the APEC and ASEAN Reports.

These BPs represent programs by regional governments, singly or in combination that address key common issues in a strategic fashion. Each represents a comprehensive potential approach to an issue shared across countries and each program has achieved sufficient progress to be able to draw meaning. The three selected BPs are:

- **Regional:** Building a platform for Regional Inter-connection: ASEAN Power Grid & Trans-ASEAN Gas Pipeline
- **Thailand:** Raising capital and creating efficiency through Stock Market Listings: Partial privatization of the Petroleum Authority of Thailand (PTT PLC)
- **Philippines:** Creating a legal framework for reform: Electric Power Industry Reform Act of 2001 (EPIRA)

Energy sector developments in Asia, as in the rest of the world, are works in progress. Different countries are proceeding on different paths and no one model can claim to be appropriate for all situations. The term Best Practice is difficult to apply in the energy sector, so this report uses it loosely.

Some Best Practices may achieve short-term goals in ways that inhibit longer term plans. In other cases the right path depends more on conditions in individual countries. While Asia has begun to privatize generation of electric power, Latin America has made greater progress in the transmission and distribution sectors. The Philippines and Thailand have built successful development programs around power purchase agreements. However, while PPAs are an effective short-term fix for inadequate power supply, they have longer-term consequences, often including higher prices. It is almost uniformly agreed that a regulatory framework and sweeping mandate for reform is an essential platform. However, regulatory frameworks are broad issues that include court independence, rule of law, role of consumers, and private property rights. Thailand passed sweeping national privatization master plans and detailed an aggressive framework for power restructuring after the 1997 crisis. However, the current government has changed course.

This set of Best Practices aims to serve as a guide to several of the most interesting developments in the Asian Energy sector. It does not recommend the implementation of these Best Practices nor does it imply that there is a right path to take. Energy officials in other countries are encouraged to regard the examples reviewed here as case studies that provide valuable lessons from peers rather than as models that should be implemented directly.

## 6.1 Regional Interconnection Projects: ASEAN Power Grid and Trans-ASEAN Gas Pipeline

Two regional projects coordinated by ASEAN, the ASEAN Power Grid and Trans-ASEAN Gas Pipeline, offer concrete models of success that could be replicated by other regions. While the two projects are both works in progress, they share a number of solid achievements including creation of uniform standards across countries, identification and initiation of component projects, and establishment of structured frameworks for integrating and advancing the projects.

The ASEAN Vision 2020 calls for cooperation to develop an integrated energy infrastructure in the region built around the ASEAN Power Grid and Trans-ASEAN Gas Pipeline. Together these projects are the centerpiece for linking ASEAN energy infrastructure into an integrated system. Linking infrastructure is a large-scale effort with considerable potential benefits, but numerous barriers. Both projects have developed cooperative frameworks with shared legal, institutional regulatory and economic criteria.

### ASEAN Power Grid (APG)

The ASEAN Power Grid initiative aims to interconnect the power grids of ASEAN countries through an integrated series of bilateral connections to create a single integrated ASEAN Grid. The participating countries would thereby:

- reduce capital investment for new generating facilities, because it could operate at a lower reserve margin and thus reduce capital expenditures;
- utilize indigenous resources such as hydropower;
- create economies of scale; and
- take advantage of staggered peak periods.

The lead ASEAN agency for the APG is the Heads of ASEAN Power Utilities/Authorities (HAPUA). In 2003, HAPUA completed the program's planning framework: the ASEAN Interconnection Masterplan (AIMS). Principal objectives as set out in the AIMS are to:

- develop the ASEAN Power Grid by interconnection;
- optimize generation through the use of indigenous energy resources;
- invite private sector participation in generation; and
- address barriers to interconnection.

The AIMS determined that it would not be economical to fully integrate the power systems of all 10 ASEAN countries. It recommended instead that the power system be split into two systems: East and West, with 11 interconnections by 2019. An ambitious schedule for commissioning the principal connections was set:

- 2005-2007:** Vietnam - Cambodia
- 2007:** Thailand - Cambodia
- 2009:** Penninsular Malaysia - Sumatra  
Sarawak - West Kalimantan  
Thailand - Lao PDR
- beyond 2009:** Sarawak - Peninsular Malaysia  
Batam - Bintan-Singapore-Johor  
Philippines – Sabah  
Sarawak – Sabah – Brunei Darusalam  
Lao PDR – Vietnam

Thailand – Myanmar  
Lao PDR – Cambodia

Other power interconnections are being pursued on either a bilateral or sub-regional level. These include:

- Greater Mekong Sub-region Interconnection;
- Brunei, Indonesia, Malaysia, Philippines Interconnection (BIMP);
- Trans-Borneo Power Grid; and
- Indonesia-Malaysia-Thailand Growth Triangle Power Connections.

### **Trans-ASEAN Gas Pipeline (TAGP)**

ASEAN contains adequate natural gas resources, a balance of suppliers and users, and a geographic proximity that makes interconnection economically viable. It is natural to look to develop an integrated infrastructure. To bring this vision to reality, ASEAN has created an organization structure, work plan, and set of agreements to lead the effort. The ASCOPE Gas Center (AGC)'s TAGP Task Force is the lead ASEAN agency for the program. The TAGP is supported by an ASEAN Gas Consultative Council (AGCC), formed for the purpose in 2002.

The program has developed through a series of plans and agreements:

- ASEAN Memorandum of Understanding on the TAGP (Bali, 2002)
- Masterplan for Trans-ASEAN Gas Pipeline Infrastructure Project completed in 2000.
- Roadmap for Integration of ASEAN: Trans-ASEAN Gas Pipeline Implementation
- ASEAN Plan of Action on Energy Cooperation (APAEC) 2004-2009: Five Year Workplan: Programme Area No. 2 Trans-ASEAN Pipeline

A series of studies to prepare and support the project are planned or underway including a national and regional assessment of the legal and institutional frameworks; commercial and economic feasibility; construction, financing, pipeline operation and maintenance, supply transportation and distribution.

<b>AREAS FOR JOINT STUDIES</b>	
1. Financing	5. Health, Safety and Environment
2. Technical Specifications	6. Transit Rights
3. Access and Use	7. Taxation and Tariffs
4. Supply Security and Emergency Supply Arrangements	8. Abandonment of Pipelines
	9. Jurisdiction

### **ASEAN has approved eight gas interconnection projects**

- South Sumatra, Indonesia–Penninsular Malaysia
- W. Natuna, Indonesia–Duyong, Malaysia
- E. Natuna, Indonesia–JDA–Erawan Thailand
  - a. E. Natuna–W. Natuna, Indonesia–Kerteh, Malaysia
  - b. E. Natuna–W. Natuna, Indonesia–Singapore
- E. Natura, Indonesia–Brunei Darusalam–Sabah, Malaysia–Palawan-Luzon, Philippines
- Malaysia–Thailand JDA–Block B Vietnam
- Pauh, Malaysia–Arun, Sumatra, Indonesia
- East Kalimantan–Sabah–Philippines

**Observations/Lessons Learned:**

- the regional cooperation has built on bilateral connections
- the large-scale programs had solid economic justification
- involving the private sector has built credibility and kept plans realistic
- the strong coordinating bodies created keep the work moving forward
- signing firm agreements between countries and as a group created progress.
- building these projects into the solid planning framework as a key piece of the existing ASEAN Plan gave them power

**Sources:**

ASEAN Center for Energy

Bangkok Post

Asia Pacific review: Building the Trans-ASEAN Pipeline

## 6.2 Thailand: Privatization Through Partial Listing On Stock Market

**Background on Plans for Restructuring**

Thailand has been working on plans to restructure its energy sector for a long time and has experimented with a range of approaches. However under frequently changing governments and against strong union opposition, most plans have faltered.

Following the 1997 economic crisis, the country passed a sweeping privatization master plan and completed an ambitious study to restructure the Thai power sector along the lines of the UK model. This plan would have debundled utilities and introduced competition in the Power Pool. Detailed privatization plans launched after the 1997 economic crisis envisioned a wholesale restructuring of the power sector including a partial dismantling of Electricity Generating Authority of Thailand (EGAT).

**New Policy of the Thaksin Shinnawat government**

With the election of Prime Minister Thaksin's government in January 2001, privatization remained a key objective, but the approach shifted dramatically. Rather than taking a sectoral approach to find economic efficiencies in the energy and power sectors, the government launched a new plan to privatize 18 state-owned enterprises along a common model. The new plan would privatize up to **49%** of state-owned companies by listing them on the Stock Exchange of Thailand (SET) without a focus on restructuring. While a stated objective is to improve the management of the listed entities, other equally important objectives are to raise public funds, build strong domestic companies, and develop local capital markets.

Thailand's national energy companies, the Petroleum Authority of Thailand (PTT) and the Electricity Generation Authority of Thailand (EGAT) are two of the largest and most profitable SOEs. The energy component of the new privatization plan envisioned developing PTT and EGAT as national champions capable of competing internationally and playing a central role in regional energy development.

While this ambitious privatization scheme is currently on hold pending elections in January 2005, it does present one of the clearest models energy sector reform in the Asia Pacific region.

## **PTT PLC**

Although EGAT has received most of the attention in past privatization plans, the first entity to undergo a restructuring along the Thaksin model was the former Petroleum Authority of Thailand (PTT).

PTT PLC was partially privatized in a March 2001 IPO that sold off **30%** of the company generating \$725 million in revenue. The privatization gave PTT a market capitalization of \$9.9 billion and put it as number 456 on the Fortune 500 listing of global companies. PTT's listed shares make up the single largest entry of the SET, worth **11%** of the market's total value. The remaining **70%** of the company's shares are held by the Finance Ministry.

Privatization through partial listing has proven to be a gentle version of reform for PTT. While privatization has frequently been hailed as a means to raise funds for the Thai government, virtually all of the new capital raised by PTT stayed within the company. These funds will be used for new investments including expanding pipelines, building gas separation plants and expanding development in Thailand and abroad. The privatization did not have a great impact on the management of PTT. The company claims to have reduced staff by **10%** since the listing, but original management has been retained and existing company strategy appears intact.

It has yet to be seen whether the privatization will make PTT more autonomous. Of particular concern is the ability of PTT management to walk the fine line between company interest and the demands of politicians in the sensitive energy sector. PTT has many loss-making subsidiaries, which might not exist in a private company. These include a **49%** holding in Thai Olefins, Thai Oil, National Fertilizer and PTTEP. PTT has also purchased Bangkok Polyethylene earlier this year.

While it is still too early to judge the ultimate outcome of the PTT privatization, it is broadly regarded in Thailand as a success. The IPO was highly subscribed and raised a large amount of money. Since the listing, PTT's price has remained high. The company has continued to earn acceptable returns and has reduced staff. The listing raised funds that have enabled it to expand its activities. However, time will tell whether this was a first step towards transforming the energy giant into an efficient energy company, or a one-time plan to raise funds for development.

## **Electricity Generating Authority of Thailand (EGAT)**

Following the successful listing of PTT PLC, the government looked to apply a similar process to EGAT and planned a listing in the first quarter of 2004. However, strong resistance by the EGAT Labor Union, a perennial and successful foe of all privatization schemes, was able to halt progress. Currently plans are on hold until after the next national elections to be held in early 2005.

EGAT would represent a second massive listing along the lines of the PTT model. EGAT would remain intact, avoiding comprehensive restructuring and preparing EGAT to be a national champion capable of leading regional electricity development. The company is already active in power markets in several Southeast Asian countries. EGAT would be Thailand's largest ever IPO, surpassing PTT and raising an estimated \$1.8 billion for the state. EGAT is top the revenue

generator of Thai SOEs, grossing 238 billion baht in revenue and 30 billion baht in profit in 2003.

However, the privatization of EGAT has long been Thailand's holy grail of economic restructuring and opposition is very strong. While the government is likely to revisit this issue after the election, the final outcome is far from clear.

## Conclusions

The strongest impression left by the PTT privatization is how little has changed. With **70%** government control, the company continues to pursue familiar policies. However, revenue has been steady and investors rewarded. The step at this point appears to be a success, although a modest one.

Thai case provides an interesting contrast with the Philippines. Thai companies have effective in delivering services and earning revenues. They were thus able to fight off total restructuring. Privatization through the stock market appears to offer some gains in the short-term. However, it does not introduce competition into the market and may not produce long-term benefits. The new approach has not been tested and it is hard to evaluate what will happen if there is a situation that pits investor interests against government interests. It will also be interesting to compare the two reform models chosen by Thailand and the Philippines to see if one emerges as a greater success.

### 6.3 Creating A Framework For Sector Reform: Philippines EPIRA 2001

#### Background

One of the key components common to successful power sector reform around the world has been passage of a major law or enabling legislation that clearly lays out the broad features of the restructuring. The Philippines Electric Power Industry Reform Act of 2001, while still a work in progress, may well be the best example of such a law in the Asian Pacific region.

Lack of development in the power sector in the Philippines has been major problem for the last decade. In the 1990s, the Philippines faced a power crisis from a lack of infrastructure and investment. Brown outs threatened manufacturing and economic growth. The government dealt with this by initiating a set of Power Purchase Agreements (PPAs) that provided guaranteed revenue streams for private sector investors. This did create a burst of investment and rescued the country from power shortages. In this regard, the PPAs were successful.

However, they were not without their costs. Long-term PPAs that provide high guaranteed returns to investors will encourage development, but also lock the country into long-term agreements to purchase power at higher rates.

The Philippines now faces the challenge of reducing the cost of power, while maintaining the ability to bring new facilities on line to meet shortages expected as soon as 2005. However, increased government expenditures are not an option, given the Philippines' fiscal position is weak and the government is trying to convince international investors that it is cutting costs and raising revenues.

#### Electric Power Industry Reform Act of 2001 (EPIRA)

In June 2001, the Philippines passed the Electric Power Industry Reform Act of 2001 (EPIRA). Principal objectives were to reduce power costs, encourage foreign investment, and promote the use of domestic energy resources. EPIRA sets out a sweeping reform of power sector including:

- Reorganization of the Electric Power Industry into four distinct subsectors:
  - Generation
  - Transmission
  - Distribution
  - Supply
- Privatization of National Power Company (Napocor) assets
- Creation of a Power Sector Assets and Liabilities Management Corporation (PSALM)
- Development of a new role for the Department of Energy
- Establishment of an Energy Regulatory Commission (ERC)
- Implementation of a plan for the promotion of rural electrification

**Generation:** Current power generating assets under Napocor are to be transferred to PSALM for eventual sale to private investors. The generating sector is not to be considered as a public utility and concession agreements are not required to produce power. Power charges are not regulated by ERC and not subject to VAT. The transmission sector is regulated as a common electricity carrier with rates set by ERC.

**Transmission and Distribution:** The law creates a National Transmission Company (TRANSCO) that assumes Napocor's previous role as a transmission utility. TRANSCO is currently owned entirely by PSALM. It serves as a system operator, providing central dispatch with providing open access to all players. TRANSCO was to be awarded in competitive bidding as an outright sale or concession contract. Distribution is to be a regulated common carrier business requiring a national franchise. It can be done by utilities, cooperatives, local government units or other authorized entities.

**Department of Energy:** The Department of Energy is charged with supervising the restructuring process at the policy and planning levels including responsibility for developing an annual Philippines Energy Plan and a Power Development Plan.

**Regulatory Commission (ERC):** The law also created an Energy Regulatory Commission (ERC), which is an independent, quasi-judicial body made up of a Chairman and four members all appointed by the President. The ERC is charged with promoting competition, encouraging market development, assuring consumer choice and penalizing abuse of market power.

**Power Sector Assets and Liabilities Management Corporation (PSALM):** The Act also calls for the privatization of almost all of the assets of Napocor, including existing IPP contracts valued at \$9 billion. This is to be accomplished by transferring the assets first to the newly created PSALM, which is to manage the "orderly sale, disposition and privatization of NPC generation assets". PSALM also assumes NPCs existing debts, estimated at between 6-9 billion and limits generator market power by restricting market share to **30%** on any one grid and **25%** on a national level. In addition to the IPP contracts, PSALM will take on \$22 billion in debt, a maximum of \$3.9 billion, which can be passed on to the national government.

**Rural Electrification:** Finally the act aims to ensure that the privatization process does not impede or burden rural electric cooperatives.

## Implementation: Current Status

As could be expected with any transformation of this magnitude, EPIRA has met obstacles and delays. In March 2002, the government passed the Implementing Rules and Regulations (IRR) for EPIRA. Rules for the Wholesale Electricity Spot Market (WESM) were passed in July 2002. However, to date the WESM has not been established. Also in July 2002, President Arroyo laid out a ten-point plan to reduce electricity rates in her State of the Nation Address.

Privatization of TRANSCO was delayed after three failed rounds of a negotiated bidding process in 2003 and 2004. In October 2004 the government announced that it would revise the process and launch a new bid round within the year. The current plan is to utilize a public bidding rather than a negotiated bidding process for the next round. A Filipino-Thai joint venture, led by the Electricity Generating Authority of Thailand submitted the highest bid of \$3.4 billion in the failed October round.

The government has been working with all IPP holders to reach achieve voluntary and agreed on modifications to contracts and has been working through the DOE to electrify all villages by 2006.

The Philippines is at the point of moving to sell the first of 30 power plants and privatize the grid in the next two years. The expectation is revenues of \$4-5 billion that will be used to pay down Napocor's 9 billion dollar debt. Investor concerns include potential hidden liabilities and incomplete transfer of assets to PSALM.

In November 2004, Philippines delayed, for the second time, an auction for Napocor's second largest power plant, a 600 MW coal fired facility, because of an unrelated transportation strike. However, at the end of the month, the government did successfully complete an auction that drew a 561.74 million dollar bid by YNN Pacific Consortium Inc. The facility was sold as a merchant power plant, without a connected PPA.

### Sources:

- Philippines: Republic Act No. 9136 (*Philippines Electric Power Industry Reform Act of 2001*)
- *Business Asia*: Regulatory Watch: Philippines
- *The Star*: Bizlinks Bizcolumn: "Waiting For Wholesale Electricity Spot Market (Wesm)," February 27, 2004, Rey Gamboa
- *Financial Times*, Manila Power Plant Sell-off Delayed Amid Transport Strike, November 26, 2004
- APERC: *APEC Energy Overview 2002*
- *Inquirer News Service*, December 3, 2004, \$561.7M bid for Masinloc power plant
- *Power Engineering International*, Asia Power Update, November 2004

### 1. 2005 TILF Account

#### ENERGY

1. APEC 21st Century Renewable Energy Development Initiative (Collaborative IV): Adoption of Renewable Energy Standards Phase II– Final Groundwork
2. Carbon Dioxide Capture and Geological Sequestration Potential of the APEC Region (Phase 3)
3. Standby Power - Promoting Improved Cooperation Among APEC Economies in Programs to Reduce Standby Power Losses

<b>Total</b>	<b>287,400.00</b>		<b>169,500.00</b>	
EWG 01/2005T	150,000.00	A	<b>134,500.00</b>	4
EWG 02/2005T	87,400.00	C	-	
EWG 03/2005T	50,000.00	A	<b>35,000.00</b>	5

**Out of Total 2005 APEC TILF  
Funds**

**3,451,762.90**

**3,158,300.00**

### 2. 2005 Operational Account

#### ENERGY

1. **Operation of APEC Energy Database and Analysis**
2. Energy Efficiency Indicators Workshop - Capacity building and technical co-operation in monitoring energy efficiency progress within APEC economies through disaggregated indicators
3. Best Practice Principles and Processes for Integrated Building Design
4. APEC 21st Century Renewable Energy Development Initiative (Collaborative VI): Handbook for Developing City/State Hydrogen and Fuel Cell Programs in APEC Member Economies.

<b>Total</b>	<b>295,700</b>		<b>20,000</b>
EWG 01/2005	20,000	A	<b>20,000</b>
EWG 02/2005	50,000	C	-
EWG 03/2005	40,000	C	-
EWG 04/2005	75,000	C	-

7. Climate Change Technology  
Roadmapping for Power Generation in  
APEC Developing Economies

EWG 05/2005	110,700	C	-
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**Out of Total 2005 APEC Operational  
Funds**

**2,440,328**

**1,263,834**

**3. 2004 TILF Account**

**ENERGY**

- Best Practice in Cross-Border Interconnection of Natural Gas in APEC Member Economies
- APEC 21st Century Renewable Energy Development Initiative (Collaborative IV) : Adoption of Renewable Energy Standards Phase II - Final Groundwork
- Carbon Dioxide Capture and Geological Sequestration Potential of the APEC Region Phase 2
- Energy Security and Petroleum Specifications - The Need for Policy Harmonization in APEC Economies
- Alignment of Testing Procedures for Air-Conditioners and Heat Pumps
- Applicability of Accounting and Trading Systems for CO2 Emissions from the Power Sectors in APEC Developing Economies
- Alignment of Standby Loss Requirements
- APEC 21st Century Renewable Energy Development Initiative (Collaborative VI) : Development of a Sourcebook of Hydrogen Codes and Standards for APEC Member Economies
- Development of the Geological Metadata System and Clearing House in Asia and Pacific Region
- Identifying Extent and Means to Reduce Cross-Border Trade in Highly Energy Inefficient Products

<b>Total</b>	<b>1,516,274</b>		<b>486,910</b>
EWG 01/2004T	167,760	A	<b>162,760</b>
EWG 02/2004T	150,000	Withdrawn	0
EWG 03/2004T	158,600	A	<b>153,600</b>
EWG 04/2004T	166,230	Withdrawn	0
EWG 05/2004T	50,000	A	<b>45,000</b>
EWG 06/2004T	60,000	Withdrawn	0
EWG 07/2004T	50,000	Withdrawn	0
EWG 08/2004T	150,000	A	<b>125,550</b>
EWG 09/2004T	167,100	C	0
EWG 10/2004T	50,000	C	0

11. 5th APEC Coal Trade and Investment Liberalization and Facilitation Workshop
12. Energy Efficiency Standards for Windows
13. International Seminar on Technology Transfer for Rural Electrification of Isolated Communities Using Renewable Energy
14. Training on Natural Gas Vehicle (NGV) Conversion, Service and Maintenance
15. Familiarization Training Course on Technology Towns/Parks that Showcase New and Renewable Energy Systems

EWG 11/2004T	100,000	C	0
EWG 12/2004T	150,000	C	0
EWG 13/2004T	65,600	C	0
EWG 14/2004T	23,258	C	0
EWG 15/2004T	7,726	C	0
<b>6,117,780</b>			<b>4,177,417</b>

**Out of Total 2004 APEC TILF Funds**

#### **4. 2004 Operational Account**

##### **ENERGY**

1. **Operation of APEC Energy Database and Analysis**
2. Potential for Growth of Gas as a Clean Energy Source in APEC Developing Economies
3. Symposium on the Implementation of Government Energy Efficiency Programs
4. Workshop on improving Energy Efficiency in APEC Mining Industry
5. APEC 21st Century Renewable Energy Initiative : Development & Implementation of a system for Accrediting Renewable Energy Training
6. APEC 21st Century Renewable Energy Development Initiative (Collaborative VI) : Workshop on Advances in Clean Transportation Fuels
7. Promoting Energy Efficiency and Conservation in the Public Sector

	<b>349,000</b>		<b>192,800</b>	
			<b>0</b>	
EWG 01/2004	20,000	A	<b>20,000</b>	
EWG 02/2004	80,000	A	<b>80,000</b>	
EWG 03/2004	50,000	A	<b>48,800</b>	2
EWG 04/2004	49,000	A	<b>44,000</b>	3
EWG 05/2004	50,000	With- drawn	-	
EWG 06/2004	50,000	C	-	
EWG 07/2004	50,000	C	-	
<b>2,279,902</b>			<b>1,624,445</b>	

**Out of Total 2004 APEC Operational Funds**

### EWG Lead Shepherd

Mr. John Ryan, Deputy Secretary  
Department of Industry, Science, and Resources  
Tel: ++ 61-2-6213-6692  
Fax: ++ 61-2-6213-6657  
E-mail: [John.Ryan@industry.gov.au](mailto:John.Ryan@industry.gov.au)

### EWG Secretariat

Mr. Aidan Storer, Acting Manager of APEC Energy Center  
E-mail: [aidan.storer@industry.gov.au](mailto:aidan.storer@industry.gov.au)  
GPO Box 9839  
Canberra ACT 2601  
Australia

### Asia Pacific Research Center (APERC)

Mr. Masaharu Fujitomi, President of APERC  
E-mail: [fujitomi@aperc.ieej.or.jp](mailto:fujitomi@aperc.ieej.or.jp)  
Dr. Yonghun Jung, Vice-President of APERC  
E-mail: [jung@aperc.ieej.or.jp](mailto:jung@aperc.ieej.or.jp)  
Institute of Energy Economics  
Inui Building-Kachidoki 16/F  
1-13-1 Kachidoki, Choku  
Tokyo 104-0054  
Japan  
Web site: <http://www.apecnetwork.org>

### Expert Group on Clean Fossil Energy (EGCFE)

Mr. Scott M. Smouse, Senior Management and Technical Advisor, International  
E-mail: [Scott.smouse@netl.doe.gov](mailto:Scott.smouse@netl.doe.gov)  
Department of Energy, National Energy Technology Laboratory  
P.O. Box 10940 M/S 922-178C  
626 Cochran Rd  
Mill Building, 922-140  
Pittsburgh, PA 15236-0940  
USA  
Web site: <http://www.apec-egcfe.org/>

### Expert Group on Energy Efficiency and Conservation (EGEEC)

Dr. Fang-hei Tsau, Senior Researcher and Manager  
E-mail: [fanghei@itri.org.tw](mailto:fanghei@itri.org.tw)  
Energy and Resources Laboratories, Industrial Technology Research Institute  
Building 64, 195 Section 4, Chung-Hsing Rd  
Chutung, Hsinchu  
Taiwan

**Expert Group on Energy Data and Analysis (EGEDA)****Mr. Kenichi Matsui, Counselor, Energy Data and Modeling Center**E-mail: [matsui@edmc.iecej.or.jp](mailto:matsui@edmc.iecej.or.jp)

Institute of Energy Economics

Inui Building-Kachidoki 16/F

1-13-1 Kachidoki, Choku

Tokyo 104-0054

Japan

Web site: <http://www.iecej.or.jp/egeda/>**Expert Group on Renewable Energy Technologies (EGNRET)****Dr. Cary Bloyd**E-mail: [bloyd@anl.gov](mailto:bloyd@anl.gov)Web site: <http://www.apecnetwork.org>**Expert Group on Minerals and Energy Exploration and Development (GEMEED)****Mr. Thomas Astorga, APEC Coordinator**E-mail: [gemeed@minmineria.cl](mailto:gemeed@minmineria.cl)

Mining Ministry

Teatinos 120, 9<sup>th</sup> Floor

Santiago

Chile

Web site: <http://www.gemeed.org>**APEC Secretariat****Mr. Xian-guo Tong**

Director (Program)

E-mail: [txg@apec.org](mailto:txg@apec.org)

APEC Secretariat

35 Heng Mui Keng Terrace

Singapore 119616

1. Commissioning of the TAGP's pipeline projects between West Natuna- Duyong, Malaysia and Grissik (South Sumatra, Indonesia) to Singapore;
2. Ongoing implementation of the 31 EAEF-supported projects with a total co-financing of EUR 6.5 million. The third call for proposals will involve a proposed co-financing of EUR 6.5 million for 27 projects;
3. Ongoing enhancement of the ASEAN Energy Database System and capacity building programs on energy supply security planning and analysis under the SOME-METI-Japan collaboration;
4. Implementation of the ASEAN Energy Awards 2004;
5. Continued energy labeling activities for energy efficient products under the ASEAN Standards and Labeling Program for magnetic ballasts, refrigerators, air-conditioners, and motors;
6. Continued implementation of the energy projects under the Work Plan for the Initiative for ASEAN Integration (IAI). One (1) energy project under the Work Plan for IAI has been completed, with five (5) projects are currently on-going and two (2) in pipeline;
7. Conducted seven (7) energy audits under the SOME-METI Japan collaboration; two each in Singapore and Thailand, respectively, and one each in Brunei Darussalam, Lao PDR and Malaysia. Conduct of technology transfer workshops to develop EE & C database, benchmarks and guidelines;
8. Development of clean coal cooperation project proposals, namely: (a) Promotion of Small-Scale Clean Coal Technology for Rural Electrification; (b) Greening of Coal-Fired Power Plants in the ASEAN; and (c) Coal Bed Methane Development;
9. Intensified cooperation and promotion activities on Renewable Energy through the following projects: Joint ASEAN Minihydro Program (JAMP), COGEN 3, Information Networking for Promotion of Renewable Energy Sources in Southeast Asia (PRESSEA), the ASEM Green Independent Power Producers Network (GR-IPP-Net) and ASEAN Small-scale Renewable Energy Program (ASREP);
10. Third-year implementation of the AAECF assisted-Energy Policy and System Analysis Project (EPSAP). EPSAP produced the first set of national policy study for the five participating ASEAN countries and a regional policy study on the Trans-ASEAN Energy Network. The second set of national policy studies had been completed in March 2004 and the second regional policy study on ASEAN Energy Market Integration will be completed in August 2004. Work on EPSAP extension to CLM countries under the AADCP-Regional Partnerships Scheme started in September 2003; and
11. Completing the Trans-Borneo Power Grid Development Concept and Energy Trading Study.

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<sup>75</sup> Report of the 22<sup>nd</sup> AMEM, June 9, 2004

**ASEAN CENTER FOR ENERGY- CASH FLOW STATEMENT**  
**For Period of January - December 31, 2002**  
**(United States Dollars/USD)**

**INCOME**

<b>Beginning Balance</b>		<b>305,755.54</b>
<b>Income from operations</b>		
General Fund (Interest on deposit, sales of publication, etc)	418,218.76	
Project Fund	219,881.77	
Other Receivable	(5,936.38)	
Prepaid expenses	(8,812.30)	
Depreciation	7,291.73	
Exchange rate differences	684.59	
Sub total	631,328.17	
<b>Total Income</b>		<b>937,083.71</b>

**EXPENDITURE****General Fund Expenditure**

Salaries and Allowances	195,808.25
Local transport	3,495.24
Communication	22,581.45
Office supplies	7,769.54
Bank fees	2,690.15
Maintenance	5,698.61
Hotel accommodation	12,733.90
Subsistence allowance	23,810.00
Advertisement fee	1,254.77
Audit fee	1,800.00
Depreciation	7,402.34
Traveling expenses	30,850.41
Representative allowance	10,861.27
Miscellaneous	812.93
<b>Sub total General Fund</b>	<b>327,568.86</b>

**Carry Over Fund Expenditure**

ASEAN Energy Bulletin and Other publications	24,530.86
Meeting	11,140.89
Material equipment	5,671.64
Seminar/Workshop	18,696.83
<b>Sub total Carry Over Fund</b>	<b>60,040.22</b>

**Project Fund Expenditure**

AAMRUG Meeting	989.73
ESSPA Project	73,348.87
PROMEEC Project	89,263.62
Green IPP Project	3,116.10
EE&C Meeting	10,000.00
IEA/ASEAN Workshop Electricity and Gas	6,362.18
ENTEG AG/SECO	5,834.19
UN ESCAP Project	4,269.86
EAEF Project	8,697.80
<b>Sub total Project Fund</b>	<b>201,882.35</b>
<b>Total Expenditures</b>	<b>589,491.43</b>
<b>CLOSING BALANCE</b>	<b>347,592.28</b>

**FINANCIAL STATEMENT -ASEAN CENTER FOR ENERGY  
as of December 31, 2002  
(United States Dollars/USD)**

**ASSETS**

Cash on hand	6,670.86
Cash in Bank	140,921.42
Time deposit	200,000.00
Prepaid expenses	12,359.37
Other receivable	6,016.38
<b>Total current assets (ACE Account)</b>	<b>365,968.03</b>
Fixed asset	39,859.99
Accumulation depreciation	(18,720.59)
<b>Book value</b>	<b>21,139.40</b>
Deposit of Endowment Fund (ASEAN Secretariat)	<b>4,834,927.99</b>
<b>TOTAL ASSETS</b>	<b>5,222,035.42</b>

**SOURCES**

General Fund	105,246.95	
Carry over Fund	192,520.41	
Project Fund	49,480.08	
<b>Total sources ACE's Account</b>		<b>347,247.44</b>
Principal of Endowment Fund	4,752,875.21	
Interest of Endowment Fund	82,051.78	
<b>Total sources in ASEAN Secretariat Account</b>		<b>4,834,927.99</b>
Carry over Fixed Assets		39,859.99
<b>TOTAL SOURCES</b>		<b>5,222,035.42</b>

**ASEAN Secretariat**

The ASEAN Secretariat  
70A, Jalan Sisingamangaraja  
Jakarta 12110  
Indonesia  
Tel : (6221) 7262991, 7243372  
Fax : (6221) 7398234, 7243504  
Web: <http://www.aseansec.org>  
Email : [public@aseansec.org](mailto:public@aseansec.org)

**ASEAN Center for Energy**

6th floor, ACE Building  
Directorate General of Electricity and Energy Utilization Complex  
Jalan H.R. Rasuna Said, Block X-2, Kav. 07-08  
Kuningan Jakarta Selatan, DKI Jakarta, Indonesia.  
Tel: (62-21) 5279332  
Fax: (62-21) 5279350  
Web: <http://www.aseanenergy.org>

1. Dr. Weerawat Chantanakome, **ACE Executive Director**
2. Mr. Tjarinto S. Tjaroko  
Currently: Program Manager for Power and ASEAN Co-Director for EAEP  
*Newly appointed* as **Manager, Department of Special Projects Development (SPD) and Acting Manager, Department of Strategic Planning and Monitoring (SPM), ACE**
3. Mr. Christopher Zamora  
Currently: Program Manager for Information, Policy and Economics  
*Newly appointed* as **Manager, Department of Administration & Finance (A&F), and Program Manager\* for Renewable Energy and Energy Efficiency, ACE**  
\* Responsible for RE-SSN and EE&C-SSN
4. Ms. Cecilya Malik (On *Secondment - Government*)  
Currently: Project Manager for AAECF III-EPSAP, ESSPA and Data Management, *Newly appointed* as **Program Manager\* for Energy Policy and Planning (EPP), Department of Strategic Planning and Monitoring (SPM), ACE**  
\* Responsible for REPP-SSN, APAEC, AAECF III-EPSAP, ESSPA, data management and Index

**ASEAN Council on Petroleum**

ASCOPE Secretariat, Petronas  
International Business Ventures, Level 45  
Tower 1, Petronas Twin Towers, 50088 Kuala Lumpur, Malaysia  
Tel: 60-3-23314804/23313597 Fax: 60-3-23311203  
Web: <http://www.ascope.com.my>

**ASEAN Forum on Coal**

Chairperson  
Mr. Hj. Othman Bin Hj. Mahmud  
Managing Director, TNB Fuel Services Sdn Bhd, Malaysia  
Tel. 603-79568349  
Fax. 603-79569221  
[othmanll@tnb.com.my](mailto:othmanll@tnb.com.my)

**Energy Efficiency & Conservation Sub-Sector Network**

Mr. Sawad Hemkanon  
Deputy Director-General  
Department of Alternative Energy Development and Efficiency (DEDE),  
Ministry of Energy, Thailand  
Fax: (66-2) 2261416  
E-mail: [sawad@dedp.go.th](mailto:sawad@dedp.go.th)

**Heads of ASEAN Power Utilities/Authorities (HAPUA)**

Chairperson  
Mr. Eddie S. Widiono  
President Director, State Electricity Co. (PT.PLN), Indonesia  
Jln. Trunojoyo, Blok M1/135, Kebayoran Baru  
Jakarta 12160  
Tel. 7261875 Ext. 1000, 1001

**Regional Energy Policy and Planning Sub-Sector Network**

Chairperson  
U Thein Lwin, Deputy Director General  
Energy Planning Department  
Ministry of Energy, Malaysia  
No.23 Pyay Road  
Yangon  
Tel: (95-01) 221063  
Fax: (95-01) 222960  
E mail: [myanmoe@mptmail.net.mm](mailto:myanmoe@mptmail.net.mm)

**Renewable Energy Sub-Sector Network**

Coordinator

Dr. Anuar Abdul Rahman, Chief Executive Officer

Pusat Tenaga Malaysia (PTM)

Level 8 SAPURA @ MINES, No.7 Jalan Tasik The Mines Resort City,

43300 Seri Kembangan

Selangor, Malaysia

Tel 603 8943 4300

Fax: 60 38945 1121/8941 1121

email: [anuar@ptm.org.my](mailto:anuar@ptm.org.my)

**Senior Officials Meeting on Energy**

Chairperson

Mr. Cyril C. Del Callar, Undersecretary

Department of Energy, Philippines

Tel. (63-2) 8436438

Fax: (63-2) 8436438

E-mail: [ccallar@doe.gov.ph](mailto:ccallar@doe.gov.ph)