ASEAN PLAN OF ACTION ON SCIENCE AND TECHNOLOGY: 2007-2011

1. INTRODUCTION

In accordance with the guiding principles laid by the ASEAN Heads of Government and the ASEAN Ministers for Science and Technology, ASEAN cooperation in S&T aims to achieve the following objectives:

1. a high level of intra-ASEAN cooperation in science and technology that is synergistic and self-sustaining and having the active participation of the private sector
2. a network of S&T infrastructure and programmes for public and private sector human resource development;
3. an active economically-beneficial institution-industry technology transfer;
4. an enhanced state of public awareness of the importance of science and technology to ASEAN's economic development; and,
5. an expanded S&T cooperation with the international community.

Since its inception in 1978, the ASEAN Committee on Science and Technology has time and again reviewed, reformulated and refocused these objectives in order to keep pace with the changing times and needs.

Vision 2020

New mandates for S&T cooperation came from Vision 2020, a vision adopted by the ASEAN Heads of Government at their Meeting in December 1997, which envisions ASEAN in 2020 as “a concert of Southeast Asian nations, outward looking, living in peace, stability and prosperity, bonded together in dynamic development and in a community of caring societies.

With this in view, ASEAN S&T cooperation efforts are directed towards the attainment of “a technologically competitive ASEAN, competent in strategic and enabling technologies, with adequate pool of technologically qualified and trained manpower, and strong networks of scientific and technological institutions and centers of excellence.”

The Vision provides for growth and development of S&T infrastructure, linkages of regional information and centers of excellence and human resources development.

Hanoi Plan of Action (HPA)

In order to implement the long-term vision, action plans are being drawn up to realize the Vision 2020. The Hanoi Plan of Action was the first in the series of plans of action building up to the realization of the goals of the Vision. Covering the period 1999 – 2004, the HPA proposed a range of measures to:

- Strengthen macroeconomic and financial cooperation (especially trade and economic liberalization);
- Enhance greater economic integration;
- Promote science and technology development and develop information technology infrastructure;
- Promote social development and address the social impact of the financial and economic crisis;

- Promote human resources development;
- Protect the environment and promote sustainable development;
- Strengthen regional peace and security;
- Enhance ASEAN's role as effective force for peace, justice and moderation in the Asia-Pacific and in the world
- Promote ASEAN awareness and its standing in the international community; and,
- Improve ASEAN's structurctures and mechanisms.

The HPA outlined specific S&T areas that should be developed, such as promotion of S&T development and development of IT infrastructure and networks, research, HRD, sustainable development as well as S&T management and future directions.

A major initiative forwarded by the ASEAN Leaders to further enhance and strengthen cooperation in ASEAN under the HPA is the Initiative on ASEAN Integration (IAI) which contains a broad framework to accelerate the integration of newer members of ASEAN. The IAI aims to narrow the divide within ASEAN and enhance the region's competitiveness.

ASEAN Plan of Action on S&T: Implementation Framework for 2001 to 2004

The most recent ASEAN Plan of Action on Science and Technology: Implementation Framework for 2001 to 2004, and extended until 2006, was adopted to achieve the following objectives:

- An intensified cooperation on science and technology development and R&D between the public and private sector, that has a strong thematic focus, and is interdisciplinary and cross-sectoral;
- An expanded scope of regional programmes leveraging on national experiences and resources and ASEAN-help-ASEAN initiatives that will enable the newer ASEAN members to move up the learning curve and become economically competitive;
- A highly mobile and intelligent S&T community that thrives on knowledge creation and applications, and is creative;
- A system of rewards and incentives to encourage innovation and technology commercialization and attract talent to a life-long career in science and technology;
- A means of seeding and sustaining science and technology programs through innovative ways of investing in S&T endeavors and generating revenue; and
- An enhanced system of management of the future S&T enterprise that is innovative, bold and entrepreneurial.

To attain the above objectives, the Plan of Action prescribed the following strategic thrusts:

THRUST 1. Networking of S&T Centers of Excellence and programmes so as to optimize resources and achieve maximum results;

THRUST 2. Developing policy for programme selection, design, and management in a new S&T enterprise, taking into consideration sectoral needs and the needs of newer member countries;

THRUST 3. Intensifying R&D collaboration in strategic and enabling technologies and promoting technology commercialization of R&D;

THRUST 4. Developing Human Resources to meet the needs of e-ASEAN, newer members and the knowledge economy;

THRUST 5. Developing S&T infrastructure and content for e-enabling research, human resource development, technology foresighting and intelligence gathering, technology commercialization and venture development;

THRUST 6. Generating revenue through innovative management systems and enterprise formation;

THRUST 7. Engaging Dialogue Partners in a focused manner in major program areas and flagship projects;

THRUST 8. Managing the S&T Enterprise in the new millennium.

During the period of implementation covering the years 2000-2006, the nine Sub-Committees of COST have implemented 78 projects, 61 of which were already completed while 17 are on-going. The efforts of Sub-Committees have been mostly focused on the human resources development, joint R&D and networking, suggesting that the Sub-Committees are still mainly operating in the traditional modes of cooperation programmes. Actions which require innovative thinking, mainly thrusts 6, 7 and 8, are less frequently addressed.

Now, the need to update the ASEAN Plan of Action on Science and Technology is timely considering the new directions set by the ASEAN Leaders in attaining the ASEAN Vision 2020 through reaching the milestones of the Bali Concord II and the integration of priority sectors as identified in the Vientiane Action Program (VAP) as well as various directives set out by the ASEAN Ministers on Science and Technology.

CONSIDERATIONS FOR THE NEW PLAN OF ACTION

Bali Concord II

The ASEAN Heads of State adopted the Declaration of ASEAN Concord II, otherwise known as the Bali Concord II, on 07 June 2003. The Concord elaborates on the themes of ASEAN Vision 2020 by setting concrete milestones to reach the goals of a broad and comprehensive ASEAN Community, founded on the three pillars of political and security cooperation, economic cooperation, and socio-cultural cooperation that are closely intertwined and mutually reinforcing for the purpose of ensuring durable peace, stability and shared prosperity in the region.

A. ASEAN Security Community (ASC)

The ASEAN Security Community is envisaged to bring ASEAN's political and security cooperation to a higher plane to ensure that countries in the region live at peace with one another and with the world at large in a just, democratic and

harmonious environment. The ASEAN Security Community members shall rely exclusively on peaceful processes in the settlement of intra-regional differences and regard their security as fundamentally linked to one another and bound by geographic location, common vision and objectives.

B. ASEAN Economic Community (AEC)

The ASEAN Economic Community is the realisation of the end-goal of economic integration as outlined in the ASEAN Vision 2020, to create a stable, prosperous and highly competitive ASEAN economic region in which there is a free flow of goods, services, investment and a freer flow of capital, equitable economic development and reduced poverty and socio-economic disparities in year 2020. The ASEAN Economic Community is based on a convergence of interests among ASEAN members to deepen and broaden economic integration efforts through existing and new initiatives with clear timelines.

C. ASEAN Socio-Cultural Community (ASCC)

The ASEAN Socio-cultural Community, in consonance with the goal set by ASEAN Vision 2020, envisages a Southeast Asia bonded together in partnership as a community of caring societies. The Community shall foster cooperation in social development aimed at raising the standard of living of disadvantaged groups and the rural population, and shall seek the active involvement of all sectors of society, in particular women, youth, and local communities.

Vientiane Action Programme

The Vientiane Action Programme (VAP) is the newest among the series of action plans or programmes leading to the end-goal of ASEAN Vision 2020, to be implemented for the period 2004 – 2010. The VAP focuses on deepening regional integration and narrowing development gaps within ASEAN, in particular the least developed member countries. In consonance with the Bali Concord II, the VAP identifies the following priority sectors for full integration by 2010:

- Agro-Based Products
- Automotive
- Electronics
- Fisheries
- Rubber-Based Products
- Textiles and Apparels
- Wood-Based Products
- Air Travel
- e-ASEAN (ICT)
- Healthcare
- Tourism
- Logistics and Services

The specific thrust for ASEAN S&T cooperation spelled out in the VAP is to "foster science and technology as a key factor in sustaining economic growth, enhancing community well-being, and promoting integration in ASEAN, through human resource, research and technology development and provision of technical services to meet the needs of economic integration; apply science and technology tools and methodologies to enhance economic and industrial planning; and formulate a systematic approach in the implementation of the

ASEAN-help-ASEAN programs to address the S&T needs and strengthen the S&T infrastructure of the less developed Member Countries. Furthermore, S&T will be used as a major tool for ASEAN to move forward in a unified and cohesive manner."

The ASEAN Development Fund was established as pool of ASEAN resources to support the implementation of the VAP and its successor documents. The ASEAN envisages that all activities across all its sectoral bodies seeking funds from ASEAN and its Dialogue Partners are in line with the VAP and its priority sectors for integration.

Directives from the Ministers

The 10th ASEAN Ministerial Meeting on S&T held on 16 October 2003 in Luang Prabang, Lao PDR, noted the following suggestions on how to further strengthen S&T cooperation in ASEAN:

- to enhance implementation of projects and activities on cost sharing projects. Not all ten countries may necessarily participate in the activities;

- to explore constant resources to fund the project and activity;

- to formulate common strategies towards relations with dialogue partners to help ASEAN to gain greater benefit from their expertise and scientific and technological development

The following suggestions were raised at the 11th ASEAN Ministerial Meeting on S&T held on 11-12 August 2005 in Indonesia:

- In order to attract support from Dialogue Partners for their projects, the Sub-Committees would need to also allocate seed money or counterpart funding to match the support to be tapped from Dialogue Partner when developing new project proposals.

- Sub-Committees to address the VAP when developing new project proposal seeking support from Dialogue Partners since the Dialogue Partners would use the VAP as a reference when considering proposals submitted by ASEAN.

- it may be time for COST to consider the revamp of the Sub-Committees to ensure their relevance with developments in the other ASEAN sectoral bodies, current challenges and technological trends.

- COST to consciously look at the demand side and consider giving priority to a few selected HRD and research areas such as renewable and alternative energy; development of IT application particularly on open source systems; biotechnology and food science; materials science and nanotechnology; and disaster management.

- there should be more inter-sectoral coordination across the many ASEAN bodies that may have similar interventions in order to achieve efficiency and effectiveness in the implementation of prioritized activities and avoid duplication.

National S&T Plans and Programmes

To facilitate the identification of priority areas that can be cost-shared, National S&T Plans and Programmes will be taken into consideration. These national plans have resources to fund programmes such as R&D and human resource development which may be pooled and expanded into regional programmes. In this regard, the ASEAN COST directed the Sub-Committees to formulate programmes which can be implemented in a short period of time. These "fast-track programmes" are derived from existing common national programmes or new initiatives of Member Countries which are supported by their national funds.

COST also requested the Advisory Body for the ASEAN Plan of Action on Science and Technology (ABAPAST) to prepare more specific recommendations for leveraging country initiatives to promote the integration of newer member countries into mainstream ASEAN cooperation in science and technology and narrow the gap between old and new member countries. COST also requested the ASEAN Secretariat and ABAPAST Chairman to prepare the groundwork on the recommendations.

Brainstorming Session

The Brainstorming Session was held on 25-26 April 2006 in Brunei Darussalam with primary aim at evaluating the current APAST. It is also envisioned to address the views and suggestions raised by the Ministers regarding (i) financial support for project activities, (ii) possible revamping of the Sub-Committees, (iii) priorities of COST's HRD and research areas, (iv) inter-sectoral coordination across the many ASEAN bodies.

While R&D remains to be the key focus APAST R&D activities were not much implemented due to difficulty in obtaining funding. Hence there is a need to look into the various possibilities and mechanisms to secure more R&D funding in the new APAST. Reviewing the projects undertaken by the Sub-Committees, the Brainstorming concluded the following:

- New initiatives are needed to get more focus on the less implemented thrusts and actions;
- Thrusts need to be more prioritized in support of the VAP and the Sub-Committees need to respond in a more directed and coordinated way to the APAST.
- HRD remains to have high priority among projects to be undertaken
- Criteria on selection of projects should coincide with the global problem
- Need of interactions and more effective communication amongst all the members of COST, as well as all other external parties involved
- Implementation of activities could be more resourceful and meaningful if they are programme-based rather than project based so that there can be a cross-cutting of projects amongst the different Sub-Committees.
- The Sub-Committees stressed the relevance of their research and development activities vis-à-vis other ASEAN bodies as well as the demands of time. Hence, no model for clustering or merger of the sub-committees was agreed upon

The Brainstorming Meeting also suggested the following criteria to be used for project/programme identification by the Sub-Committees:

- Multidisciplinary and/or thematic
- Funding Support
  - participation of countries
  - participation of private sectors
  - participation through country funding, matching grant and others
- ASEAN-help-ASEAN (ASEAN integration)
- ASEAN Science Fund
- Potential commercial spin-offs
- Potential public good

2. CONCEPTUAL FRAMEWORK

The conceptual framework for the ASEAN Plan of Action on Science and Technology 2007-2011 is shown in Fig. 1. The new APAST takes into account the guiding principles and directives provided by the ASEAN Leaders and the ASEAN Ministers for Science and Technology, previous action plans on science and technology, as well as national S&T plans and programmes.

(a) ***Guiding principles of ASEAN cooperation*** provide COST, since its inception in 1978, with the overall direction on S&T cooperation.

(b) ***Previous Action Plans on Science and Technology*** were formulated based on the guiding principles provided by the ASEAN Heads of Government and the ASEAN Ministers for Science and Technology.

(c) ***Vision 2020*** issued by ASEAN Heads of Government in 1997 set the Vision of what ASEAN should be in 2020.

(d) ***Hanoi Plan of Action*** adopted in 1998 by the ASEAN Heads of Government as the first in a series of action plans to implement Vision 2020.

(e) ***Bali Concord II*** *elaborates on the themes of ASEAN Vision 2020 founded on the three pillars of political and security cooperation, economic cooperation, and socio-cultural cooperation.*

(f) ***Vientiane Action Programme***, adopted by the ASEAN Heads of Government in 2004, is the latest in the series of action plans to implement ASEAN Vision 2020.

(g) ***ASEAN Plan of Action on Science and Technology 2001-2004***, extended up to 2006, is the most recent plan of action for S&T cooperation in ASEAN

(h) ***Directives from ASEAN Ministers*** on further strengthening S&T cooperation in ASEAN during the 10th Ministerial Meeting on S&T in 2003 and the 11th Ministerial Meeting on S&T in 2005.

(i) ***National S&T Plans and Programmes*** *facilitate the identification of activities that can be cost-shared.*

(j) ***Objectives of APAST 2007-2011*** to achieve ASEAN Vision 2020 are derived from the VAP and the directives from the ASEAN Ministers.

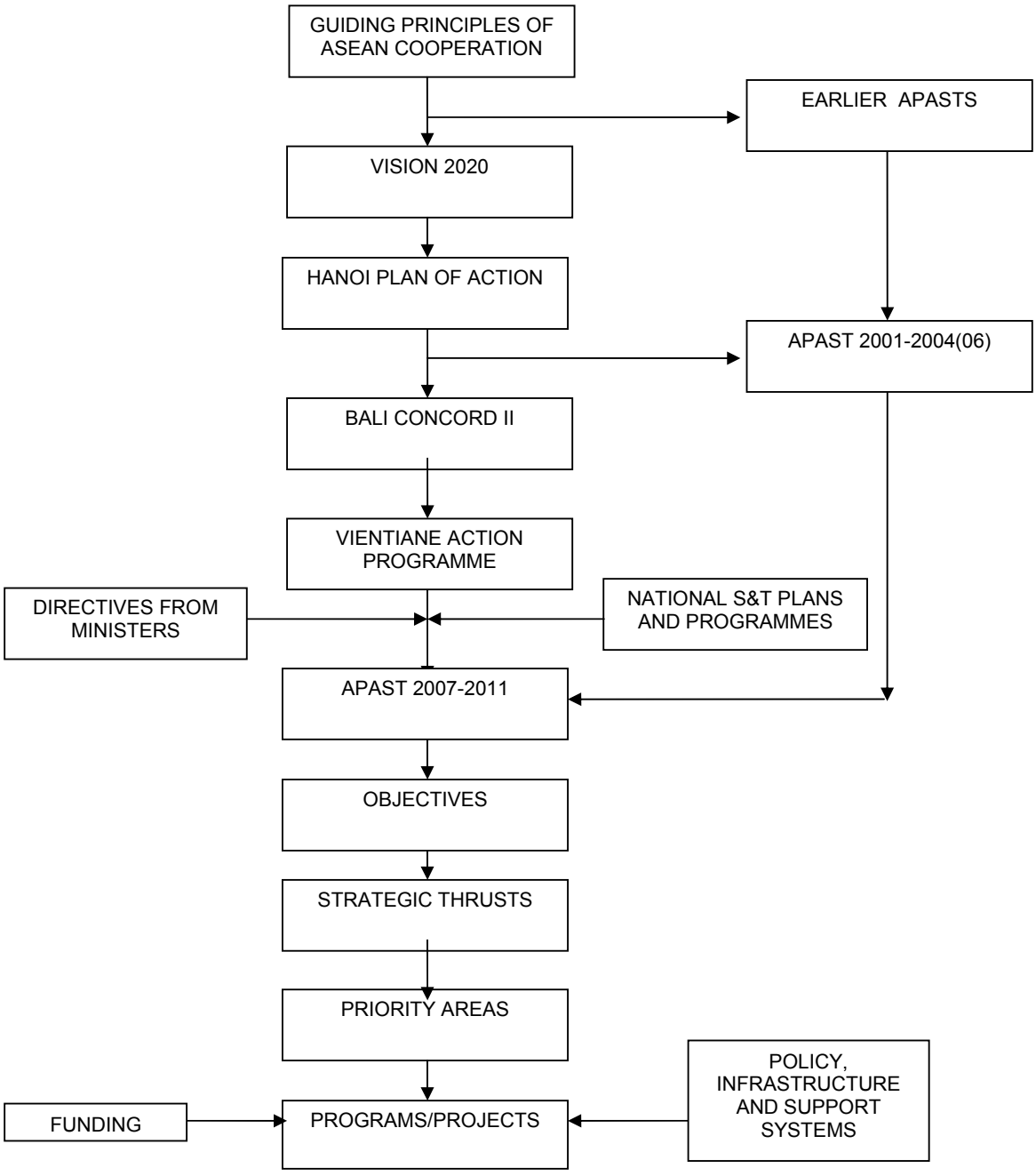
(k) ***Strategic Thrusts*** to attain the objectives are identified.

(l) ***Programme areas*** include the priority areas by subcommittees, ongoing projects and projects in the pipeline, proposed Flagship programmes and cost-shared projects.

(m) ***Funding*** for programs and projects by cost-sharing, from the ASEAN Science Fund, ASEAN Development Fund, Dialogue Partners and the private sector.

(n) ***Policy, infrastructure and support systems*** include policies on IPR, collaborative undertakings, commercialization; networks to facilitate information and resources sharing.

Fig. 1 Conceptual Framework of APAST 2007-2011



3. OBJECTIVES

In accordance with the VAP and other declarations of the ASEAN Leaders and directives of ASEAN Ministers for Science and Technology; and, in order to sustain and fully utilize the accomplishments of APAST 2001-2004, this action plan aims to achieve the following objectives:

3.1. To foster science and technology (S&T) as a key factor in sustaining economic growth, enhancing community well-being and promoting integration in ASEAN through human resource, research and technology development and provision of technical services to meet the needs of economic integration;

3.2. To apply S&T tools and methodologies to enhance economic and industrial planning;

3.3. To formulate a systematic approach in the implementation of the ASEAN-help-ASEAN programmes to address the S&T needs and strengthen the S&T infrastructure of less developed Member Countries;

3.4. To use S&T as a major tool for ASEAN to move forward in a unified and cohesive manner; and,

3.5. To build on the accomplishments of ASEAN Plan of Action on Science and Technology (APAST) 2001-2004 extended until 2006.

4. STRATEGIC THRUSTS

4.1. Intensifying R&D collaboration and promoting technology commercialization

Actions:

4.1.1. Identify and develop cost-shared projects through the subcommittees of COST.

4.1.2. Develop a policy framework for strategic partnership in R&D and technology development with the private sector.

4.1.3. Identify and seek appropriate commercial spin-offs with the private sector.

4.1.4. Transfer and apply technological know-how for the community's welfare.

4.2. Developing S&T human resources

Actions:

4.2.1. Enhance the promotion of the ASEAN-help-ASEAN programme focusing on human resource development and capacity building.

4.2.2. Design and implement training programmes to address the needs of high value-added industries that enhance ASEAN global competitiveness.

4.2.3. Design training programmes and utilize the ASEAN Virtual Institute of Science and Technology (AVIST) whenever appropriate.

4.2.4. Establish the ASEAN Scholarship and Fellowship Programme to support e-ASEAN and the implementation of the ASEAN Information Infrastructure.

4.3. Networking of S&T centres of excellence and programmes

Actions:

4.3.1. Establish an ASEAN network of technology foresight practitioners and sustain technology foresight exercises for selected priority sectors.

4.3.2. Develop a resource database and network to facilitate information sharing and technical cooperation among agencies in the public and private sector.

4.3.3. Enhance and sustain the utilization of the ASEAN Science and Technology Network (ASTNET) and other S&T networks.

4.4. Promoting S&T awareness and utilization

Actions:

4.4.1. Increase awareness of S&T projects and accomplishments through The implementation of appropriate programmes, leveraging on the ASEAN Science and Technology Week (ASTW), ASEAN Food Conference (AFC), the ASEAN Journal on Science and Technology for Development (AJSTD), and the various ASEAN COST supported events.

4.4.2. Establish linkages with other ASEAN bodies and committees for joint undertakings, utilizing S&T as a major tool in addressing priority projects in ASEAN.

4.4.3. Improve the competitiveness of the small and medium (SME) sector in ASEAN through the application of S&T tools and methodologies.

4.4.4. Promote the wider utilization of services provided by the ASEAN Seismological and Meteorological Centre (ASMC) and the ASEAN Earthquake Information Centre (AEIC).

4.5. Strengthening S&T infrastructure and support systems

Actions:

4.5.1. Complete the current augmentation plan of the ASEAN Science Fund and other ways to augment the fund.

4.5.2. Develop a core set of ASEAN S&T indicators that can serve as input in the development of human resource strategies by economic and industry planners.

4.5.3. Operationalize the ASTNET as a hub of S&T information exchange technology transaction.

4.5.4. Strengthen the ASEAN information infrastructure by creating and utilizing the contents of ASTNET, ITTIN, ASTMIS, ASTRENA and other COST resources.

4.5.5. Develop the policy and the system to promote and manage regional S&T enterprise, including intellectual property protection, for commercial spin-offs and joint ventures.

4.5.6. Develop the framework for the establishment of the ASEAN and Technology Enterprise for Research, Innovation, Service and Knowledge (ASTERISK) to create a fast-moving, adaptive and forward-looking S&T enterprise.

4.6. Forging closer cooperation with dialogue partners and other relevant organizations on regional projects

Actions

4.6.1. Develop new strategies for partnership with dialogue partners and other relevant organizations on mutually beneficial projects.

4.6.2. Facilitate access to dialogue partners' resources for implementation of regional projects with a focus on newer ASEAN members.

4.6.3. Forge closer relationships with relevant + 3 S&T agencies for mutually beneficial development in East Asia.

5. PROGRAMME AREAS

In line with the objectives and consistent with the strategic thrusts and actions, COST through its Sub-Committees will design and implement projects and activities within the priority areas. These priority areas, as determined by the Sub-Committees, must be anchored on the Priority Integration Sectors (PIS) under the ASEAN Economic Community (AEC) pillar of the VAP and directed to contribute to the other two pillars of the VAP; namely, the ASEAN Socio-Cultural Community (ASCC) and the ASEAN Security Community (ASC). Flagship Programmes, their criteria for selection, and their strategy for implementation are identified. The Sub-Committees formulated several specific projects proposed for cost-sharing.

5.1. Priority Areas

The priority areas, as identified by the Sub-Committees, are listed in the following table and the Priority Integration Sectors under the AEC to which they can be identified are indicated. These areas can also be designed to contribute to support the strategic thrusts of ASCC particularly on (1) strong and functional systems of social protection that address poverty, equity and health impacts of economic growth; and (2) promoting environmental sustainability and sustainable natural resource management that meets current and future needs. For the ASC, the strategy to establish an institutional framework to facilitate the free flow of information among ASEAN Member Countries may be addressed particularly by the priority areas identified under Microelectronics and Information Technology and under the Space Technology and Applications; and, the strategy for post-conflict peace-building to implement human resources development and capacity building programmes in areas undergoing post-conflict resolution and rehabilitation may be likewise addressed.

	AEC (PIS)
Biotechnology	
(a) Food and horticulture crops	*1, 4, 10*
(b) Improvement of livestock production	*1, 10*
(c) Bioremediation	*10*
(d) Bioprospecting	*10*
(e) Value-addition to natural products	*1, 5, 6, 7*
(f) Bioinformatics	*10*
Food Science and Technology	
(a) Food safety and quality	10
(b) Functional food	10
(c) Natural flavours and other additives	1, 10
(d) Food processing technology	1, 4
Infrastructure and Resources Development	
(a) S&T policy studies, especially S&T foresight study	12 12
(b) S&T management and information dissemination	12 12

(c) ASEAN S&T Information Network (ASTNET) *(d) ASEAN Virtual Institute for Science and Technology (AVIST)*	
Marine Science and Technology *(a) Marine biotechnology* *(b) Transboundary marine pollution* *(c) Marine hazards mitigation*	 4 8,10, 11 10, 11
Materials Science and Technology *(a) Nanomaterials, functional materials* *(b) Biomaterials to biomedical materials* *(c) Environment-friendly materials including biodegradableplastics and recyclable materials*	 10 10 10
Meteorology and Geophysics *(a) Climate, climate change and climate variability* *(b) Meteorological and geophysical issues* *(c) Regionally and meteorologically- related environmental issues* *(d) Capability building of national meteorological and geophysical services*	 10 8, 11 8, 11 12
Microelectronics and Information Technology *(a) Microelectronics and IC design* *(b) Multimedia applications and e-learning* *(c) Embedded systems and robotics* *(d) Open source systems* *(e) Image processing and vision systems* *(f) Security and surveillance systems*	 2, 3, 9 11, 12 3, 9 9 9 8,11
Non-Conventional Energy Research *(a) New and renewable/alternative energy such as biomass, solar and fuel cell* *(b) Energy and environment technology such as clean coal and natural gas* *(c) Industrial energy technology such as cogeneration and energy management of buildings*	 1 2, 10 10
Space Technology and Applications *(a) Geoinformatics* *(b) Communication and satellite technology applications* *(c) Micro/small satellites, sensors and ground*	 12 3, 8, 9, 11 3, 12

facilities	

** 1 Agro-based Products*
2 Automotive
3 Electronics
4 Fisheries
5 Rubber-based Products
6 Textiles and Apparels
7 Wood-based Products
8 Air Travel
9 e-ASEAN (ICT)
10 Healthcare
11 Tourism
12 Logistics and Services

5.2. On-going and Pipeline Projects

Recognizing the large number of pending projects, COST requested its Sub-Committees to review and prioritize their projects according to their relevance and contribution to APAST, VAP and the Roadmap of Integration of the priority sectors in the VAP. Moreover, those proposals which have been pending for more than 3 years should be dropped or the Sub-Committees may consider to redefine and update the projects such that they will elicit interests from Dialogue Partners or other external funding sources.

COST also urged the Sub-Committees to ensure that their activities address the goals of the VAP and take this into account when developing new projects and activities.

Acknowledging the existence of other ASEAN bodies that exert efforts to provide solutions similar to those of COST's concerns, the Sub-Committees must work closely with the other bodies to ensure that is no duplication of efforts and that the impact of utilization of scarce resources is maximized.

5.3. Flagship Programmes

While S&T activities can be handled by each COST Sub-Committee, collaborative undertakings will be pursued. Synergy among the various Sub-Committees will optimize the use of resources and maximize the benefit. These high impact flagship programmes will also be coordinated and/or jointly undertaken with other bodies whenever possible.

Criteria for Flagship Programmes

The following criteria will be used by COST in designing flagship programmes;

(a) Must address the goals of the VAP. ASEAN Vision 2020, APAST and other related declarations;
(b) Must address urgent regional issues;
(c) Must include provisions for capacity and capability building (HRD);
(d) Must address the common needs of Member Countries;
(e) Must be demand-driven;
(f) Must have the ability to share experience and knowledge already gained;
(g) Must possess the opportunity to synergize the efforts of concerned stakeholders;
(h) Must involve cost-sharing and can attract sponsorships from external donors;
(i) Must meet the needs of the community and/or industry; and
(j) Must demonstrate the ability for sustainability.

Flagship programmes that meet all of these criteria would be ideal. The minimum set of criteria will be determined by ABAPAST and COST.

Proposed Flagship Programmes

Based on consultations with representatives of all Member Countries in an experts group meeting which were guided by the criteria for flagship projects and the directive of the S&T Ministers for COST to consciously look at the demand side and give priority to a few selected HRD and research areas such as disaster management; renewable and alternative energy; development of IT application particularly on open source systems; and, materials science and nanotechnology, the following flagship programmes are proposed for the period 2007-2011.

(a) *Early Warning System for Disaster Risk Reduction*
A multi-purpose Early Warning System(EWS) established for creating national disaster preparedness by delivering accurate warning on potential hazards in a timely manner to authorities and populations at risk. This programme is designed to reduce the gaps in EWSs for different hazards among ASEAN member countries; to provide an integrated, multidisciplinary approach for disaster risk management; and, to broaden disaster preparedness and mitigation measures. The EWS will build on current capabilities and existing systems to ensure sustainability.

(b) *Biofuels*
This programme is designed to significantly reduce the dependence on fossil fuels by improving on and maximizing the use of biofuels. Improvements on the technology and its utilization by enhancing research and development capability and increasing public awareness will be developed. A special interest group will be formed and a network of R&D institutions will be established.

(c) *Application and Development of Open Source System*
This programme seeks to provide a legal and more affordable software alternative and to accelerate the development of the ASEAN software industry. Activities in the programme will include the development of more awareness and interest among the scientific community and the general public on the significance of Open Source Software (OSS); and, a special interest group and network in OSS and its applications.

(d) *Functional Food*
In more recent times functional and whole foods in ASEAN have found their way as ingredients in health food markets of developed countries. The health promoting and/or disease preventing function claimed in these products are usually based on testimonials but are well accepted in regions where they are known and used. This programme will address the current need to provide the scientific basis for sustainable development of the rich sources of functional foods in ASEAN countries; and, in so doing promote health and regional economic integration.

Other programmes which can be considered for formulation of courses of action are: technology transfer, management and commercialization;

security technology for supporting e-travel based on biometrics and related technologies; e-learning and sharing of academic resources through Research and Educational Networks (RENs); avian flu vaccines and drugs; water quality improvement and supply; technology for rural development; and, awareness, advocacy and popularization of science and technology.

Implementation Strategy

The proposed flagship programmes may have several Sub-Committees involved. COST, through its Sub-Committees, should identify the lead country or proponent for each programme and establish a flagship programme committee responsible for implementing it.

5.4. Cost-Shared Projects

COST has, from its inception, looked into cost-sharing as a means of establishing and strengthening S&T cooperation in ASEAN. The ASEAN Science and Technology Development Medium-Term Programme: 1996-2000, developed this modality extensively. However, Dialogue Partners continue to be the principal source of funding. In a more deliberate effort to use cost-sharing as a means of implementing projects and activities, the Sub-Committees identified/proposed several projects which are listed below. The first three projects have initial collaboration among some Member Countries. The required support from each participating Member Country is included. These projects are derived by the Sub-Committees from initiatives of Member Countries with similar thrusts. These proposed cost-shared projects will be developed by the Sub-Committees with a view to fully develop them into regional projects with shared costs and responsibilities and aligned to the goals of the VAP and other relevant declarations of ASEAN Leaders.

Proposed Cost- shared Projects	Proponent	Brief Description	Existing Collaboration	Required Support from Participating Member Country
1.Construction and analysis of metagenomic libraries of extreme environments	SCB	It has been estimated that more than 99% of the microorganisms in most environmental niches cannot be isolated and grown in the laboratory, thus, very little is known about their physiology and role in the environments. To access the diversity of these organisms, their phylotypes can be categorized according to their ribosomal RNA (rRNA) genes, which can be amplified directly from environmental DNA extracts. However, this approach can only provide information on the identity and distribution of microbial species, the physiology, biochemistry and ecological function of uncultured microbes remain unknown. Since uncultured microorganisms have potential to be sources for new enzymes and bioactive compounds, the aim of this project is therefore to access the genomes of the uncultured microbes from the extreme environments in ASEAN countries, such as hot springs, deep sea and volcanic soil. Among the methods designed to gain access to the genetics of the uncultured microorganisms, metagenomic library construction and analysis have become powerful approaches. This will involve isolating DNA from an environmental sample, cloning the DNA into a suitable vector, transforming the clones into a host bacterium, and screening the resulting transformants for the desired enzyme activity or bioactive compounds. The project will be implemented among existing research on this topic in participating ASEAN countries. Thailand will act as a project leader of the network and, as the project leader, Thailand will allocate budget to host researchers from participating countries in Thailand's laboratory, to construct metagenomic libraries from the environmental samples and screen by using either activity-based or sequence-based for the gene/protein of interest. The researchers will use their own "specimen", comprising genomic DNA recently isolated from environmental samples collected in their country to generate metagenomic libraries. By doing so, the researchers will be trained to be able to establish the protocol to construct the metagenomic libraries in their respective countries.	Thailand, Indonesia, Malaysia	Participants will contribute at least research budget for activities conducted in their countries and airfare for researchers to travel to conduct joint research or attend group meeting.

2.Development of reverse genetics-based vaccines against highly pathogenic H5N1 avian influenza viruses	SCB	It has been demonstrated that reverse genetics provides a powerful tool for preparing standardized inexpensive vaccines that are efficacious against highly pathogenic H5N1 influenza viruses. Moreover, reassortant influenza vaccines that employ a DIVA (Differentiating Infected from Vaccinated Animals) strategy for the control of avian influenza has been successfully generated using reverse genetics technique. Nonetheless, H5N1 strains isolated in Thailand and its neighboring countries have rarely, if not never, been used as a reference virus to generate a practical agricultural vaccine. Since the H5N1 avian influenza viruses are highly pathogenic, they are unsuitable for vaccine production using traditional approach. We therefore propose to use reverse genetics to generate recombinant (6:2 reassortant) viruses that comprise genetically modified avirulent-type HA derived from various H5N1 strains, heterologous NA for DIVA strategy, and the genes derived from viruses capable of growing rapidly in embryonated chicken eggs. Prior to testing its efficacy in poultry, the growth potential and the genetic stability of reassortant virus (rgH5N3) will be determined and, most importantly, the HA antigens will be standardized. The project will be implemented among existing research on this topic in participating ASEAN countries. Thailand will act as a project leader of the network and, as the project leader, Thailand will allocate budget to host researchers from participating countries to apply reverse genetics to develop reference vaccines, which will be further developed as agricultural vaccines on a large-scale production. The researchers will use their own "specimen", comprising RNA samples of H5N1 recently isolated in their country to generate plasmids expressing genetically modified H5 to be used to produce reassortant viruses that are antigenically matched with strains currently circulating in their country. By doing so, the researchers will be trained to be able to develop reverse genetics-based reference vaccines using H5N1 strains isolated in their respective countries.	Thailand, Singapore, Vietnam, Malaysia	Participants will contribute at least research budget for activities conducted in their countries and airfare for researchers to travel to conduct joint research or attend group meeting.

3.Human resource development in biotechnology for CLMV	SCB	This program specifically addresses the underlying causes of the shortage of skilled manpower in the field of biotechnology in CLMV, which are lack of facilities, equipment, technical know-how, limited research and development in biotechnology and inappropriate training facilities and equipment. The Program offers short-term training courses (3 to 12 months) to researchers from Cambodia, Lao PDR, Myanmar and Vietnam to work/train in laboratories in Thailand. The training courses consist of teaching of basic and advanced techniques, designing and conducting a mini research project and site visit to factories or project sites. The trainees are provided with living and research/training expenses and are assigned a one-on-one BIOTEC researcher to give the training and guidance. Training is under the following scope, while specific topics will be identified year by year: 1. Microbial Diversity and Utilization 2. Agricultural Biotechnology 3. Food Biotechnology, Food Safety and Risk Assessment 4. Microbiology Researchers from CLMV will be recruited from the application process once a year and they will be invited to laboratories in Thailand at the same time, so that in addition to capacity building, networking among researchers from different countries will be formed for long-term collaboration. In addition to short-term training, a specific training workshop will also be organized in partnership with various international organizations. For instance, Thailand in collaboration with French Embassy in Bangkok and CIRAD will organize Workshop on Food Safety and Risk Assessment for neighboring countries on 6-9 November 2006.	Thailand, Cambodia, Lao PDR, Myanmar, Vietnam	Raising funds; organizing and participating in activities.
4.Adoption of Open Document Format (ODF) standard	SCIRD	ODF is a recent ISO standard format for office documents. ODF adoption means 6. not locked to a single vendor, 7. document sharing is easier,		All MCs to study the needs and relevance of ODF in their respective countries. If feasible, all MCs to progress at its own pace/schedule within a 3-year

		8. archived documents won't be lost due to format becoming obsolete.		period, at own expenses. Where additional funds for ASEAN group activities (workshop, experts group meeting, etc) are required, the project could refer to ASEAN Secretariat for possible funding sources or consider self-sponsored and in-kind contribution.
5.ASEAN COST Framework for Technology Management and Commercialization	SCIRD	The objectives are: to develop (i) a framework for the management of technology derived from COST sponsored projects; (ii) mechanisms for intra-ASEAN technology commercialization; and (iii) human resource capabilities to support technology management and commercialization activities in ASEAN COST networks. Deliverables of the project are: 1. ASEAN COST network of technology transfer centres; 2. an ASEAN IP infrastructure and trained manpower to support technology transfer activities among ASEAN COST networks; and 3. mechanisms that promote, facilitate, motivate and reward technology commercialization. Execution can include: 1. organize training courses on IP and technology management; 2. work with ASEAN relevant bodies to establish a basic understanding and framework on IPR; and 3. operate an IP protection and sharing mechanism leveraging on available resources in the network of ASEAN technology transfer centres.		Participation of institutional resources in technology transfer and management. Funding of training by certain member countries.
6.Development of an ingredient or extract	SCFST	Development of an ingredient/ extract by country A, then other member countries could chip in to do the testing, marker compound identification, standardisation, efficacy, toxicity etc. then possible the		To be determined

		stabilisation, further utilisation trials or product development in different type of products.		
7.Solid fuel cells for transportation	SCMST	While the project is basically a research and development project which aims to develop new materials for use in fuel cells, the initial phase will be the conduct of a workshop. The objectives of the workshop will be to: • provide basic background information on the operations of a fuel cell through lecture by experts and a laboratory demonstration • provide information on the different applications of fuel cells • provide information on the development of fuel cell materials • identify specific areas of collaboration among the ASEAN countries While participating countries in the R&D project may be limited to Indonesia, Malaysia and Singapore, participants to the workshop will come from all the member countries. The workshop will be organized by Indonesia.		Airfare for participation in the workshop. Project to formulate scope and responsibilities of participating countries.

by the implementation of projects and activities on a cost sharing basis. The ASEAN Science and Technology Development: Medium-Term Programme 1996-2000 developed the principles governing the implementation of cost shared S&T projects, the procedure to establish cost shared projects, and the management of cost shared projects (Annex 1)

6.2. ASEAN Science Fund

The ASEAN Science and Technology Fund (also known as ASEAN Science Fund, or ASF) was established for the purpose of providing seed financing for the various programmes, projects and activities under ASEAN science and technology cooperation, as identified and approved by the ASEAN Committee on Science and Technology.

The ASF is mainly built up from contributions by the member countries of ASEAN. However, contributions from third parties are welcome. For example, New Zealand, a Dialogue Partner of ASEAN, has made a contribution to the ASF.

Management and utilization of the ASF is the responsibility of COST. An Advisory Body on the ASEAN Science Fund (ABASF) assists COST in establishing the guidelines and procedures for utilization of the Fund, and reviewing project proposals requesting support from the Fund.

Recognizing the need for stronger funding support to seed regional cooperation programs in science and technology, the ASEAN Ministers on S&T signed the Agreement on the Augmentation of the ASEAN Science Fund on 08 April 2000 in Genting Highlands, Malaysia to reach a target contribution of US$1M each, the payment to be stretch over for a period of ten years (Annex 2)

Meanwhile, to yield higher return on the Fund, the ASEAN COST agreed to invest the ASF in equal amounts in both fixed deposit and capital protected guaranteed. Should the ASF become sizeable (~USD10M), the other options will also be considered such as the possibility to piggy-back the fund with other funds managed by ASEAN Secretariat.

6.3. ASEAN Development Fund

The ASEAN Development Fund serves as ASEAN's common pool of financial resources to support the implementation of the Vientiane Action Programme (VAP) and its successor documents. In particular, the ADF shall be used for the following purposes:

The use of the ADF shall be programmed on a regular basis every two years to realise each of the three pillars of the ASEAN Community and to narrow the development gap among ASEAN Member Countries. Selection of regional cooperation measures to be included in the ADF programme shall take explicit account of the need for:

(a) priority measures in realising each of the three pillars of the Community;
(b) striking a parallel and balanced development and implementation of the three pillars of the Community; and
(c) narrowing the development gap among ASEAN Member Countries so that they could move forward in a unified manner.

Projects seeking ADF support shall be appraised based on criteria including regionality, appropriateness and relevance in the context of the VAP and its successor documents, quality of design, cost effectiveness, and sustainability.

At the end of the period of the implementation of the VAP, any funds remaining in the ADF shall be carried over for the implementation of the successor ASEAN action programmes or for any other related purposes approved by the ASC.

6.4. Dialogue Partners

At present, the principal sources of funds for programs and activities of COST are Dialogue Partners and they remain to be an important component of ASEAN S&T cooperation. Current dialogue partners are Australia, Canada, China, EU, India, Japan, New Zealand, Republic of Korea (ROK), Russian Federation, US, and UNDP, with Pakistan as a Sectoral Dialogue Partner. Relations with some dialogue partners continue to remain challenging, with unresolved issues of funding, mismatched interests, and non-discrimination.

For the period 2002-2004, funds from Dialogue Partners supported about 87.1% of the total cost of projects and activities undertaken by COST Sub-Committees. This amounted to approximately USD 12.66 Million out of the total project cost of USD 14.54 Million.

The 11th ASEAN Ministerial Meeting on S&T in 2005 directed that funds from Dialogue Partners should be tapped for projects and activities with counterpart funds provided by participating ASEAN member countries. Funding from Dialogue Partners, whose priorities are provided (Annex 3),

through the Sub-Committees of COST.

7. POLICY, INFRASTRUCTURE AND SUPPORT SYSTEMS

ASEAN Virtual Institute of Science and Technology

The ASEAN Virtual Institute of Science and Technology (AVIST) is a virtual learning network for continuing professional development and advanced studies in science and technology with opportunities for real practical experience at participating universities.

With the signing of the Ministerial Declaration on the Establishment and Operation of the ASEAN Virtual Institute of Science and Technology (AVIST) by the S&T Ministers in Tagaytay City, Philippines, in November 2004, a number of activities have been undertaken by the AVIST management team which includes various preparations for the three courses (i.e., Introduction to Technology and Innovation Management, Hypercourse on Bioinformatics and Sustainable Ecotourism Development) to be initially offered to public. AVIST has identified 4 local nodes in Indonesia, Malaysia, Singapore and the Philippines. The central node is located in Thailand and can be accessed from all ASEAN countries.

To jump start the project, the ASEAN Secretariat offered to allocate USD1,000 for scholarships to member countries. AVIST granted 5 scholarships to 5 participants from the Philippines, Thailand, and Vietnam. Funds are still available for 16 scholarships of TYPE A for the three courses . UNESCO also provided funding support for a total of 30 scholarships for Type B1 courses (USD99/course) for a total budget of USD 2,970.00. The courses are still in process and will be accessible to the participants until March 2007.

The ASEAN S&T Ministers have yet to approve the AVIST Business Plan. Since this is the first project under COST with possible window for resource generation, the Business Plan must also include a scheme of sharing revenue which may possibly be added to the ASF.

Awareness of AVIST and its activities in all member countries is very crucial to the success and sustainability of AVIST. In this regard, all member countries should individually exert efforts in promoting AVIST and its courses by employing various strategies such as providing hyperlinks to the AVIST website, exchange of banners, and media campaigns.

ASEAN Science and Technology Network

The ASEAN Science and Technology Network (ASTNET) is the comprehensive,

The aim of the ASTNET is to create an ASEAN-wide electronic based technology information network. It will also be a gateway to interconnect ASEAN S&T information resources to internal S&T and industrial databases. It is expected to support administration, monitoring and coordination of plans and programs of ASEAN COST so as to improve the efficiency of cooperation and coordination among ASEAN member countries. It is envisaged as an overall regional effort to network S&T information resources, databases on S&T institutions and experts, centers of excellence, available expertise, and technology requests and offers. As an ASEAN-wide electronic based technology information network on the world wide web, it is also intended that ASTNET will result in the development of an information management system in support of COST activities. ASTNET is expected to eventually support administration, monitoring and coordination of programmes of ASEAN COST and its subsidiary bodies so as to improve the efficiency of cooperation and coordination among ASEAN Member Countries. Considering these expected outcomes of ASTNET, Member countries should be expected to assist in the development of ASTNET by providing appropriate contents.

ASEAN S&T Research and Education Network Alliance

The ASEAN S&T Research and Education Network Alliance (ASTRENA) aims to build an advanced high performance broadband Science &Technology network infrastructure within ASEAN for fostering cooperation in Higher Education, Research and Development and Advanced Network Interconnectivity for the ASTNET.

The project aims to prepare Member Countries for connectivity to the second generation Trans-Eurasia Information Network (TEIN2) which will facilitate exchange of large dataset through said connectivity.

Since the TEIN2 network interconnects more than 10 research and education networks and grids in six ASEAN nations (Indonesia, Malaysia, the Philippines Singapore Thailand Viet Nam) amongst other Asian countries, this infrastructure has allowed ASEAN COST and SCIRD to establish the ASTRENA amongst participating ASEAN networks.

As an ASEAN institution, ASTRENA is positioning itself as the ASEAN organization to begin the process of gradually taking ownership of the scope covered by these externally funded projects such as TEIN2. It will provide the basis of continuity for such projects to bring them to the next stage, especially after the TEIN2 project ends in 2007.

In order to have greater access to data and networks, tie-ups with other organizations should be strongly pursued under ASTRENA. It is also necessary

Competitiveness and Knowledge (ASTICK) to support an enhanced regional cooperation, and requested COST to develop more detailed programme to realize ASTICK.

As an outcome of the project under SCIRD entitled "Formulation of a Programme Framework for the concept of an ASTICK" the following activities were proposed to be considered by COST to be able to realize an S&T community for innovation, competitiveness and knowledge in ASEAN:

- Move towards the adoption of a Visa free entry for scientist and ASEAN S&T personnel
- Networking of Testing Facilities
- Networking of Equipment Services
- Identification/Establishment of Centres of Excellence for Bio-tech
- HRD/conduct of skills training and development

The project concluded that contrary to a lot of belief that ASEAN has limited S&T resources, in fact, the combined S&T resource in ASEAN is quite large. ASEAN needs to re-assess the current situation and make a bold decision of change the current system. In other regions or countries, pooling of S&T resources have been yielding handsome payoff. ASEAN should learn from these experiences.

A lot more work needs to be done to produce a good framework program that achieve the objective set out by the Summit. The next step would be to conduct a detailed study on the S&T role in the 12 priority identified in the VAP to:

- Define the Vision of the ASEAN S&T community
- A procedure to develop a framework program
- An example of the process

IPR Issues

In support of the implementation of the APAST, the COST would need to collaborate with the working group on IPR and legal experts to develop the appropriate legal instruments that could be applied to intra-ASEAN cooperation. The amount USD 2,000.00 approved by the COST for the engagement of the IPR expert remains available.

Future activities of COST in relation to IPR should address the following:

(i) work with relevant bodies to establish a basic understanding on IPR using as starting point COST's developed Policy on Intellectual Property Rights in Collaborative Research Projects;

8. ORGANIZATION AND ADMINISTRATIVE SUPPORT

Support from ASEAN Secretariat

The Terms of Reference for the ASEAN Secretariat in its support of the ASEAN COST appears as Annex 4.The Sub-Committees of COST have concluded that for now the existing supporting functions are adequate for the purpose of COST and its Sub-Committees. One support function, however, that may be explored and considered essential is the coordination with other ASEAN bodies for the purpose of project identification and collaboration. This initiative for intra-ASEAN committee cooperation can be better pursued with the assistance of the ASEAN Secretariat.

ASEAN COST, National COST, Sub-Committees, ABAPAST

COST agreed that the Chairmanship of the Sub-Committee is a very important part of COST activities especially in leading the development of project proposals and project implementation in accordance with the thrusts of the ASEAN Plan of Action on Science and Technology. In this regard, COST recommended that all Member Countries do their best to provide resources and support to the leadership and representation in the Sub-Committees.

COST also called on the Sub-Committee Vice Chairmen to play a more active part when necessary and to be ready to assume the tasks of the Sub-Committee Chair, in the event that the Sub-Committee Chair is unable to perform the mandated tasks due to reasons beyond his/her control or when assigned specific duties by the Sub-Committee Chair.

To specify the actual duties and responsibilities of the Chairmen of COST and the Sub-Committees, COST requested the ASEAN Secretariat to formalize the draft Terms of Reference (TOR) of the Chairmen of COST and its Sub-Committees. Moreover, to guide COST and the Sub-Committee Chairmen on the extent of assistance to be provided by the ASEAN Secretariat, COST also requested the ASEAN Secretariat to draft its TOR. The TORs of the Chairs of ASEAN COST, National COST and Sub-Committees appear as Annex 5, Annex 6 and Annex 7.

The Advisory Body for the ASEAN Plan of Action on Science and Technology (ABAPAST) is a permanent body of COST with the following functions:

- To review the progress of activities of COST and its Sub-Committees in accordance with the ASEAN Plan of Action on Science and Technology;
- To sit in the meeting of Sub-Committees in line with the experience and

Technology, ABAPAST also takes on the following tasks:

- Recommending policies and strategies concerning intra-ASEAN matters, such as initiatives of ASEAN Summit and AMMST, cooperation with other ASEAN bodies and activities;
- Recommending policies and strategies concerning new developments, such as mechanisms of ASEAN+3; and
- Recommending policies and strategies concerning societal implications and public awareness of science and technology.

In view of the important role of ABAPAST, COST agreed to link the chairmanship of the ABAPAST to the chairmanship of COST. To strengthen the interaction between and among Sub-Committees and the ABAPAST, COST agreed to include the provision of appointing Sub-Committee Chairmen as ex-officio members of the APAST and strongly encouraged their participation in ABAPAST meetings.

Rotation of Sub-Committee Chairmanship

The Chairmanship of COST Sub-Committees, Advisory Bodies and the Editorship of the ASEAN Journal on Science and Technology for Development (AJSTD) are rotated alphabetically once every three years among ASEAN Member Countries based on the principle of equal sharing of opportunities and responsibilities. At the 38th Meeting of COST held on 27 – 29 October 1999 in Singapore, COST agreed to adhere to the following four principles when formulating a mechanism for identifying Sub-Committee Chairmen:

- There should be fair and equitable sharing of opportunities and responsibilities in chairing Sub-Committees;
- There should be no domination by any Member Country of the Chairmanship of any Sub-Committee in terms of length of service; Sub-Committee Chairmen should have the technical qualifications and experience; and,
- Proposed Chairmen should have the support and commitment of his/her country to provide the necessary resources to facilitate his/her role.

At the 49th Meeting of COST held on 20-22 April 2005 in Vientiane, Lao PDR, it was observed that to better promote cooperation and camaraderie between and among ASEAN Member Countries, it would be better to review the cycle of rotation to enable each country to work with all ASEAN Member Countries as Chairman and Vice-Chairman of the Sub-Committee.

Taking all these guidelines as well as the current Chairman and Vice Chairmanship of the Subcommittees into consideration, a ten-cycle rotation on the Sub-Committee Chairmanship may be adopted by COST at the next cycle.

Principles of Cost-sharing

(a) When three or more ASEAN member countries decide to jointly undertake an S&T project, the cost of the project will be shared by the participating member countries.

(b) In return for the shares of participating member countries in the project, the sharing of potential benefit among them will be agreed upon before the start of the project. The share of benefit will correspond with the share of the project cost. An agreement on terms and conditions for the cost-sharing and intellectual property rights, the latter whenever deemed appropriate by the participating countries, will be drafted.

(c) Within each member country, the government may invite the private sector, a company or a group of companies, to provide funding as part of the country's share. In turn, the private sector contributor will have a share in the country's benefit.

(d) When the project is approved for funding by the ASEAN Science Fund or the ASEAN Development Fund, the financial support from the ASF and/or the ADF will be considered as the share from the ASF and/or the ADF. The ASF and/or the ADF will be given their corresponding benefit arising from the project.

(e) Contribution from a Dialogue Partner or a Third country to the project cost will be translated into the corresponding share of benefit of the Dialogue Partner or the Third Country.

Procedure to Establish Cost-sharing Project

(a) A subcommittee or an ASEAN member country(ies) will propose to COST a cost-shared S&T project. The proponent must make a prior identification of other participating ASEAN member countries.

(b) Dialogue Partners and/or Third Countries may be invited to join the project and consider the possibilities of sharing the cost as well as the benefits.

(c) The proponent will then draw up a draft agreement on the sharing of the cost and of the benefits, including intellectual property rights whenever deemed appropriate, among the potential participating countries. A subcommittee or COST through the ASEAN Secretariat may assist in bringing about the signing of the agreement.*

necessary steps to seek the support from the ASEAN Science Fund or the ASEAN Development Fund before the project is authorized to start. In addition, the benefits from the project will be included in the agreement. Any share of the revenue which may accrue from the project will be returned to the ASF or the ADF.

Management of Cost-shared Project

COST, a subcommittee of COST or COST through the ASEAN Secretariat will oversee and monitor the activities and ensure that the outputs are achieved. Cost-sharing funds may include an allocation for project management. This allocation may come from the cost-sharing contributions of participating ASEAN member countries, Dialogue Partner or Third country, the ASEAN Fund or the ASEAN Development Fund. If necessary, a Project Coordinator may be hired. Progress and financial reports will be made to COST during regular COST meetings.

Any of the following schemes on the handling of cost-sharing funds will be adopted and incorporated in he agreement prior to the start of a cost-shared project.

(a) Cost-sharing contributions will be retained in separate member country accounts and managed by the respective countries.

(b) Cost-sharing contributions will be centralized into a common account and managed by the ASEAN Secretariat. The disbursement will be made to support the project activities in the participating countries.

(c) A combination of a and b. A ratio of a to b will be agreed upon by each participating country.

ANNEX 2: Schedule of Augmentation of ASEAN Science Fund (US

Country	Seed contribution	Year									
		1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Brunei	50,000		50,000	80,000	100,000	120,000	120,000	120,000	120,000	120,000	120,000
Cambodia			100,000 *	77,500	87,500	97,500	107,500	117,500	127,500	137,500	147,500
Indonesia	50,000		30,000	50,000	70,000	90,000	120,000	140,000	150,000	150,000	150,000
Lao PDR	50,000		60,000	70,000	80,000	90,000	100,000	110,000	120,000	130,000	190,000
Malaysia	50,000	20,000	30,000	50,000	70,000	90,000	110,000	130,000	150,000	150,000	150,000
Myanmar	50,000		30,000	50,000	80,000	100,000	110,000	130,000	150,000	150,000	150,000
Philippines	50,000	30,000	65,000	75,000	85,000	95,000	100,000	110,000	120,000	130,000	140,000
Singapore	50,000	50,000	60,000	70,000	80,000	90,000	100,000	110,000	120,000	130,000	140,000
Thailand	50,000		100,000	100,000	100,000	100,000	100,000	100,000	100,000	120,000	130,000
Vietnam	50,000		50,000	50,000	70,000	90,000	110,000	130,000	150,000	150,000	150,000
Total	450,000	100,000	575,000	672,500	822,500	962,500	1,077,500	1,197,500	1,307,500	1,367,500	1,467,500

Note: (*) The figure includes the seed contribution of US $ 50,000

ANNEX 3

PRIORITIES OF DIALOGUE PARTNERS

ASEAN-Australia

Australia has committed A$45 million over 5 years for the ASEAN-Australia Development Cooperation (AADCP) which was launched in October 2003. The AADCP has 3 components, namely: (i) Program Stream – This is a five-year A$19 million program which commenced in late May 2003. The allocation for this component has already been committed to fund ten identified projects supporting ASEAN economic integration and competitiveness; (ii) Regional Economic Policy Support Facility (REPSF) – This is a A$9.5 million support facility which commenced in March 2002 and is basically a funding mechanism, which allows the ASEAN Secretariat (ASEC) to engage ASEAN and Australian economic research organizations (including public and private sector research institutions and qualified economics consulting firms) and individual researchers in the provision (through specific research contracts) of regional economic policy analysis for the Secretariat; and (iii) Regional Partnerships Scheme (RPS) – This A$15 Million scheme which commenced in August 2002 aims to support the implementation of a range of smaller scale regional development activities, which are to be developed by ASEAN and Australian entities, to be funded in rounds over a period of five years.

Among the three components of AADCP, only the Regional Partnership Scheme may be tapped for funding S&T activities. The RPS is open to applications from ASEAN and Australian public, private, academic or non-government organizations and provides funding of between A$50,000 - A$500,000 for regional development activities targeting the prescribed thematic elements of AADCP and which are consistent with the development cooperation policies of ASEAN. Projects seeking less than A$50,000 in total project cost will generally not be considered for funding support. The activities should not be more than two years in duration and applicants must meet at least 20% of the eligible costs associated with the activity.

There is no sectoral focus in the AADCP-RPS. However, projects to be proposed must support policy formulation, harmonization of institutional parameters; and capacity building to implement the policies to prepare ASEAN to better participate in the global economy;

ASEAN-Canada

ASEAN and Canada have adopted the ASEAN-Canada Joint Cooperation Work Plan for 2005-2007 on 27 July 2006 in Kuala Lumpur. In S&T, ASEAN and Canada aim to expand the cooperation through the following joint proposed activities:

(i) Seek ways to engage in cooperative research and development projects in key technology priority areas such as biodiversity, biotechnology, nanotechnology, vaccine, drug and herb-based medicine development, food sciences and technology, materials technology, technology transfer and management, health and life sciences, marine science, ICT, environment and alternative clean energy;

(ii) Identify and promote S&T cooperative activities between Canadian Universities and Colleges, Government Research Centres, and the private sector with their ASEAN counterparts; and
(iii) Provide support to Canadian and ASEAN to develop joint research activities; to organise scientific seminars, conferences, symposia and workshops as well as participation of experts in those activities; and to facilitate visits and exchanges of scientists, technical experts and academies.

ASEAN-China

To facilitate dialogue on the S&T cooperation between ASEAN and China, ASEAN and China established the ASEAN-China Joint Science and Technology (ACJSTC). The ACJSTC has identified the following priority areas of the ASEAN-China cooperation in S&T: biotechnology, functional food, information technology, remote sensing, seismology, marine sciences, materials science and traditional medicines.

COST and its Sub-Committees may continue to tap the ASEAN-China Cooperation Fund (ACCF) to support their activities. The Fund was established to promote understanding and familiarization between ASEAN and China through people-to-people interactions in the various sectors of cooperation agreed by both sides. As the utilization of the ACCF is prioritized to support activities under the category of people-to-people interactions, it may be difficult to tap the Fund to support joint R&D work. In light of this, joint activity on R&D will have to be implemented through cost-sharing arrangements.

The Plan of Action (PoA) to Implement the Joint Declaration on ASEAN-China Strategic for Peace and Prosperity (2005-2010) adopted by the ASEAN and Chinese Leaders also identified transfer of technology to SMEs as a priority in S&T cooperation. The PoA was adopted at the ASEAN-China Summit held in Kuala Lumpur in November 2005.

The PoA identified the following activities in S&T which ASEAN and China will pursue:
(i) Strengthen cooperation in implementing HRD and joint research and development activities in the areas identified by the ASEAN-China Joint Science and Technology Committee (JSTC), including biotechnology, remote sensing, seismology, food, marine science, non-conventional energy and materials science and technology, and other new areas which are mutually beneficial;
(ii) Implement joint scientific research and technology development activities among research institutions in ASEAN and China in the areas identified by the JSTC;
(iii) Organise various scientific workshops and seminars in China, specifically for CLMV countries or other ASEAN countries, which are technologically less developed on applicable technologies;
(iv) Strengthen cooperation among technology-oriented SMEs of ASEAN and China;
(v) Organise exhibition on technological innovation by China-ASEAN SMEs during China-ASEAN Expo; and
(vi) Explore cooperation in space technology applications and meteorology.

ASEAN-European Union (EU)

READI (Regional EU-ASEAN Dialogue Instrument) has been introduced as a policy dialogue process for promoting ASEAN-EU dialogue relations in non-trade areas. Following its endorsement by the 15th ASEAN-EU Ministerial Meeting (AEMM), the ASEAN-EC Informal Coordinating Mechanism (ICM) held in June 2005 in Bali finalised and agreed on the implementation modalities and mechanism of the READI. It was also agreed that under the READI, both sides will initiate cooperation in the areas of information society, animal health, and climate change, transport, communicable diseases and other priority areas which will be agreed by both sides. At this stage, there is no allocation of funds to support cooperation activities, including in the area of S&T, under the framework of the ASEAN-EU Cooperation.

In addition through READI, the S&T cooperation with EU, can also be facilitated through the EU's Framework Programme for Research and Technological Development (FP). Submission of proposals under the FP is only possible in response to calls for proposals, which are published in the Official Journal of the European Communities and on the Internet (CORDIS: http://www/cordis.lu/fp6/calls.htm).

ASEAN-India

To promote and intensify the S&T cooperation between ASEAN and India, ASEAN and India established the ASEAN-India Working Group on S&T (AIWGST). Currently, the areas of cooperation include biotechnology, microelectronics and IT, materials science, remote sensing technology, and technology management. More recently, ASEAN and India also agreed to expand the areas of cooperation to include marine sciences, seismology and food science.

The joint activities which have been implemented, or currently being implemented, by ASEAN and India mostly fall under the category of HRD such as workshop, seminar, training, exchange of visits and research attachment. To date, only two R&D in the areas of advanced materials (coating technology and magnets) have been implemented. Another one, also in the area of advanced materials (thermal spray), is currently being implemented. It has been agreed by ASEAN and India that any joint R&D work will be implemented under the cost-sharing arrangements.

India places utmost importance to the cost-sharing scheme in R&D collaboration with ASEAN in the fields which have economic relevance. In this regard, India encourages the involvement of industries in joint R&D collaboration. India is also interested in establishing scientific cooperation with laboratories in ASEAN which could lead to commercialization of R&D outputs. COST and its Sub-Committees could tap the ASEAN-India Cooperation Fund to support joint activities which fall under the category of people-to-people contact.

ASEAN and India Leaders signed the "ASEAN-India Partnership for Peace, Progress and Shared Prosperity" during the ASEAN-India Summit in November 2004 in Vientiane. This document sets out the roadmap for long-term ASEAN-India engagement, which would be executed through the implementation of a Plan of Action to be attached to the Partnership document. Through the signing of this

document, the Leaders reaffirmed their commitment to strengthen cooperation in a number of sector including science and technology.

In the science and technology area, the ASEAN and Indian Leaders reaffirmed their commitment to promote cooperation in science and technology, in particular information technology and biotechnology, including through joint research and development and commercialisation of new technologies.

With respect to Research and Development and Technology Management, the following activities are identified in the PoA:

(i) Promote joint R&D and technology development in areas having potentials for commercial applications with the involvement of public and private sector, through, among others, the formation of strategic alliances between ASEAN and Indian enterprises;
(ii) Cooperate in the field of technology management, on issues, covering IPR management, technology forecasting, technology assessment, technology inter-mediation in areas such as materials science, marine technology, microelectronics design and processing, and multimedia;
(iii) Establish a Technology Transfer Network, to facilitate the pooling of information on the availability of technologies and experts with the enterprises/R&D organisations in the region; and
(iv) Support ASEAN's environmental programme and activities under its Environmentally Sustainable Cities Initiative by organising seminars and workshops to share India's experiences in lowering urban air pollution and use of alternative fuel.

In the areas of space technology applications and biotechnology, the following activities are identified in the PoA:

(i) Develop a medium to long term programme of cooperation in the field of space technology promoting collaboration in its applications for broadcasting and telecommunication, effective management of natural resources and environment, disaster mitigation and weather forecasting;

(ii) Establish an ASEAN-India Biotechnology Network to encourage cooperation in the field of plant biotechnology for crop improvement; and
(iii) Develop an inventory of the region's bio-resources and joint research on issues relating to animal biotechnology, bio-informatics and regulatory issues concerning biotechnology.

ASEAN-Japan

Under the framework of ASEAN-Japan cooperation, no specific areas in S&T have been identified. In recent years, Japan has supported activities in the areas food technology, materials science, seismology, meteorology and technology management.

ASEAN and Japan have not established any forum for S&T dialogues. Japan has also not identified any technical agency with whom COST and its Sub-Committees could develop joint activities.

During the ASEAN-Japan Summit in November 2004, the ASEAN-Japan Plan (PoA) of Action to implement the Tokyo Declaration for the Dynamic and Enduring ASEAN-Japan Partnership in the New Millennium was adopted with the aim to strengthen the growing strong and broad-based partnership. The PoA identified the following areas of cooperation that COST may further participate:

(i) Information and Communications Technology
- joint R&D and standardisation activities on network infrastructure;
- standardisation of ICT applications such as e-Learning, and develop legal infrastructures related to e-Commerce;
- capacity building and HRD programmes particularly in the areas of new and advanced ICT technologies and creative multimedia; and
- Internet Protocol (IP), broadband and wireless technologies.

(ii) Energy - co-operation in oil stockpiling, natural gas utilisation and promotion of energy efficiency;

(iii) Protecting the environment focusing on the following priority areas:
- Global environment issues;
- Land and forest fires and transboundary haze pollution;
- Coastal and marine environment;
- Fresh water resources;
- Promotion of environmentally sound technologies and cleaner production; and
- Sustainable development and monitoring, reporting and database harmonization.

(iv) Human Resource Development
- research cooperation through exchange of researchers supported by the Japan Society for the Promotion of Science (JSPS); and
- holding of joint seminars and encouraging exchange of views, information, experiences and best practices.

Up until 1990, Japan supported ASEAN S&T activities both in R&D and HRD. Since then, however, the supports have focused on capacity building and HRD with no research work being funded.

Japan has funded many COST S&T activities through the several Funds established under the ASEAN-Japan Dialogue Relations such as the Japan-ASEAN Exchange Project (JAEP) and the Japan-ASEAN General Exchange Fund (JAGEF).

ASEAN-New Zealand

In the past, New Zealand's support to ASEAN in S&T were in the areas of biotechnology, materials science, non-conventional energy and technology management. Due to limited financial resources, New Zealand currently focuses its assistance on a cost-sharing basis on the Initiative for ASEAN Integration (IAI) to effectively contribute towards narrowing the development gaps in ASEAN.

Development programmes between ASEAN and New Zealand will continue to shift towards trade and economic development activities covering, among others, poverty alleviation and environmental protection. New Zealand also indicated that non-trade related projects were being phased out but it might consider alternative funding mechanisms for these projects either through the NZAID (New Zealand International Aid & Development Agency) Asia Regional programme or through bilateral country programmes.

Since August 2003, there are no S&T projects being supported under the ASEAN-Zealand Cooperation. At the ASEAN-Australia and New Zealand Commemorative Summit held on 30 November 2004 in Vientiane, Lao PDR, ASEAN, Australia and New Zealand agreed to enhance cooperation various areas including energy security, non-conventional energy, and science and technology.

The ASEAN – New Zealand Framework for Cooperation 2006-2010 finalized in July 2006 identified the following ideas which are relevant to S&T for closer cooperation towards achieving ASEAN Community by 2020:

(i) Enhance existing areas of cooperation such as technical assistance and transfer of technology related to trade and development capacity building (eg SPS, food safety), and SMEs;
(ii) Consider possible new areas of cooperation such as sustainable energy development; and
(iii) Consider new/enhance existing areas for cooperation such as disaster mitigation and management (including training and capacity building, confidence building measures and programs in non-conventional disaster, strengthening regional preparedness and joint emergency response, public awareness and education).

ASEAN-Republic of Korea (ROK)

Science and technology, information and communication technology, environmental conservation, economic development, education, and human resources development are the areas supported under the ASEAN-ROK cooperation. There are, however, no specific fields in S&T that have been identified. As such, COST and Sub-Committees could consider proposing joint activities with ROK in various S&T fields. The past and current S&T cooperation activities implemented are in the areas of technology management, microelectronics, biotechnology, meteorology and marine science.

ASEAN and ROK have not established any forum for S&T dialogues. However, COST has been implementing a number of joint activities with technical agencies in ROK as their counterparts. There is currently one on-going activities supported by the ROK in the area of marine biotechnology.

Almost all of the past and on-going activities have been supported by the ASEAN-ROK Special Cooperation Fund (SCF). The ROK will continue to support the ASEAN-ROK Special Cooperation Fund (SCF) to promote the exchange of experts and information and the establishment of cooperative projects in various areas including science and technology.

To strengthen the ASAEN–ROK relationship, ASEAN and ROK Leaders signed the Joint Declaration on Comprehensive Cooperation Partnership at the 8th ASEAN-ROK Summit on 30 November 2004 in Vientiane. This was followed by the adoption of the ASEAN-ROK Plan of Action (PoA) to Implement the Joint Declaration on Comprehensive Cooperation Partnership at the 9th ASEAN-ROK Summit on 13 December 2005 in Kuala Lumpur.

In the areas of S&T, the PoA strives to undertake the following:

(i) strengthen the competitiveness of ASEAN S&T by assisting in promoting exchange of information to strengthen scientific technology competitiveness, and developing technology management and innovation to build the capabilities of science & technology experts and officials in ASEAN; and
(ii) implement joint efforts to enhance economic growth and ASEAN's community well being by intensifying cooperation activities, promoting R&D collaboration, technology development and commercialisation in the areas of biotechnology, food technology, new materials, micro-electronics, meteorology and other high value-added industries, especially latest technology of marine biology or genetic engineering.

ASEAN-Russia

To promote the S&T cooperation between ASEAN and Russia, the ASEAN-Russia Working Group on S&T (ARWGST) was established. The initial priority areas identified by the ARWGST under the ASEAN-Russia Cooperation include biotechnology; new materials; information technology; microelectronics; meteorology and geophysics.

The 5th Meeting of the ASEAN-Russia Joint Cooperation Committee (ARJCC), 3 November 2006, endorsed the Concept Paper on the Convergence of Interest between ASEAN and Russia in the Area of Science and Technology. The Concept Paper recognized the strength of Russia in the areas of biotechnology, microelectronics, information technology, meteorology and geophysics, nanotechnology, geoinformatics, environment management and energy technology and energy efficiency. Specific joint activities to be undertaken by ASEAN and Russia are to be identified by the ARWGST.

ASEAN and Russia have established the ASEAN-Russia Dialogue Partnership Financial Fund (DPFF) to support joint activities, including those under S&T.

ASEAN-United States (US)

The ASEAN-US cooperation is managed through the ASEAN Cooperation Plan (ACP). Three areas of cooperation have been identified. First is the support for ASEAN Integration. In consultation with Congress, the U.S. Government would seek to expand assistance to ASEAN, especially its newer members, on economic development and investment, good governance, rule of law, democratization, and civil society. Second, cooperation on transnational issues. ASEAN has requested U.S. assistance in addressing transnational challenges -- particularly narcotics, terrorism, piracy, the environment, HIV/AIDS, and trafficking in persons. Third,

strengthen ASEAN Secretariat. The U.S. would work with ASEAN Secretariat to assist in building the Secretariat's capabilities to serve the Chair and the ASEAN member nations

The identified fields of cooperation include biotechnology, health and infectious diseases, disaster response and management, and information and communications technology. Specific activities in these fields will include training, personnel exchanges, policy dialogues, and communications support for ASEAN and the ASEAN Secretariat.

The ACP supports activities in areas such as disaster management, competition policy, intellectual property rights, standards and conformance, environment, health, information technology, transnational issues, and strengthening of the ASEAN Secretariat.

To implement the ASEAN-US Enhanced Partnership, a Plan of Action (PoA) was signed on 27 July 2006. In the areas of S&T, the PoA strives to undertake the following:

(i) Hold consultations between authorities concerned in the area pof S&T with the goal to establishing and ASEAN-US S&T Agreement to broaden and expand relations between the scientific and technological communities in ASEAN Member Countries and the US;
(ii) Enhance cooperation in capacity-building for ASEAN's S&T authorities, institutions and laboratories, through, *inter alia*, exchange of information and best practices, training courses, seminars, workshops, conferences, research attachment, exchange of visits by scientists and government officials; and
(iii) Strenghten joint scientific research and development activities, especially in the areas of agricultural biotechnology, food science and technology, macroeconomics and information technology, energy technology, materials science, seismology, geoscience, space technology and geoinformatics, and marine science.

There are some major issues to be considered regarding the ASEAN-US Cooperation. US Department of State officials pointed out that any regional undertaking funded by the US Government should comply with its development assistance policy set by the US Congress including the ACP projects. While the policies are not available in written form, they are already in place, particularly those pertaining to the use of funds. Basically, only Indonesia, Philippines, Laos and Viet Nam, the US experts and officials and the ASEAN Secretariat are eligible for direct funding support (e.g., airfare and per diem). The other six countries are not eligible for direct funding support due to the US Congressional restriction. Funds from the US government can support the cost of organizing the events (e.g., seminars, workshops, training course etc.) in any ASEAN countries and the US. The non-eligible ASEAN countries can participate in activities under the ASEAN-US Dialogue Relations, but it must be at their own cost. Co-partners/sponsors (from any organizations and specialized agencies in Dialogue Partner countries) could still be tapped to sponsor the participation of the six non-eligible ASEAN countries should they be available. The co-sponsor could also be from private sector or from any organizations in the world.

ASEAN-Pakistan

Pakistan has expressed its interest in pursuing joint S&T activities in the following areas of cooperation: remote sensing; food processing technologies; materials science; new and renewable sources of energy for power generation; and ICT.

Althought the current size of the Fund is small, COST could continue to tap the ASEAN-Pakistan Cooperation Fund to support joint activities. Two past activities in the area of materials science were funded by the Fund. In addition to the Fund, the Sectoral Ministries under the Government of Pakistan could also provide support to implement joint HRD activities.

ANNEX 4

Terms of Reference
for the ASEAN Secretariat in its support of the ASEAN Committee on Science and Technology

1. Provide the following technical and administrative support to the activities of the AMMST, ASEAN COST and its subsidiary bodies, including those established with Dialogue Partners in the area of science and technology:

   i. General support
      a. Advise, coordinate and assist in the initiation and implementation the ASEAN COST activities;
      b. Assist in the preparation and development of the plan of action on S&T;
      c. Monitor the implementation of Agreements entered into between and among the ASEAN COST, Dialogue Partners, other legal entities and the private sector.

   ii. Conduct of Meetings
      a. Participate and/or serve as resource person in the Meetings of relevant ASEAN Committees and other international bodies;
      b. Assist the host country in planning and coordinating all activities required for convening the ASEAN COST and other relevant meetings. The assistance may include the following:
         - provide advice on the preparations of annotated agenda, information papers, project reports, project briefs/concept paper/proposals and other documents for discussion in the Meeting;
         - assist in protocol and logistical arrangements including media conference;
         - assist the local secretariat or the assigned committee in the preparations of draft report of the meeting for adoption.

   iii. Project conceptualization, implementation and monitoring
      a. Assist in the conceptualization, development and appraisal of project proposals for funding consideration of Dialogue Partners and other sponsors;
      b. Monitor the progress of implementation and assist in the impact assessment of programmes and projects of the ASEAN COST;
      c. Coordinate the implementation of the projects of the ASEAN COST.
      d. Implement COST projects of which the ASEAN Secretariat is the proponent;

   iv. Information dissemination
      a. Inform the ASEAN COST and its Sub-Committees of the directives of the ASEAN Standing Committee and on relevant current developments in ASEAN;
      b. Maintain regular communications and links with the ASEAN COST and Sub-Committees, proponents of projects, project consultants/experts, designated focal points in Dialogue Partner Countries and international bodies;

c. Present reports and updates on ASEAN S&T activities to the ASEAN Standing Committee (ASC) and other ASEAN bodies;

v. Trust Fund management
   a. Manage the ASEAN Science Fund, as instructed by the ASEAN S&T Ministers and ASEAN COST;
   b. Administer the disbursement of funds for ASEAN COST approved activities and projects supported by the ASEAN Science Fund.

2. Perform such other duties as directed by the ASEAN Secretary General, the S&T Ministers and the COST.

ANNEX 5

Terms of Reference
ASEAN COST Chairman

1. To provide leadership and guidance towards fulfilling the charter (objective, mission, strategies) of the ASEAN Committee on Science and Technology (COST), pursuant to the larger goals, aims, objectives and mission of ASEAN.

2. To initiate, direct and oversee the development, monitoring and implementation of the COST and the Sub-Committee programmes and activities in support of the ASEAN Plan of Action on S&T (APAST) and the Vientiane Action Plan (VAP) and other directives from the ASEAN S&T Ministers and leaders.

3. To plan and coordinate all activities required for convening of meetings, in coordination with the host country and ASEAN Secretariat. These include the following:
   i. Preparations of tentative agenda and its annotation, information papers, policy issues and other documents for discussion in the meeting;
   ii. Issuance of meeting announcement and invitation letters; and
   iii. Preparations of draft report of the meeting for adoption, and its subsequent reproduction.

4. To present reports, policy papers, and provide recommendations of the COST to S&T Ministers for their considerations;

5. To preside over regular COST meetings, preparatory meetings for the ASEAN Ministerial Meeting on S&T (AMMST) and other relevant meetings and exert efforts in achieving consensus over the issues discussed and decisions made.

6. To Chair and/or Co-Chair Meetings and represent the COST in meetings under the purview of ASEAN-Dialogue Relations and other forums. These include:

   i. ASEAN-China Joint Science and Technology Committee (ACJSTC);
   ii. ASEAN-EU Joint Cooperation Committee Sub-Committee on S&T (AEUJCCSCST);
   iii. ASEAN-India Working Group on S&T (AIWGST);
   iv. ASEAN-Russia Working Group on S&T (ARWGST);
   v. ASEAN COST Plus Three Meeting; and
   vi. Forums convened by the ASEAN Secretariat, ASEAN Standing Committee (ASC), AMMST, etc.

7. To facilitate and coordinate the execution and follow-up of the decisions of the ASEAN Summit, AMMST, COST and other relevant meetings under ASEAN Dialogue relations.

8. To maintain an archive of Meeting's minutes, notes, and relevant documents of AMMST, COST and its subsidiary bodies, in close cooperation with the ASEAN Secretariat

9. To establish regular communications and links with all National COST Chairmen, ASEAN Secretariat, Chairmen of other COST-Sub-Committees, ABAPAST, ABASF, proponents of projects implemented by COST, project consultants/experts engaged under COST, and counterparts in Dialogue Countries.

10. To prepare Handover Notes at the end of Chairman's term to ensure continuity and that proper succession planning takes place according to the usual rotation.

ANNEX 6

Terms of Reference
National COST Chair

1. To assist the S&T Minister in providing leadership and guidance to the National efforts towards fulfilling the Charter (objective, mission, strategies) of the ASEAN Committee on Science and Technology (COST), pursuant to the larger goals, aims, objectives and mission of ASEAN.

2. To assist the S&T Minister in initiating, directing and overseeing the development, monitoring and implementation of the COST and the Sub-Committee programmes and activities, at the national level, in support of the ASEAN Plan of Action on S&T (APAST) and the Vientiane Action Plan (VAP) and other directives from the ASEAN S&T Ministers and Leaders.

3. To preside over National COST Meetings, prepare reports and recommendations to the S&T Minister in preparation for the regular ASEAN Ministerial Meeting on S&T (AMMST) and other relevant meetings and exert efforts in achieving consensus over the issues discussed and decisions made.

4. To represent his/her country in the Meetings of the ASEAN COST and in other Meetings under the purview of ASEAN-Dialogue Relations and other forums. These include, but not limited to:

    i. ASEAN-China Joint Science and Technology Committee (ACJSTC);
    ii. ASEAN-EU Joint Cooperation Committee Sub-Committee on S&T (AEUJCCSCST);
    iii. ASEAN-India Working Group on S&T (AIWGST);
    iv. ASEAN-Russia Working Group on S&T (ARWGST);
    v. ASEAN COST Plus Three Meeting; and
    vi. Forums convened by the ASEAN Secretariat, ASEAN Standing Committee (ASC), AMMST, etc.

5. To facilitate and coordinate at the national level the execution and follow-up of the decisions of the ASEAN Summit, AMMST, COST and other relevant Meetings under ASEAN Dialogue relations.

6. To facilitate, coordinate and organize all activities, as host country, in the smooth conduct of activities not limited to meetings and workshops of the ASEAN COST, its Sub-Committees, and other relevant bodies established with Dialogue Partners.

7. To Co-Chair the ASEAN COST Meeting should the Meeting be held in his/her country;

8. To maintain, in coordination with the National COST Secretariat, an archive of Meeting's minutes, notes, and relevant documents of AMMST, COST and its subsidiary bodies, in close cooperation with the ASEAN Secretariat.

9. To establish regular communications and links with all focal points, particularly the Chairs, if any, of the various National COST Sub-Committees, proponents of projects implemented by COST, project consultants/experts engaged under COST, and counterparts in Dialogue Countries.

10. To prepare Handover Notes at the end of his/her term as National COST Chair to ensure continuity and that proper succession planning takes place should such event takes place.

ANNEX 7

Terms of Reference
COST Sub-Committee Chairman

1. To provide leadership and guidance to the Sub-Committee towards fulfilling the charter (objective, mission, strategies) of the Sub-Committee, pursuant to the larger goals, aims, objectives and mission of Committee on Science and Technology (COST), ASEAN Ministerial Meeting on S&T (AMMST) and ASEAN.

2. To initiate, direct and oversee the development, monitoring and implementation of Sub-Committee programmes and activities in support of the ASEAN Plan of Action on S&T (APAST) and Vientianne Action Plan (VAP) and other directives from COST and the ASEAN S&T Ministers.

3. In coordination with the host country and ASEAN Secretariat, to plan, execute and coordinate all activities required for convening meetings under the purview of the Sub-Committees. These include the following:
   i. Preparations of tentative agenda and its annotation, information papers, project reports, project briefs/concept paper/proposals and other documents for discussion in the meeting;
   ii. Issuance of meeting announcement and invitation letters;
   iii. Preparations of draft report of the meeting for adoption, and its subsequent reproduction;
   iv. Preparations of report and documents for presentations to COST and other COST subsidiary bodies for their consideration.

4. To preside over meetings, project meetings, discussion forums under the purview of the Sub-Committee so as to achieve consensus over issues discussed and decisions made.

5. To present the outcomes of the Sub-Committee Meetings and relevant issues (recommendations, policies, comments, new initiatives) to COST, and other subsidiary bodies of COST (e.g. other Sub-Committees, ABAPAST, ABASF) for their consideration.

6. To participate in ABAPAST Meetings and its other activities as *ex-officio* member.

7. Upon invitation by COST, to represent the Sub-Committee in the Meetings under the purview of ASEAN-Dialogue Relations such as:

   i. ASEAN-China Joint Science and Technology Committee (ACJSTC);
   ii. ASEAN-EU Joint Cooperation Committee Sub-Committee on S&T (AEUJCCSCST);
   iii. ASEAN-India Working Group on S&T (AIWGST);
   iv. ASEAN-Russia Working Group on S&T (ARWGST);
   v. ASEAN Plus Three Consultation Meeting on S&T; and
   vi. Other forums under the purview of COST

8. To facilitate and coordinate the execution and follow-up of the decisions of the Sub-Committee COST and other subsidiary bodies of COST.

9. To maintain an archive of the Sub-Committee Meeting's minutes, notes, and relevant documents in close cooperation with the ASEAN Secretariat.

10. To establish regular communications and links with Sub-Committee Members, the ASEAN Secretariat, Chairmen of other COST Sub-Committees. National COST Chairman, the ABAPAST, the ABASF, proponents of projects, project consultants/experts engaged under the Sub-Committee, and designated focal points in Dialogue Countries.

11. To prepare Handover Notes at the end of Chairman's term to ensure continuity and that proper succession planning takes place accordingly.

12. The Sub-Committee Vice-Chairmen shall be ready to assume the tasks of the Sub-Committee Chair, in the event that the Sub-Committee Chair is unable to perform the mandated tasks due to reasons beyond his/her control or when assigned specific duties by the Sub-Committee Chair.