
**ASEAN PLAN OF ACTION FOR ENERGY
COOPERATION
(APAEC)
2004 – 2009**

*Adopted by
The Twenty-Second ASEAN Ministers on Energy Meeting
(22nd AMEM)
9 June 2004 in Makati City, Metro Manila, Philippines*

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I. Introduction

Energy has played a vital part in moving ASEAN countries towards economic integration. With the vast reserves of 22 billion barrels of oil, 227 trillion cubic feet of natural gas, 46 billion tons of coal, 234 gigawatts of hydropower, and 20 gigawatts of geothermal capacity, the ASEAN countries have actively pursued cooperation for the full utilization of their energy potentials. The ASEAN Vision 2020 adopted in 1997 calls for cooperation to establish interconnecting arrangements for electricity and natural gas within ASEAN through the ASEAN Power Grid and the Trans-ASEAN Gas Pipeline Projects. Under the Hanoi Plan of Action for the energy sector, ASEAN countries are to institute the policy framework and implementation modalities by 2004 for early realization of the interconnection infrastructures. The ASEAN Plan of Action for Energy Cooperation 1999-2004 reiterates the implementation of an integrated ASEAN energy network, consisting of the ASEAN Power Grid and Trans-ASEAN Gas Pipeline projects.

• **The Evolving Plan of Action**

The rapidly changing global socio-economic landscape poses important opportunities and challenges among nations resulting to the formation of regional alliances for countries to gain greater resilience in addressing new developments. In Asia, the Association of South East Asian Nations (ASEAN) is one among such coalitions.

Created to accelerate economic growth and promote peace and stability, the ASEAN has become an indispensable block to be reckoned with. Today, the ASEAN region is a vast market of more than 520 million people with a total area of 4.5 million square kilometers. Its combined gross domestic product is about US\$ 610 billion, and a total trade of more than US\$ 700 billion. The very modest economic gains the ASEAN countries have made over the years can be partly attributed to their collective actions based on consensus in implementing regional cooperation programmes.

Guided by the Treaty of Amity and Cooperation (TAC) of 1976 as its fundamental principle, the ASEAN continues to be a well-functioning body after 30 years of existence. Presently, its cooperation accords in the economic sector, cover among others the following areas: trade, finance, investment, industry, services, finance, agriculture, forestry, energy, transportation, information communications technology, intellectual property,

small and medium enterprises, and tourism. ASEAN has several specialized bodies and arrangements promoting inter-governmental cooperation in these various fields.

For the Energy Sector, the Senior Officials on Energy Meeting (SOME) has the overall responsibility in the supervision, coordination and implementation of ASEAN cooperation programs, projects and activities. The ASEAN Ministers on Energy Meeting (AMEM) provides the issues and concerns of common interest and set policy and program directions in ASEAN energy cooperation. More specifically, specialized bodies such as the ASEAN Centre for Energy (ACE), the ASEAN Council on Petroleum (ASCOPE), the Forum of Heads of ASEAN Power Utilities/Authorities (HAPUA), the ASEAN Forum on Coal (AFOC), the Energy Efficiency and Conservation Sub-Sector Network (EE&C-SSN), the Renewable Energy Sub-Sector Network (RE-SSN), the Sub-Committee on Non-Conventional Energy Research (SCNER) under the ASEAN Committee on Science and Technology, and the newly established Regional Energy Policy and Planning Sub-Sector Network (REPP-SSN) are involved in the formulation and implementation of ASEAN energy cooperation activities. The ASEAN Secretariat provides facilitation, coordination and advisory support to these specialized bodies in their implementation activities.

In 1997, the ASEAN leaders adopted the ASEAN Vision 2020, calling for ASEAN Partnership in Dynamic Development aimed at forging closer economic integration within the region. ASEAN 2020 resolved to create a stable, prosperous and highly competitive ASEAN economic region, to facilitate a free flow of goods, services, investments, capital, and equitable economic development and reduced poverty and socio-economic disparities.

Specific to energy and utilities, ASEAN Vision 2020 seeks to: 1) establish interconnecting arrangements for electricity, natural gas and water within the region through the ASEAN Power Grid (APG), Trans-ASEAN Gas Pipeline (TAGP) and Water Pipeline; and, 2) promote cooperation in energy efficiency and conservation, as well as the development of new and renewable energy resources. It also envisions a clean and green ASEAN with fully established mechanisms for sustainable development to ensure protection of the environment, the sustainability of its natural resources, and the high quality of life of its peoples.

In the quest of making ASEAN Vision 2020 a reality, the Hanoi Plan of Action was adopted in 1998. To implement the Plan, a strategic plan of action, the ASEAN Plan of Action for Energy Cooperation (APAEC) 1999-2004 was formulated. APAEC 1999-2004 is an integrated implementation programme of the various energy sub-sectors that covers six (6) cooperation programmes including those under the previous Medium Term Programme of 1995-1999. A great importance is focused in two key project areas, the Trans-ASEAN Power Grid and Trans-ASEAN Gas Pipeline. The programme areas were conceived to address the prevalent issues then on energy security, integration of regional infrastructure, energy sector restructuring and market liberalization, environmental concerns, etc.

- **The New APAEC in the Context of Sustainable Development**

The new plan of action for energy cooperation ensures continuity in key on-going energy cooperation projects and prepares the ASEAN region to emerging global developments. The Plan responds to the challenge thrown to the all countries to address the issue on sustainable development echoed during the World Summit on Sustainable Development at Johannesburg, South Africa in 2002. This second phase of the APAEC considers the existing energy situation in the region and anticipates probable scenarios over the medium term given economic, social and environmental considerations of a fragile geo-political situation of the whole world. Specific action plans to be pursued are in line with the ministerial policy statements made during the 22nd ASEAN Ministers' on Energy Meeting (AMEM) in June 2003 held in Langkawi, Malaysia which are largely directed to the following:

- Strengthen coordination/participation in all programme areas to narrow development gap among ASEAN member countries;
- Encourage a conducive environment for greater private sector involvement and participation, including securing foreign direct investment;
- Enhance human resources and capacity building skills;
- Develop and expand the energy mix and supply source through utilization of full energy potential of the region to include frontier exploration and development and extensive research on oil, natural gas, coal, hydropower, geothermal, EE & C and NRSE;
- Develop transparent legal, regulatory and technical frameworks in various energy projects, in particular on the cross border interconnection projects

II. Status of ASEAN Energy Cooperation

The year 2002 was high point in ASEAN energy cooperation. At the 20th AMEM in Bali in July 2002, the ministers signed the Memorandum of Understanding (MOU) on the Trans-ASEAN Gas Pipeline Project. The MOU serves as the framework for cooperative efforts among the ASEAN public and private sectors for the expeditious realization of the TAGP project. Under the MOU, an ASEAN Gas Consultative Council (AGCC) has been established to facilitate and assist the ASCOPE in the implementation of the MOU. The AGCC comprises of representatives from the ASEAN member countries, ASCOPE members and the ACE. The ASCOPE Gas Centre (AGC) has also been established in Malaysia, to serve as the strategic technical and information resource and capacity building center in the facilitation and implementation of the TAGP and gas development programs in ASEAN.

In the 20th AMEM, the Ministers stressed the importance of energy security, sustainable development, diversification of energy supplies as among the important strategic directions in national and regional economic policies.

At the 7th ASEAN Summit in Brunei Darussalam in November 2001, the ASEAN leaders discussed flagship projects including the power grids and gas pipelines and requested their ministers to come up with more concrete plans and to report back at the 8th ASEAN Summit. Following the directives to “*accelerating regional integration and the need to develop a Roadmap for Integration of ASEAN*”, the 20th AMEM approved the roadmaps for the concerted implementation of the ASEAN Power Grid and Trans-ASEAN Gas Pipeline projects. The roadmaps clearly set out the specific steps and policies in realizing the interconnection arrangements of natural gas and electricity networks in the region.

At the 9th ASEAN Summit in Bali in October 2003, the leaders, in line with planned ASEAN Economic Community, emphasized on cooperation and integration activities in other areas which include enhanced infrastructure and communications connectivity.

- ***Major Programme Accomplishments***

The following are the notable accomplishments in the various programmes under the APAEC 1999-2004:

- Adoption of the overall policy framework for the implementation of the ASEAN Power Grid and Trans-ASEAN Gas Pipeline Projects, under the ASEAN Energy Roadmaps endorsed at the 20th AMEM in Bali.
- Completion of the Trans-ASEAN Gas Pipeline Masterplan by ASCOPE in October 2000 and was presented at the 19th AMEM-SOME in Bandar Seri Bagawan, Brunei Darussalam in 2001. The ASCOPE Masterplan indicates that there are a total of 175 Tscf of proven and 94 Tscf probable natural gas reserves in the then seven (7) ASCOPE member countries. Indonesia has the highest gas reserves with 90 Tscf proven and 42 Tscf probable reserves. The Masterplan identified seven (7) gas pipeline interconnections for implementation.
- Completion of the ASEAN Interconnection Master Plan Study (AIMS) in March 2003 under the auspices of HAPUA. The final report of AIMS was adopted during the 19th HAPUA Meeting in Surabaya in 02-03 June 2003 and the 21st SOME/AMEM, as reference for the APG implementation. The results indicated implementation of 11 bilateral interconnection projects until the year 2019.
- Creation of the Trans-Borneo Power Grid Interconnection Coordination Committee, to coordinate and oversee the implementation of the Borneo Island’s power grid interconnection study.

- Initiatives to develop the ASCOPE Model Gas Sales and Purchase (GSPA) and Gas Transportation Agreement (GTA). The ASCOPE National Committee likewise approved the creation of the ASCOPE Gas Centre and the creation of the ASCOPE Joint Venture Company (JVC). The JVC will be created if there are two or more ASEAN countries interested to set up a common carrier pipeline interconnecting such countries.
- Updating/review of the 1986 ASEAN Petroleum Security Agreement (APSA). A draft of the 2003 APSA was submitted at the 21st SOME-AMEM in Langkawi in 2003.
- Annual conduct of the ASEAN Best Practices Competition for Energy Efficient Buildings and the NRSE Project Competition. The awards were given to the winners during the annual AMEM.
- Energy labeling program for energy efficient products under the ASEAN Standards and Labeling Program for magnetic ballasts, refrigerators, air-conditioners, and motors.
- Conduct of EE&C technology transfer workshops and energy audits for selected buildings and industries.
- 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.
- Promotion of 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).
- Continued development of the ASEAN Energy Database System (AEDS) and capacity building programs on energy supply security planning and analysis.
- Conduct of national and regional energy policy studies.
- Forging cooperative partnerships with ASEAN Dialogue Partners, notably with Australia, European Union and Japan, and other countries, and with relevant international/regional organizations such as UN ESCAP, Asia-Pacific Energy Research Center (APEREC), International Energy Agency (IEA), and the Energy Charter Secretariat.

- **Multilateral Cooperation for APAEC**

In the light of growing global desire to bring the region closer to important bilateral and multilateral partners that could support ASEAN energy initiatives, various cooperation activities have been undertaken to pave the way for an enhanced regional cooperation.

- **ASEAN and European Union (EU) Cooperation**

The EU has been a major source of financing for energy projects in the ASEAN since the time of the ASEAN-EU Energy Management Training and Research Center (AEEMTRC). To this day, the EU continues to extend funding assistance through the ACE. One such programme being implemented by ACE is the EC-ASEAN Energy Facility (EAEF) launched in March 2002. It is a cooperation programme between the EC and ASEAN to facilitate partnerships between ASEAN and European organizations in developing specific joint projects in four categories, namely, 1) market awareness; 2) institutional frameworks; 3) feasibility studies; and, 4) demonstration projects.

The first Call for Proposals (CfP) was launched in early July 2002 and closed mid October 2002. Seventeen projects were approved out of 49 proposals with total co-financing of about Euro 3.5 million. A total of 15 projects is currently under implementation, with total co-financing of Euro 2.88 million.

The second CfP launched on 18th July 2003 closed on 16th October 2003. Total co-financing cost of Euro 5.5 million for 27 projects had been allocated. A total of 19 projects with a co-financing support of Euro 5.075 million, out of the 32 proposed projects received, have been recommended for EC's approval. The third CfP is planned for May to September 2004. Total co-financing of Euro 5 million is expected, for a maximum of 25 projects.

Another EC financed programme is the EC-ASEAN COGEN Programme Phase 3 (COGEN 3). COGEN 3 seeks to promote and create business opportunities for the fuse of co-generation to generate power and heat using biomass, coal or gas as fuel. It will involve partnerships between ASEAN industries and power producers and European equipment suppliers. A number of European countries such as Germany and Switzerland are also actively supporting the Joint ASEAN Minihydro Programme in implementing minihydro projects.

- **ASEAN - Japan Cooperation**

The SOME-METI (Ministry of Economy, Trade and Industry) Consultations was formalized to enhance dialogue partnership between ASEAN and Japan. The Consultation is being pursued to strengthen multilateral and bilateral cooperation in the areas of energy, security, electricity infrastructure, natural gas, energy efficiency and conservation,

and renewable energy. Now on its third year, the Consultations have brought fruitful outcome through the implementation of Work Programmes. Under METI-Japan support, ASEAN and Japan are actively pursuing the following programs:

- Energy Supply Security Planning in the ASEAN (ESSPA) and
- Promotion of Energy Efficiency and Conservation (PROMEEC) in Buildings and for Industries

As earlier proposed by the Japanese Prime Minister in the 5th ASEA + 3 Summit in Brunei Darrusalam in November 2001, the Ministry of Foreign Affairs of Japan hosted the Seminar on Energy Security in Asia in Tokyo in March 2002. The ASEAN + 3/International Energy Agency (IEA) Joint Workshop was also held in Tokyo in December 2002, which developed the proposed Initiative for ASEAN + 3 Closer Energy Partnership, as a follow-up activity.

At the 8th ASEAN Summit, the ASEAN and Japanese leaders issued a Joint Declaration on the Comprehensive Economic Partnership, where they agreed to seek cooperation in other areas, to include energy. At the 9th ASEAN Summit, they signed a Framework for Comprehensive Economic Partnership. This agreement calls for ASEAN and Japan consultations from the beginning of 2004 on the areas of facilitation and cooperation, and to develop work programmes for the expeditious implementation of measures or activities, among others, and in the energy sector, for oil stockpiling, natural gas utilization and promotion of energy efficiency. ASEAN-Japan cooperation in energy security has been reiterated during the ASEAN-Japan Commemorative Summit in December 2003. The leaders signed the Tokyo Declaration for the Dynamic and Enduring ASEAN-Japan Partnership for the New Millennium and adopted the accompanying ASEAN-Japan Plan of Action. Both sides agreed to a) Develop energy policy dialogue and support ongoing capacity building programmes under ASEAN-Japan cooperation such as the above ESSPA and PROMEEC initiatives to enhance energy security in East Asia; and b) Cooperate in developing infrastructure, including energy facilities such as power stations, oil and gas pipeline network by using concessional loans, other schemes or private finance.

○ **ASEAN + 3 Cooperation**

In the SOME of the 20th AMEM, ASEAN energy officials formally established closer energy cooperation with their counterparts from China, Japan and Korea at the First SOME + 3 Consultations. The First Consultations in Bali in June 2002 served as a venue for high-level policy discussions and exchanges of relevant information in the field of energy in the East Asia. In September 2002, during the 8th International Energy Forum held in Osaka, Japan, the ASEAN + 3 Energy Ministers reached common understanding on the five-point initiative for “*Energy Cooperation among Japan, China, Korea and ASEAN*”, comprised of the

following: (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.

At the 8th ASEAN Summit, the ASEAN + 3 leaders attached great importance to the ASEAN energy sector. In the Framework Agreement on Comprehensive Economic Cooperation between ASEAN and China, the leaders agreed to extend economic cooperation to include energy. In the Joint Declaration on the Comprehensive Economic Partnership, ASEAN and Japan agreed to seek cooperation in other areas, to include energy. The Final Report of the East Asia Study Group (EASG) was also endorsed which among others underscored energy security for the sustainable development of the East Asian economy through cooperation among East Asian countries.

The 21st SOME/AMEM agreed to strengthen partnership with China, Japan and Republic of Korea to address mutual issues and concerns in energy security, natural gas development, oil market studies, oil stockpiling and renewable energy. The SOME + 3 Energy Policy Governing Group (EPGG) has been established to provide overall policy direction and program management for ASEAN + 3 energy cooperation. The SOME + 3 EPGG had subsequently formed a Fora of Experts, for these five (5) initial cooperation areas with designated country coordinators from the ASEAN + 3 countries, respectively. The Forums started to meet in November 2003.

○ ***ASEAN - Australia Cooperation***

Australia has been extending technical assistance through the ASEAN-Australia Economic Cooperation Programme (AAECP). Under AAECP Phase III, the Energy Policy and System Analysis Project (EPSAP) is being implemented to enhance the capacity of ASEAN energy policy makers and planners in assessing the impacts and cost effectiveness of alternative energy options. Five countries are participating in this EPSAP activity, namely: Indonesia, Malaysia, Philippines, Thailand and Vietnam. EPSAP has been expanded to cover Cambodia, Lao PDR and Myanmar, through the ASEAN-Australia Development Cooperation Programme – Regional Partnership Scheme (AADCP-RPS). Technical capacity in energy policy and planning will be enhanced, through the conduct of policy studies and analysis, on the national and regional basis, of selected issues and concerns. To date, five analysis reports had been completed: 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; and, Vietnam – The Strategy Orientation for Electricity Supply. The regional policy study on

the “Trans-ASEAN Energy Network” has also been substantially completed.

Through the AADCP-Regional Economic Policy Support Facility (REPSF) technical assistance and support has been provided for the ASEAN’s initiative on the formulation of the ASEAN common policy on power interconnection and electricity trade. A study on “*Preparing for Electricity Trading in ASEAN*” will be undertaken. The study will among others provide policy options to guide the phased and progressive implementation of the power interconnection projects in ASEAN and to help member countries, individually and collectively promote and prepare for electricity trading.

○ ***Cooperation with the Energy Charter Secretariat***

In line with the decision of the 21st SOME/AMEM, ASEAN has become an observer in December 2003 in the Energy Charter Secretariat based in Brussels with ACE as the focal organization. Henceforth, ACE will be entitled to attend all meetings of the Energy Charter Conference and its subsidiary bodies and to receive all related official documentation. ASEAN recognizes that the experience gained by the Energy Charter process is useful in facilitating the implementation of the Trans-ASEAN Gas Pipeline and the ASEAN Power Grids Projects.

○ ***Initiative for ASEAN Integration (IAI)***

ASEAN Leaders approved the Initiative for ASEAN Integration (IAI) Work Plan designed to reduce the development gap between the new and old ASEAN members. The IAI Work Plan is comprised of 54 projects in the following areas: infrastructure, human resource development, information and communications technology, and regional economic integration. Of the ten energy projects in the IAI Work Plan, seven (7) have secured funding as of February 2004. Four (4) projects funded by the European Commission ASEAN Energy Facility (EAEF) are currently under implementation. These projects are as follows, which have a combined budget of US\$1.24 million.

- ENE/02/002 – Power Industry Capacity Building Program with focus on CLMV
- ENE/02/003 – Capacity Building Program for Power Transmission System Personnel of Electricite du Cambodge
- ENE/01/012 – Study Tour and Workshop on Power Pooling in Europe for Greater Mekong Sub-Region/ASEAN Power Interconnection Programme
- ENE/02/013 – Rural Electrification Decentralized Energy Options

The other three projects, with total secured funding of US\$825,487, are in the planning stage. These projects are:

- ENE/02/004 – Training on Small-Scale Product Processing Unit (SPPU) Utilizing Environmentally-Friendly Renewable Energy and Local Resources
- ENE/02/005 – Institutional Strengthening and Capacity Building in the Energy Sector (Oil & Gas) in CLMV Countries
- ENE/02/006 – Training Program on Coal Briquetting Technology and the Use of Briquettes for Households and Small Industries for CLMV Countries

III. The New APAEC -- *Visualizing the Region's Path to Greater Heights*

The current geo-political climate and global security remains uncertain. With this challenge, the ASEAN strongly recognizes the urgent need for closer and enhanced cooperation within and outside the region. In addition, ASEAN faces important key barriers which are believed could be turned into window of opportunities tied up with the integration of the world economy while ensuring that the member countries are on equal footing to face global competition. It now becomes crucial that ASEAN sustains its economic gains with having secure and reliable supply of energy to support economic activities, in an environmentally acceptable manner. These three-pronged objectives necessitated the introduction of the Strategic Planning and Management (SPM) Framework for Sustainable Energy Development as a tool in crafting the new APAEC which emphasizes that every stakeholder is focused and has well defined responsibilities and burdens.

The programme areas of APAEC 1999-2004 shall essentially be maintained. As adopted in 21st AMEM, a new proposal for the creation of the Regional Energy Policy and Planning (REPP) has been incorporated.

Programme Area No. 1. ASEAN Power Grid

To strengthen collective cooperation among ASEAN power utilities/authorities in pursuing the ASEAN Power Grid for optimum use of energy resources for ASEAN development, new objectives, strategies and directions/actions have been formulated for Programme Area No. 1.

The proposed objective of the programme area is: “to facilitate the implementation of the ASEAN Interconnection Master Plan and to further the establishment of policy framework of the electricity network comprising the APG. The proposed strategies are: 1) develop the ASEAN Power Grid by interconnection; 2) optimization of the generation sub-sector vis-à-vis available indigenous energy resources; 3) invite private sector participation to develop the generation identified in the AIMS; and, 4) address barriers to interconnection.

Objective: To facilitate the implementation of the ASEAN Interconnection Master Plan and to further the establishment of policy framework of the electricity networks comprising the APG	
Strategy	Action
1. Develop the ASEAN Power Grid by Interconnection	<p>Possible commissioning by 2005-2007</p> <ul style="list-style-type: none"> • Vietnam – Cambodia <p>Possible commissioning by 2007</p> <ul style="list-style-type: none"> • Thailand – Cambodia <p>Possible commissioning by 2009</p> <ul style="list-style-type: none"> • Peninsular Malaysia – Sumatra • Sarawak - West Kalimantan • Thailand - Lao PDR <p>Possible commissioning beyond 2009</p> <ul style="list-style-type: none"> • Sarawak – Peninsular Malaysia • Batam - Bintan - Singapore - Johor • Philippines - Sabah • Sarawak - Sabah - Brunei Darussalam • Lao PDR - Vietnam • Thailand - Myanmar • Lao PDR - Cambodia
2. Optimization of the generation sector vis-à-vis indigenous resources	Further optimize the AIMS result
3. Invite private sector participation to develop the generation identified in the AIMS	Conduct F/S on identified interconnections
4. Address barriers to interconnection	Conduct studies on policy, regulatory, legal, financial and commercial framework

1. Develop the ASEAN Power Grid Interconnection

The Heads of ASEAN Power Utilities/Authorities (HAPUA) is tasked to implement the ASEAN Power Grid programme. It completed the ASEAN Interconnection Masterplan Study (AIMS) in March 2003, identifying 14 interconnection projects. During the 21st AMEM on June 2003 in Langkawi, Malaysia, the Ministers approved 11 of the projects endorsed by HAPUA. The AIMS, as adopted, will serve as the reference guide in the implementation of the ASEAN interconnection projects.

Two (2) interconnection projects are operational. These are the Peninsular Malaysia-Singapore interconnection and the Thailand-Peninsular Malaysia Stage # 1 and Stage # 2 interconnections. The Vietnam-Cambodia interconnection shall be commissioned between 2005-2007 and the Thailand-Cambodia link by 2007. Three (3) other projects will be commissioned by 2009, and the rest beyond 2009.

In its bid to streamline operation, HAPUA adopted the Memorandum of Understanding (MOU) of the new Structure of HAPUA during their 20th Meeting. A special task force headed by Malaysia completed the review of the HAPUA organizational structure, administrative modalities and

established a permanent HAPUA Secretariat last December 17, 2003 with three year term rotation. Indonesia hosts the HAPUA Secretariat for the period 2004-2007.

HAPUA is expected to play a very important role in the development of the ASEAN Power Grid and it is confident that it can develop the grid and bring electricity to the people in the region.

2. Optimization of the Generation Sub-sector

The ASEAN has abundant indigenous energy resources. There are large potential reserves of fossil energy sources as well as renewable energy which can be harnessed to produce electricity. However, initial results of the interconnection study indicate that it would not be economical to fully integrate the power systems of all the 10 ASEAN countries. Dividing the power system into two systems – East System and West System – indicated that there are 11 potential interconnection projects that can be implemented up to the year 2020. Further optimization studies shall be conducted to determine the delivery of cheap source of energy to the load center and economic operation and sharing of reserves.

3. Invite Private Sector Participation to Develop the Interconnection

HAPUA will continue to conduct feasibility studies on the interconnection projects. As power generation and interconnection projects entail huge capital investments, which no single government can undertake on its own, the private sector will be encouraged to embark on these projects.

4. Address barriers to interconnections

HAPUA will conduct studies to come up with appropriate recommendations to overcome barriers to interconnections. Studies to be undertaken will cover areas such as policy, regulatory, legal, financial and commercial framework. The studies shall be conducted in coordination with the eight (8) Working Groups (WG's) under the new HAPUA structure. The WG's include: a) Generation; b) Transmission; c) Distribution; d) Renewable Energy and Environment; e) Electric Supply Industry (ESI) Services; f) Resource Development; g) Power Reliability and Quality; and, h) Human Resource.

Programme Area No. 2. Trans-ASEAN Gas Pipeline

The Trans-ASEAN Gas Pipeline programme is a very important task expected to provide the region with a secure supply of energy. For the plan period, the proposed objective of the programme is: “to facilitate the implementation and realisation of the Trans-ASEAN Gas Pipeline Infrastructure Project to ensure greater economic value and security of gas supply. The strategies are: 1) ASCOPE members to collectively implement the ASEAN MOU on TAGP; 2) PERTAMINA and PSC partners to undertake detailed feasibility study for East Natuna gas field development; 3) respective ASCOPE members to implement

the approved roadmap for TAGP taking into consideration its economic viability accordingly; and, 4) ASCOPE Gas Centre (AGC) to implement the approved 5-year Work Programme.

<p>Objective: To facilitate implementation and realisation of the Trans-ASEAN Gas Pipeline Infrastructure Project to ensure greater economic value and security of gas supply</p>	
Strategy	Action
<p>1. ASCOPE Members to collectively implement ASEAN MOU on TAGP</p>	<ul style="list-style-type: none"> • Operationalization of the MOU on TAGP • Formal establishment of the AGCC
<p>2. PERTAMINA and PSC Partners to undertake detailed feasibility study for East Natuna Gas Field Development</p>	<ul style="list-style-type: none"> • Commission of Feasibility Study Initiative
<p>3. Respective ASCOPE Members to implement the approved roadmap for TAGP accordingly</p>	<ul style="list-style-type: none"> • Eight (8) gas interconnection projects <ol style="list-style-type: none"> 1. South Sumatera, Indonesia – Peninsular, Malaysia 2. W. Natuna, Indonesia – Duyong, Malaysia 3. E. Natuna, Indonesia – JDA – Erawan, Thailand 4a+4b <ul style="list-style-type: none"> E. Natuna – W. Natuna, Indonesia – Kerteh, Malaysia 4a+4b <ul style="list-style-type: none"> E. Natuna – W. Natuna, Indonesia – Singapore 5. E. Natuna, Indonesia – Brunei Darrusalam - Sabah, Malaysia – Palawan-Luzon, Philippines 6. Malaysia – Thailand JDA – Block B Vietnam 7. Pauh, Malaysia – Arun, Sumatra, Indonesia 8. East Kalimantan – Sabah - Philippines
<p>4. ASCOPE Gas Centre (AGC) to implement the approved 5-year Work Programme</p>	<ul style="list-style-type: none"> • AGC Work Program are as follows: <ol style="list-style-type: none"> 1. To support and encourage the production, utilisation, distribution, marketing, and sale of natural gas. 2. To standardise technical specification for the Pipelines, such as design and construction standards, operation and maintenance guidelines, safety, environment and measurement standards which are internationally recognised by the oil and gas industry. 3. To facilitate effective and stable contractual arrangements for the supply, distribution and transportation of natural gas including adherence to the open access principle as well as management of the pipelines in accordance with such internationally accepted standards in the petroleum industry. 4. To recommend appropriate measure to ensure security and safety of the Pipelines and the uninterrupted flow of contracted natural gas for transmission through the Pipelines. 5. To recommend measures to mitigate the risk and impact on the environment which the construction, operation, and maintenance of the Pipelines may pose to the community, property and environment. 6. To explore possible cooperation and coordination measures concerning further economic potential use of pipelines to be abandoned

	<p>7. Other initiatives may include R&D on CO2 sequestration, harmonization of standards & specifications, etc.</p> <p>8. Study alternative options on Marine CNG Transport mode</p>
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The following plan of action provides the platform for the implementation and realization of the TAGP:

1. Implement the Memorandum of Understanding (MOU) on the TAGP

The Memorandum of Understanding (MOU) on the TAGP was signed by the ASEAN Energy Ministers during the 20th AMEM held in Bali, Indonesia on 04 July 2002. The TAGP MOU sets out the cooperation framework for greater public-private partnership and collaboration in the implementation of the TAGP.

Under the MOU member countries can initiate individual and/or joint studies, either on a bilateral or multilateral basis, to support and encourage the production, utilisation, distribution, marketing and sales of natural gas among ASEAN member countries. Assessment and review of national and regional legal and institutional frameworks for natural gas, concerning cross-border issues relative to the commercial and economic feasibility, construction, financing, operation and maintenance of the pipeline as well as supply transportation and distribution of natural gas to member countries shall be undertaken.

Relevant studies on the following (pursuant to Article III of the TAGP MOU) will likewise be conducted:

a) **Financing**

To consider available financing modes or arrangements relative to the financing of the construction, operation and maintenance of the pipelines, as well as the supply, transportation and distribution of natural gas to member countries. This considers the important role of the private sector, especially in the provision of needed capital investment.

b) **Technical Specifications**

To determine appropriate standardisation of technical specification of the pipeline, such as, but not limited to, design and construction standards, operation and maintenance guidelines, safety, environment and measurement standards which are internationally recognized by the oil and gas industry.

c) **Access and Use**

To determine effective and stable contractual arrangements for the supply distribution and transportation of natural gas, including

adherence to the open access principle as well as management of the pipelines in accordance with such internationally accepted standards by the oil and gas industry.

d) Security Supply and Emergency Supply Arrangements

To determine appropriate measures to ensure security and safety of the pipelines and the uninterrupted flow of contracted natural gas for transmission through the pipelines, including a framework for cooperation in the event of serious supply disruptions, subject to mutual consultations.

e) Health, Safety and Environment

To determine a framework for cooperation to mitigate risk and environmental impact which the construction, operation and maintenance of the pipelines may pose to affected communities, recognising each member country's rights in accordance with its own national laws, safety measures and environmental requirements which are to govern the construction, operation and maintenance of the pipelines, constructed within its territories, including the designation of its own safety and environmental inspectors.

f) Transit Rights

To determine acceptable measures to facilitate issuance of permits, licenses, consents or other authorisations for transit pipelines and natural gas being transported through the territory of member countries.

g) Taxation and Tariff

To determine arrangements for the mutually agreed imposition of, or exemption from import, export or transit fees, duties, taxes or other government imposed fees and charges on the construction, operation and maintenance of the pipeline as well as the natural gas in transit.

h) Abandonment

To explore possible cooperation and coordination measures concerning the potential further economic use of abandoned pipelines without undermining each member country's right to enforce its own national laws concerning the abandonment of pipelines within its territory.

i) **Jurisdiction**

To determine jurisdiction and responsibility over the pipelines, particularly for pipeline segments located in the high seas (the exclusive economic zone-EEZ).

2. PERTAMINA and PSC partners to undertake detailed feasibility study for East Natuna gas field development

Tasked to lead the implementation of the TAGP as a program area in the APAEC, the ASCOPE formulated the Masterplan for the "*Trans-ASEAN Gas Pipeline Infrastructure Project*." The Masterplan which was completed in October 2000 indicates that there are a total of 175 Tscf of proven and 94 Tscf probable natural gas reserves in the then seven (7) ASCOPE member countries. Indonesia has the highest gas reserves with 90 Tscf proven and 42 Tscf probable reserves. Myanmar, which joined ASCOPE in 2003, has a total reserves of 18.4 Tscf proven and 60.3 Tscf probable and possible gas reserves.

A very important finding of the Masterplan revealed that should there be no significant commercial gas discoveries in the near future, countries like Thailand, Singapore and the Philippines would see gas shortfalls. The region would increasingly be dependent on Indonesia as the future main gas supply hub for the ASEAN region or else the region has to import gas supplies.

The Masterplan concludes that there are enough gas supplies to meet the future growing demand for natural gas in the ASEAN 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. Toward this end, investment for the exploration of potential resources should be encouraged. 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.

3. Implement the Trans-ASEAN Gas Pipeline Infrastructure per the approved roadmap on the TAGP

ASCOPE has reviewed and submitted to the ASEAN Secretariat the "Roadmap for Integration of ASEAN: Trans-ASEAN Gas Pipeline Implementation". 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 Sumatera, 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.

A feasibility study on a gas pipeline project covering East Kalimantan – Sabah – Philippines has been proposed with possible commissioning by 2009.

4. ASCOPE Gas Centre (AGC) to implement the approved 5-year Work Programme

In the near to medium term, the ASCOPE Gas Centre (AGC) is expected to address matters relating to harmonization and standardization of technical specification and gas quality while the commercial aspects as per the studies identified under the ASEAN MOU on TAGP will be undertaken in consultation with the ASEAN Gas Consultative Council (AGCC). It will also undertake joint-techno economic studies for the implementation of the TAGP and gas related projects. Furthermore, the AGC will develop knowledge management system for sharing/exchange information on the natural gas industry and develop exchange programme to promote research on natural gas technologists and researchers. One of the studies to be conducted will deal with using marine compressed natural gas (MCNG) as an alternative mode of transport for island demand centers.

In the long term, the AGC will enhance and promote technological capability enhancement through effective gas-related techno-economic research and development efforts, education and skills training and development. AGC is also expected to undertake value-added activities for gas development for ASCOPE members.

As presented during the 21st AMEM in Langkawi, Malaysia will host the AGC.

Programme Area No. 3. Coal

The main objective of the programme for the next five years is: “to cooperate and promote sustainable development and utilization of coal while addressing environmental issues and facilitating intra-ASEAN coal-related issues.”

Objective: To cooperate and promote sustainable development and utilization of coal while addressing environmental issues and facilitating intra-ASEAN coal related issues	
Strategy	Action
1. Strengthen Institutional and Policy Framework	<ul style="list-style-type: none"> • Provide assistance in policy reviews
2. Promote Clean Coal Technology (CCT)	<ul style="list-style-type: none"> • Organize seminars on CCT • Organize technical visits on CCT

	<ul style="list-style-type: none"> • Facilitate feasibility studies on CCT for rural electrification • Facilitate/organize technical training on CCT including coal bed methane
3. Promote private sector investments	<ul style="list-style-type: none"> • Organize investment seminars • Facilitate feasibility studies on coal infrastructure projects and low rank coal projects
4. Promote intra-ASEAN Coal Trade	<ul style="list-style-type: none"> • Update directories of coal specifications of consumers and producers • Facilitate feasibility studies on establishing an ASEAN coal commodity market • Organise coal market seminars
5. Promote environmental assessment of coal projects	<ul style="list-style-type: none"> • Provide assistance on environmental impact assessment of projects • Organize seminars on environmental impact

Accordingly, the strategies to be implemented for the next five years are: 1) strengthen institutional and policy framework; 2) promote clean coal technology (CCT); 3) promote private sector investments; 4) promote intra-ASEAN coal trade; and, 5) promote environmental assessment of coal projects. The strategies remain relatively the same as in the previous programme, with some modification on the promotion of environmental awareness.

Various activities were identified to implement the five major strategies, namely:

1. Strengthen Institutional and Policy Framework

The AFOC shall undertake an inventory of existing policies, institutional arrangements and regulations on coal as well as the key industry players in each member country. Likewise it shall conduct studies and provide assistance on policy reviews.

2. Promote Clean Coal Technology (CCT)

Coal suffers from negative perception that it is not a clean fuel. It is common to ASEAN countries that strong opposition is met when coal-fired generating facilities are being constructed due to perceived pollution effects once it becomes operational. This is where government and private developers can work jointly for public acceptance of the project. The promotion of CCT will be highlighted in an information education campaign (IEC) plan through tri-media (print, radio and television) showing the new technologies being employed for emission mitigation of present generation coal power stations.

Other activities that will be carried out to promote CCT are the following: a) organize seminars on CCT; b) organize technical visits on CCT facilities; c) facilitate feasibility studies on CCT for rural electrification; and, d) facilitate/organize technical training on coal usage.

3. Promote Private Sector Investment

To promote private sector investment, the AFOC shall organize Coal Business Forums wherein the private sector will be presented with business opportunities. It shall conduct feasibility studies and likewise compile feasibility studies of member countries and make these available to prospective investors. When necessary, assistance in conducting feasibility studies shall be provided by relevant ASEAN bodies to enhance investment opportunities. The conduct of investment promotion road shows is also expected to boost the level of investments in the sector.

4. Promote intra-ASEAN Coal Trade

With the assistance of ACE, the AFOC plans to establish a directory of coal specifications, producers and consumers in the ASEAN which will be uploaded in the AFOC website. It will also organize a network of coal laboratories in ASEAN to improve standards of coal analysis. AFOC will conduct studies on existing and future coal flow in the region. The studies to be conducted will focus on the coal trade flow and show how the coal commodity market can be organized and established in the future. Preliminary studies have been completed and the information gathered are compiled in the AFOC website.

5. Promote Environmental Assessment of Coal Projects

Under this strategy, the AFOC shall provide assistance in the conduct of environmental impact assessment (EIA) of coal projects. This will be extended to small-scale coal project entrepreneurs who will need external assistance on environmental impact assessment.

Programme Area No. 4. Energy Efficiency and Conservation

Energy efficiency aims to reduce energy consumption without reducing the use of energy-consuming plant and equipment. It intends to make better use of energy, resulting to the promotion of individual behavior, working methods and manufacturing/industrial practices which are less energy-intensive. Various measures to promote energy efficiency form part of the objectives of the EE&C-SSN programme for the next five years.

<p>Objective: To strengthen cooperation in energy efficiency and conservation through institutional capacity building and increasing private sector involvement including enhancing public awareness as well as expanding markets for energy efficient products</p>
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Strategy	Action
1. Continuation of Information Sharing and Networking	<p>Develop a compendium of the following for circulation to member countries and general public:</p> <ul style="list-style-type: none"> • EE&C Policies / Strategies / Programs • EE&C Products and Technologies • EE&C Pool of Experts and Institutions • EE&C Best Practices / Researches
2. Continuation of ASEAN Energy Standards and Labeling	<ul style="list-style-type: none"> • Review country S&L programs and testing capacity • Study international experiences through study tour and joint workshops • Formulation of common Technical Bases • Development of Control Mechanisms and Implementation process • Dialogues with stakeholders and promotion
3. Expansion of Private Sector Involvement	<ul style="list-style-type: none"> • Enhance dialogues with private sector, other countries and organizations outside ASEAN • Conduct Seminars and Workshops jointly with EE&C Industry and Businesses • Include EE&C Discussion and Exhibitions in AEBF • Expand Energy Awards/Competitions for Industry Sector and Individual Achievements
4. Capacity Building	<ul style="list-style-type: none"> • Establish energy audit procedures • Implement energy audit training • Implement / Disseminate recommended improvements • Develop system for energy database, benchmarking and guideline • Develop ASEAN Energy Management System/Network • Develop certification system for ASEAN energy manager including energy auditor • Develop ASEAN energy management training for trainers • Develop energy management guidelines • Technology Transfer and Demonstration
5. Promotion of ESCO business	<ul style="list-style-type: none"> • Development of Measurement & Verification (M&V) Protocol for ASEAN • Development of Energy Performance Contracting Legal Framework and Standard Form of Contract • Development of Project Management and Institutional Guideline

	<ul style="list-style-type: none"> • Development of Energy Saving Potential Indexes (Benchmarking) • E-commerce development for energy services
6. Promotion of Energy Efficiency in the Transport Sector	<ul style="list-style-type: none"> • Information Sharing on EE Policy and Measures for Transportation Sector • Explore possible cooperation activities with ASEAN Transport sector (STOM)

In response to evolving developments, the programme area objective is: “to strengthen cooperation in energy efficiency and conservation through institutional capacity building and increasing private sector involvement including enhancing public awareness as well as expanding markets for energy efficient products.”

The major guiding framework of the sector is to continue implementing the three strategies contained in the last plan and the inclusion of three new strategies for the next plan of action 2004-2009. The three strategies in the old programme which will be continued are the following: 1) continuation of information sharing and networking; 2) continuation of ASEAN energy labeling; and, 3) expansion of private sector involvement. The three new strategies include, 1) capacity building; 2) enhance business environment of energy services or promotion of ESCO business, and 3) promotion of energy efficiency in the transport sector.

1. Information Sharing and Networking

This strategy is mainly a continuation and expansion of information sharing and networking among the members and stakeholders from the previous APAEC 1999-2004.

In general terms, priorities have been set for the next five (5) years where efforts shall be concentrated towards promoting energy efficiency. These include the following:

- Collection of policies, strategies and programs from other member economies;
- Finalization and dissemination of directory of EE&C products and technologies;
- Finalization and dissemination of directory of EE&C resources in ASEAN; and
- Finalization and dissemination of papers/studies/researches on EE&C best practices

All the information gathered will be uploaded to the ACE Homepage through regular updates by the coordinator of the EE&C-SSN for ready reference and/or dissemination to members and its stakeholders.

Overall, lack of information for consumers, manufacturers and industries hamper the inflow of investments in energy efficiency. For the 2004-2009 plan, the EE&C-SSN can also strengthen public awareness on the benefits of implementing energy savings through print advertisements (e.g., newspapers, posters, brochures, handbooks, manuals, etc.) and media campaigns (e.g., radio, TV, etc.).

2. ASEAN Energy Standards and Labeling

The SOME of the 20th 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 Programme was created. The conduct of feasibility studies on ASEAN labeling system has previously been considered under the 1999-2004 plan.

3. Expansion of Private Sector Involvement

Private sector involvement is critical to the successful implementation of the plans and programs for the sector. An enhanced and closer dialogue and exchanges will be undertaken for information on energy policy, notably through establishments of networks, fora, conferences and seminars with the private sector. These shall include EE&C industry and businesses, other countries and organizations outside ASEAN. As an example, the sub-sector network will tap the Renewable Energy and Energy Efficiency Partnership (REEEP) which is a coalition of progressive governments, businesses and organizations committed to accelerating the development of renewable energy and energy efficiency systems. The ASEAN Energy Business Forum (AEBF) is also a good opportunity where EE&C can play a major part in the discussion and exhibitions with the private sector.

The extension of ASEAN Best Practices Competition Awards is expected to increase potential in energy savings, increase participation of other buildings through replication and adoption of building energy management system and other good practices towards energy efficient operation of their building. This will compel building owners, operators and contractors to use energy efficient equipment, devices, and other energy conserving measures in the construction and maintenance of their buildings.

4. Capacity Building

This is a new strategy being considered for the medium term noting that demand for energy and energy prices have been increasing rapidly within and outside ASEAN. To meet this challenge, EE&C-SSN has undertaken a number of initiatives for the effective utilization of energy. However, some of the ASEAN members lack experience and

technology on how to facilitate development and implementation of cleaner production of energy efficient projects. In addition, some ASEAN members lack financial resource to carry out such projects.

For 2004-2009, the sector shall pursue a conservation plan to reap benefits to the extent possible. Hence, capacity building shall be a major focus.

5. Promotion of ESCO Business

Among the key actions to be implemented under this strategy are: a) development of measurement and verification protocol for ASEAN; b) development of energy performance contracting legal framework and standard form of contract; c) development of project management and institutional guideline; d) development of energy saving potential indexes (benchmarking); and e) E-commerce development for energy services.

The Energy service companies or ESCOs approach has not been widely used in ASEAN due to lack of awareness, financial, institutional and legal framework. As a mechanism, the EE&C-SSN shall tap the assistance of an ESCO to improve energy efficiency within ASEAN. The sector will be provided value-added benefits on the technical assessment and recommendation with the help of a specialist. This shall result to an immediate reduction of energy costs to the members who acquired the services of an ESCO.

6. Promotion of Energy Efficiency in the Transport Sector

The new strategy was crafted in response to the clamor of the AMEM/SOME to include projects for the transport sector as the sector is a major consumer of energy. Formulation of actions to be undertaken is in its very early stage and still under discussion by the sub-sector network. Some of the actions envisioned would be the sharing of information on the energy efficiency policy and measures for the transport sector and possible research or studies. The EE&C-SSN will coordinate with the Senior Transport Officials Meeting (STOM) of ASEAN for joint studies.

Programme Area No. 5. Renewable Energy

The motivation in the formulation of the ASEAN Plan of Action by the RE-SSN was inspired by the fact that the sensible deployment of renewable energy will accelerate the economic and social development of ASEAN. Renewable energy is seen as the right candidate to complement fossil fuel in order to support sustainable energy development. It is also envisaged that by end of the Plan period, clear policies and responsive plans and programme for RE commercialization be addressed.

<p>Objective: To institute and maintain sustainable development on the use of renewable energy and its technologies</p>	
Strategy	Action
<p>1. To develop a policy and institutional framework for the development of RE</p>	<ul style="list-style-type: none"> • Recommend a regional policy on RE including setting a renewable energy target in the region • Conduct institutional capacity building • Continue to conduct dialogues and consultation workshops among stakeholders
<p>2. To promote the development and contribution of RE in energy supply</p>	<ul style="list-style-type: none"> • Increase the share of RE in ASEAN to at least 10 percent of power generation
<p>3. To further strengthen information networking in RE</p>	<ul style="list-style-type: none"> • To continue the implementation of PRESSEA and ASEM GRIPP Network
<p>4. To promote intra-ASEAN cooperation on ASEAN-made products and services</p>	<ul style="list-style-type: none"> • Update compilation of existing specification and standards of member countries in the RE-SSN Infonet of ACE • Conduct market study on various RE technologies • Develop/harmonize standards for RE products • Strengthen local manufacturing capabilities for RE products • To design and apply innovative financing instruments in support of RE projects • To compile potential projects that are planned for implementation up to 2009 • To increase international cooperation
<p>5. To promote the utilization of biomass-based cogeneration technology</p>	<ul style="list-style-type: none"> • To develop promotional activities i.e. workshops/ seminars to encourage uptake of cogeneration projects • Dissemination of information relating to cogeneration and market developments
<p>6. To promote the utilization of biofuels</p>	<ul style="list-style-type: none"> • To develop promotional activities i.e. workshops/ seminars to encourage utilization of biofuels • Dissemination of information relating to biofuel technology and market developments • Establish linkage to the automotive and related industries to pursue cooperation in R&D activities

The objective of the programme area is “to institute and maintain sustainable development on the use renewable energy and its technologies”. The need for multilateral action to promote the commercialization of RE is apparent in the strategies and activities as elaborated below:

1. Develop a policy and institutional framework for the development of RE

Certain issues and barriers regarding RE development need to be unveiled and sufficiently addressed by the ASEAN countries, which can be discussed in national workshops participated by various agencies, including government, research institutions, private and commercial industries. Findings from these activities are anticipated to be included in the formulation of a policy and institutional framework for the development on RE.

Skilled and trained personnel are essential to help realize the actual potential of RE. Necessary transfer of technology, knowledge and skills among ASEAN countries are required for capacity building. Special training sessions need to be conducted to facilitate the exchange of information on technology and successful practice among experienced ASEAN personnel.

Experience gained in the ASEAN region is valuable. Therefore, it is highly important for other countries in the region to gain access to mature technologies. Exposure through organizing bilateral dialogues and consultation workshops, training courses, study tours and exchange of visits of technical experts shall be encouraged.

2. Promote the development and contribution of RE in energy supply

The success in the development of renewable energy is gauged through its increasing importance in the national energy balance in competition with conventional sources of energy. Therefore, the target to attain at least 10 percent of dependable capacity utilizing RE for power generation is deemed as an acceptable and precise indicator in ASEAN context.

3. To further strengthen information networking in RE

Given the high acceptance of internet based information dissemination, the existing online information networking, i.e PRESSEA and ASEM GRIPP Network, will be sustained to help ensure effective diffusion of RE initiatives. Selected stakeholders in the region will be invited to attend national level RE programme workshops and seminars organized by member countries to share experience and lesson learned.

4. Promote intra-ASEAN cooperation on ASEAN-made products and services

At the moment, ACE has taken the initiative to compile existing RE specification and standards of ASEAN Member countries in its infonet. This effort will be continued to ensure sufficient and updated information readily accessible to all.

Efforts will be devoted to the commercialization and marketing aspects of RE technologies. A market study will be conducted to identify and address the constraints in marketing renewable technologies in order to facilitate diffusion and to enable the renewable industry to be self-sustaining.

Lack of standard and codes of practice contribute to the perceived risk in renewable energy application among investors and consumers. To improve their confidence, RE products should comply with certain standard.

The capacity of the local industry to manufacture, assemble, service and maintain the RE products must be improved in order to assist in fostering commercialization. The capabilities of local manufacturing should be supported by strategic incentives from the government.

In spite of the merits of NRE, significant barrier to its wide scale application involve high cost of investment which undermine the efforts to further expand its utilization and to achieve the targeted commercialization phase. An innovative financing instrument/mechanism should be formulated to accelerate use of RE.

Given the potential merits of RE for the ASEAN region, a compilation of prospective RE projects will be made to ascertain the accumulated potential installed capacity within the area. The activity will provide interested developers with valuable information needed for investment decision-making.

A cooperative arrangement among countries is viewed as a viable approach. Multilateral collaborations that bring in private and international agencies to invest in viable RE projects shall be continued.

5. To promote the utilization of biomass-based cogeneration technology

Biomass-based cogeneration system for the production of electricity and usable energy will be encouraged. In this respect, the generation of energy mainly for in-house consumption will be promoted. The supply of excess energy generated by the biomass-based generating system to the local community and to the grid will be encouraged.

It is envisaged that closer cooperation with the on-going EC-ASEAN Cogen Programme will be undertaken to accelerate the acceptance of the technology in the region.

6. To promote the utilization of biofuels

Many countries are trying to search for alternative fuels to reduce heavy reliance on petroleum fuels. Under the programme area, utilization of biofuels calls for focused technological cooperation in

bioenergy. Linkage with automotive and related industries shall be established in order to advance technological know-how and R&D activities. Likewise, market studies shall be conducted to fully determine the commercial potential of bioenergy.

Programme Area No. 6. Regional Energy Policy and Planning

As agreed in the 21st AMEM, program area number six has been renamed Regional Energy Policy and Planning from Regional Energy Outlook, Energy Policy and Environmental Analysis in the previous APAEC.

The objective of the new program is “to enhance national and regional energy policy analysis and planning towards sustainable development”. Eight (8) strategies were identified which include: 1) energy policy and supply security information sharing; 2) capacity building in energy policy planning, supply security assessment and database development; 3) incorporation of environmental and sustainable development concern in regional policy formulation; 4) analysis and preparation of regional energy policy and outlook; 5) strengthen collaboration/cooperation among national and regional institutions in

Objective: To enhance national and regional energy policy analysis and planning towards sustainable development	
Strategy	Action
1. Energy policy and supply security information sharing network	<ul style="list-style-type: none"> • Continue and update the member's country energy policy and plans/infonet of ACE • Continue and update the ASEAN energy database system of ACE
2. Capacity building in energy policy planning, supply security assessment and database development	<ul style="list-style-type: none"> • Continue capacity building activities of member countries in energy policy analysis, database maintenance, supply security assessment through training, joint studies and technical exchanges between member countries
3. Incorporation of environmental and sustainable development concern in regional policy formulation	<ul style="list-style-type: none"> • Continue the information networking on environmental data related to energy development • Conduct studies on environmental and energy policies for sustainable development • Undertake regional cooperation on energy and sustainable development
4. Analysis and preparation of regional energy policy and outlook	<p>Conduct analysis on regional energy policy and outlook using common methodologies / framework</p> <ul style="list-style-type: none"> • Prepare regional energy policy and outlook
5. Strengthen collaboration/ cooperation among national and regional institutions in energy policy and planning	<ul style="list-style-type: none"> • Expand energy nodal network for the region • Conduct seminar/workshop and regional training in energy policy planning and supply security assessment

	<ul style="list-style-type: none"> • Exploration/utilization of all kind of indigenous energy resources
6. Address energy issues pertaining to ASEAN dialogue partners/other relationships	<p>Continue/pursue dialogue with the following:</p> <ul style="list-style-type: none"> • ASEAN-Japan • ASEAN+3 • ASEAN-EU • ASEAN-Australia • ASEAN-Germany • ASEAN-Multi Lateral Agencies
7. Pursue studies on evolving regional energy policy reform/issues	<ul style="list-style-type: none"> • Identify priority areas for regional studies
8. Monitoring and evaluation on the progress of the ASEAN Plan of Action for Energy Cooperation	<ul style="list-style-type: none"> • Conduct periodic monitoring and evaluation of the APAEC 2004-2009 • Formulate an evaluation and monitoring (E&M) system for the APAEC 2004-2009

energy policy planning; 6) address energy issues pertaining to ASEAN dialogue partners; 7) pursue studies on evolving regional energy policy reform/issues; and, 8) monitoring and evaluation of the progress of the ASEAN Plan of Action for Energy Cooperation. The programme strategies are consistent with the expectations and desired initiatives expressed by energy ministers during the 21st AMEM to undertake regional planning to ensure availability of energy supply.

Energy policy planning, supply security assessment on a per country and on a regional scale and the implementation of programmes requires the creation of a specialized body that will supervise Programme Area No. 6 and assist the ACE in monitoring the implementation of all the programme areas of the APAEC. Thus, with the approval of SOE Leaders, the Regional Energy Policy and Planning Sub-Sector Network (REPP-SSN) was created. Among others, this body will be tasked to objectively analyze and effectively assess the economic, social and environmental impacts of energy projects for each member country and to the region as a whole. Further, this establishes a permanent venue in addressing issues pertaining to implementation of the APAEC 2004-2009 and matters arising among ASEAN dialogue partners.

1. Energy policy and supply security information sharing network

Under the strategy of energy policy and supply security information sharing, continuous updating will be required of the ASEAN Energy Database (AED). The same will be done to member countries' energy policy and plans at the REPP-SSN infonet to be developed with the assistance of ACE. A seminar/workshop on Estimation and Reporting of Energy Reserves shall be conducted wherein data to be acquired shall be included in the AED.

2. Capacity building in energy policy planning, supply security assessment and database development

With regard to capacity building, regular training, joint studies and technical exchanges in energy policy analysis, database maintenance and supply security assessment will be conducted. These will be carried out through the technical exchange programs such as the SOME-METI capacity building on energy database and energy supply security assessment, the EPSAP under the ASEAN-Australia Economic Development Cooperation, and the ASEAN-IEA program. Although some ASEAN members have progressed ahead of other members in these areas, training will ensure increased technical capability, ensure uniformity in the pace of work and output expected of each country. This will greatly benefit the new members of ASEAN -- Cambodia, Lao, Myanmar and Vietnam which will be accorded priority.

3. Incorporation of environmental and sustainable development concern in regional policy formulation

A particular area of interest that this programme area would like to focus on is the incorporation of environmental concern in regional policy formulation. The REPP-SSN will continue the 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). These nodal networks on climate change and environment shall likewise conduct cooperation studies on environmental and energy policies for sustainable development.

4. Analysis and preparation of regional energy policy and outlook

Preparation of the Regional Outlook is in progress. The Institute of Energy Economics, Japan (IEEJ) shall assist in developing the energy outlook models of each country using econometric approach. The Microfit software will be used for developing the models.

5. Strengthen collaboration/cooperation among national and regional institutions in energy policy and planning

The energy nodal network for the region will be expanded with the dissemination of reports on regional policy issue analysis and demand-supply outlook to concerned international organizations. Cooperation/exchange programs with regional institutions will be conducted in seminars, workshops, trainings, etc.

6. Address energy issues pertaining to ASEAN dialogue partners/other relationships

Through the programme, dialogue shall be continued with the ASEAN partners through participation in meetings/forums/trainings. The implications of issues arising from these dialogues shall be included in policy analysis reports which could assist Senior Officials in decision making.

7. Pursue studies on evolving regional energy policy reform/issues

The strategy was formulated upon the recommendation during the Special SOME in December 2003 in Kuala Lumpur, Malaysia. This will provide special focus to ASEAN energy regulatory and market reforms as well as other areas of interest deemed important to merit deeper studies.

8. Monitoring and evaluation on the progress of the APAEC 2004-2009

One of the functions of the REPP-SSN under the Terms of Reference (TOR) creating it is to assist the ACE in coordinating the implementation and monitoring of the APAEC 2004-2009. This responsibility will formally rest with the sub-sector network upon approval of energy ministers at the 22nd AMEM on May/June 2004.

IV. Implementation Arrangements

The ASEAN Senior Officials Meeting on Energy (SOME) shall have overall responsibility in the supervision, coordination and implementation of APAEC 2004-2009, with the following specific responsibilities:

- a) Undertake all measures for its implementation, including determining priorities, carrying out periodic reviews, and the approval of the necessary cooperating programs, projects and activities;
- b) Serve as the principal coordinating body to address all issues relating to its implementation;
- c) 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
- d) Report on the overall implementation progress to the annual ASEAN Ministers on Energy Meetings (AMEM).

Member Countries shall collectively determine the implementation priorities, develop work programmes or plans for the programme areas, for consideration/approval by SOME/AMEM. Participation of the ASEAN private or business sector, ASEAN Dialogue Partners and the relevant regional/international organizations shall be encouraged in the development and implementation of the work programmes/plans.

The relevant ASEAN energy sub-sector networks or specialized bodies shall serve as the SOME's implementing arms in their respective programme area. They shall convene their respective meetings or Experts Group, as deemed necessary, to determine the priorities and implementing arrangements, further elaborate the cooperation work programmes, and prepare the necessary project proposals/documents. The designation of country coordinators for specific programmes/activities would be subject to mutual agreement by the Member Countries/SOME.

The ASEAN Centre for Energy (ACE) in coordination with ASEAN Secretariat shall assist SOME and the ASEAN energy specialized bodies and sub-sector networks in carrying out the above responsibilities, including technical support and assistance in the supervision, coordination and review of the cooperation programmes, projects and activities. In particular, ACE shall provide technical coordination, as well as facilitate the task of the implementing organizations such as the planning and fund sourcing, among others. The ASEAN Secretariat shall be responsible for programme coordination and other requirements with the other ASEAN coordinating bodies and the ASEAN Dialogue Partners. ACE jointly with the ASEAN Secretariat shall prepare regular implementation progress reports, for submission to the annual SOME/AMEM meetings.

Technical assistance from ASEAN Dialogue Partners, ASEAN private sector organizations, international and regional organizations and other related institutions are most welcome to ensure the successful implementation of APAEC 2004-2009. SOME, with the assistance of ACE and the ASEAN Secretariat, may undertake resource mobilization activities for securing potential funding support for the APAEC 2004-2009 projects and activities.

AMEM would provide the issues and concerns of common interest and set policy and programme directions for the effective implementation of APAEC 2004-2009.

V. Conclusion -- The Way Forward

The APAEC 2004-2009 is a dynamic document which continues to reflect ASEAN's priority and responses to changing circumstances. If warranted, annual reviews should be carried out to allow necessary redirections of the programmes.

To achieve the Plan, the ACE and its established policy and planning body should provide the necessary guidance for a cohesive implementation of projects. Member country commitment to facilitate implementation is crucial. It must be secured and maintained so that the region benefits as whole. The same dedication will be needed from the ASEAN specialist organizations in carrying out their respective program areas.

ASEAN has witnessed a growing integration in energy cooperation with respect to energy supply vital to its economic and social development. Intra-regional bilateral and multilateral, as well as international cooperation agreements regarding the development of its energy resources must be continuously pursued in manner that would ensure the sustainable development and use of these resources.

Much work on the infrastructure for cross border energy trading still need to be done. Respective governments will play a decisive role in facilitating the development of these projects. It will be the responsibility of the member states to create a more stable, predictable and competitive business environment. Among others, laws and regulations have to be harmonized and made transparent on matters relating to energy trade, pricing and contracts.

In the past, wealthier economies around the world have shown great interest and helped in the development of the ASEAN. It is the desire of the region that the same generous support be extended for energy projects by the funding countries and donor institutions.