The ASEAN Space Organization : legal aspects and feasibility

Noichim, C.

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Legal Aspects and Feasibility

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Contents in brief

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List of abbreviations

AASL	Annals of Air and Space Law
ABSU	Arab Broadcasting States Union
ACCI	ASEAN Chambers of Commerce and Industry
ACDM	ASEAN Committee on Disaster Management
ACOCI	ASEAN Committee on Culture and Information
ACW	ASEAN Committee on Women
ADPC	Asian Disaster Preparedness Centre
AEC	ASEAN Economic Community
AEGDM	ASEAN Experts Group on Disaster Management
AFTA	ASEAN Free Trade Area
AIA	ASEAN Investment Area
AIPO	ASEAN Inter-Parliamentary Organization
AISP	ASEAN Integration System of Preference
AISIS	ASEAN Institute for Strategic and International Studies
AIT	Asian Institute of Technology
AMRSW	ASEAN Ministers Responsible for Social Welfare
AOCRS	African Organization of Cartography and Remote Sensing
APSCO	Asia-Pacific Space Cooperation Organization
APRSAF	Asia-Pacific Regional Space Agency Forum
APT	Automatic Picture Transmission
ARABSAT	Arab Satellite Communications Organization
ARF	ASEAN Regional Forum
ARPDM	ASEAN Regional Progremme on Disaster Management
ASCOE	ASEAN Committee on Education
ASEAN	Association of South-East Asian Nations
ASC	ASEAN Security Community
ASCB	ASEAN Sub-Committee on Biotechnology
ASCC	ASEAN Socio-Cultural Community
ASCMG	ASEAN Sub-Committee on Meteorology and Geophysics
ASIAP	ASEAN Strategic Investment Action Plan
ASMC	ASEAN Specialized Meteorological Centre
ASO	ASEAN Space Organization
ASOMSWD	ASEAN Senior Officials Meeting on Social Welfare and Development
ASTER	Advanced Spaceborne Thermal Emission and Reflection Radiometer
AVHRR	Advanced Very High Resolution Radiometer (United States)
AUN	ASEAN University Network
AVIST	ASEAN Virtual Institute of Science and Technology

BCGS	Bureau of Coast & Geodetic Surveys (the Philippines)
BFD	Bureau of Forest Development (the Philippines)
BMS	Brunei Meteorological Service
CEPs	Closer Economic Partnerships
CEPT	Agreement on the Common Effective Preferential Tariff
CLMV	Cambodia, Laos, Myanmar and Vietnam
COSPAR	Committee on Space Research (ICSU)
COST	Committee on Science and Technology (ASEAN)
CRC	Convention on the Rights of the Child
CREST	Centre for Research in Satellite Technologies (Singapore)
CRISP	Centre for Remote Imaging, Sensing and Processing (Singapore)
CRTEAN	Regional Centre for Remote Sensing of North African States
DCA	Department of Civil Aviation (Brunei)
DENR	Department of Environment and National Resources (the Philippines)
DEPANRI	National Council of Aeronautics and Space of RI (Indonesia)
DLF	Distance Learning Foundation
DLR	German Aerospace Center
DPD	Dewan Perwakilan Daerah (Indonesia)
DTH	Direct-To-Home
EAC	European Astronaut Center (ESA)
EADS	European Aeronautic Defence and Space Company
ECSL	European Centre for Space Law
ELDO	European Launcher Development Organization
ENVISAT	Environmental Satellite
ERS	European Remote Sensing
ESA	European Space Agency
ESOC	European Space Operation Center (ESA)
ESPI	European Space Policy Institute
ESRIN	European Space Research Institute (ESA)
ESRO	European Space Research Organization
ESTEC	European Space Research and Technology Center (ESA)
EU	European Union
EUMETSAT	European Organization for Satellite Meteorology
EUTELSAT	European Telecommunications Satellite Organization
FAO	Food and Agriculture Organization of the United Nations
FDI	Foreign Direct Investments
FRIM	Forest Research Institute of Malaysia
FTAs	Free Trade Areas
GDI	Gross Domestic Income
GDP	Gross Domestic Product
GIS	Geographic Information Systems
GISTDA	Geo-Informatics and Space Technology Development Agency (Thailand)
GMS	Geostationary Meteorological Satellites
GNI	Gross National Income
GNP	Gross National Product
GNSS	Global Navigation Satellite Service (Russian Federation)

GPS	Global Positioning Systems (United States)
GSLV	Geo-synchronous Launch Vehicle
GSO	Geostationary Orbit
HLTF	High Level Task Force (ASEAN)
HPA	Hanoi Plan of Action
ICJ	International Court of Justice
ICSU	International Council of Scientific Union
ICSW	International Council on Social Welfare
ICT	Information and Communications Technologies
IISL	International Institute of Space Law of the IAF (International Astronautical Federation)
ILO	International Labour Organization
IMO	International Meteorological Organization
INMARSAT	International Maritime Satellite Organization
INTELSAT	International Telecommunications Satellite Organization
INTERCOSMOS	International Cooperation in Study and Utilization of Outer Space Program
INTERSPUTNIK	Intersputnik International Organization of Space Communications
IP	Intellectual Property
IPRs	Intellectual Property Rights
IRS	Indian Remote Sensing (India)
ISRO	Indian Space Research Organization
ITU	International Telecommunication Union
JAXA	Japan Aerospace Exploration Agency
LAPAN	National Institute of Aeronautics and Space (Indonesia)
LDCs	Least Developed Countries
LEO	Low-Earth Orbit
LPRP	Lao People's Revolutionary Party
MACRES	Malaysian Centre for Remote Sensing
MARDI	Malaysia Agriculture Research and Development Institute
MDGs	Millennium Development Goals
MFN	Most Favoured Nation
MIMOS	Malaysia Institute of Microelectronic Systems
MNCs	Multi-national Corporations
MNEs	Multinational enterprises
MODIS	Moderate-resolution Imaging Spectroradiometer
MOP	Meteosat Operation Programme (EUMETSAT)
MOPs	Margins of Preferences
MOSTI	Ministry of Science, Technology and Innovation (Malaysia)
MOU	Memorandum of Understanding
MPC	Multi-Project Chip
MPR	Majelis Permusyawaratan Rakyat (Indonesia)
MPSC	Mabuhay Philippines Satellite Corporation
MRAs	Mutual Recognition Arrangements
MSG	Meteosat Second Generation Satellite System
MTG	Meteosat Third Generation Satellite System
MUT	Mahanakorn University of Technology

NAMRIA	National Mapping and Resource Information Authority (the Philippines)
NASA	National Aeronautic and Space Administration (United States)
NCA	National Cartographic Authority (the Philippines)
NCSRA	National Committee for Space research and Application of Vietnam
NCST	National Centre of Science and Technology of Vietnam
NEP	New Economic Policy
NGD	National Geographic Department (Laos)
NGOs	Non-governmental Organizations
NLD	National League for Democracy (Myanmar)
NOAA	National Oceanic and Atmospheric Administration (United States)
NRMC	Natural Resources Management Center (the Philippines)
NSA	National Space Agency (Malaysia)
NTBs	Non-Tariff Barriers
NTMs	Non-Tariff Measures
OAS	Organization of American States
OECD	Organization for Economic Co-operation and Development
PAGASA	Philippine Atmospheric, Geophysical and Astronomical Services Administration
PTA	Preferential Trading Arrangement
RCICM	Regional Training Course on Integrated Coastal Management
R&D	Research and Development
RESAP	Regional Space Application Programme for Sustainable Development
ROO	Rules of Origin
RTAs	Regional Trading Arrangements
SARS	Sever Acute Respiratory Syndrome
SCIRD	Sub-Committee on S&T Infrastructure and Resources Development
SCMIT	Sub-Committee on Microelectronics and Information Technology
SCNCER	Sub-Committee on Non-Conventional Energy Research
SCOSA	Sub-Committee on Space Technology and Applications (ASEAN)
SEANWFZ	Treaty on the Southeast Asia Nuclear Weapon-Free Zone
SEATO	Southeast Asia Treaty Organization
SIRIM	Standards and Industrial Research Institute of Malaysia
SME	Small and Medium Enterprises
SMMS	Small Multi-Mission Satellite Program
SPC	Science Programme Committee (ESA)
SPDC	State Peace and development Council (Myanmar)
SPOT	Experimental Earth Observation System (France)
S&T	Science and Technology
STCC-COSTA	Science and Technology Coordinating Council Committee on Space Technology Applications (the Philippines)
STEA	Science Technology and Environment Agency (Laos)

TAC	Treaty on Amity and Cooperation in Southeast Asia
TAGP	Trans-ASEAN Gas Pipeline
TGIST	Thailand Graduate Institute of Science and Technology
THEOS	Thai Earth Observation Satellite
TMSC	Thai Micro-Satellite Company
TOT	Training of Trainers
TPM	Technology Park of Malaysia
UCOM	United Communication Company
UK	United Kingdom
UKM	Universiti Kebangsaan Malaysia
UN	United Nations
(UN)COPUOS	(United Nations) Committee on the Peaceful Uses of Outer Space
UNDP	United Nations Development Programme
UNESCAP	United Nations Economic and Social Commission for Asia and the Pacific
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNGA	United Nations General Assembly
UNICEF	United Nations Children's Fund
UNISPACE	United Nations Conference on the Exploration and Peaceful Use of Outer Space
UNTAC	United Nations Transitional Authority in Cambodia
UNOOSA	United Nations Office for Outer Space Affairs
UPM	Universiti Putra Malaysia
USA	United States of America
USGS	United States Geophysical Survey
USSR	Union of Soviet Socialist Republics
UTM	University Teknologi Malaysia
VAST	Very-Small Aperture Terminal
VAST	Vietnamese Academy of Science and Technology (Vietnam)
WCO	World Customs Organization
WMO	World Meteorological Organization
WSO	World Space Organization
WTO	World Trade Organization
WWW	World Weather Watch
ZOPFAN	Zone of Peace, Freedom and Neutrality Declaration (ASEAN)

Introduction

BACKGROUND AND RATIONALE

Most space activities both present and past have been undertaken under sponsorship of states, acting either alone or in cooperation, in order to achieve objectives such as:

· *Foreign Policy Objectives*

To provide foreign policy prestige for a country is an important objective for countries such as the United States of America and the former Soviet Union. These countries perform activities in space in order to demonstrate their economic, technological, military and political strengths; for example, in 1961, the United States of America under President John F. Kennedy, announced that the United States would send a man to the moon by the year 1970. At the same time, the Soviet Union was also successful in developing a large-scale space project as well as gaining useful knowledge for the establishment of a huge space station. As for countries in Europe such as France, serious initiatives were conducted to develop a space organization. Later these initiatives were considered to be a fundamental source of knowledge for the development of the European Space Agency (ESA). Furthermore, two countries in Asia, Japan and China, also made more of an effort and showed more interest in the development of a space project in order to avoid being considered out-of-date countries in the eyes of powerful countries;[1]

· *Promoting National and Regional Security*

To promote national and regional security for increasing military capability in the stability of the country may be the main reason to operate a space project in the United States of America and the former Soviet Union. This can be seen clearly during the cold war, when spy satellites were sent to gather information about strategic military positions and directions. Also, at present, there is regional cooperation to provide a wide variety of danger warnings and missile prevention systems; for example, space systems for military activities were

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1 International Space University, *KEY TO SPACE: An Interdisciplinary Approach to Space Studies*, Ed by A. Houston and M. Rycroft, International Space University Publication, USA: The McGraw-Hill Companies, Inc., 1999, p.2-6

used in the Persian Gulf War and are also being used extensively in various peacekeeping activities;[2]

· *Scientific Progress*

Scientific progress is another objective used by many countries as a reason to perform research on space projects. The cost of each space project is very high as the Mars Mission shows or the project of The Hubble Space Telescope;[3]

· *Commercial Benefits*

As for the objective of commercial payoffs, communication via satellites is one way to create business with high economic value to countries, also with satellites for remote sensing. Therefore, many countries such as the United States of America, Russia, France and China have increased support to activities in the satellite telecommunication business and some of these countries have also operated commercial launch services;[4] and,

· *Space Technology Progress*

The other objective is developing space technology in order to support economic and social development for a country. The European Union, Japan and especially India and Brazil pay utmost attention to this progress which benefits technological and social development from space activities such as the development of software.[5]

When performing space activities which meet any or all of the objectives mentioned above, countries or groups of countries use the same process to achieve these objectives. As can be seen in the first stage of the space age until the 20th century, many countries have founded their own space agencies and supported capital investments in space activities to progress in one or all of the objectives aimed for. However, they realized that the development of space activities needs more natural resources, human resources and financial support (Currently, the world's financial system fluctuates continuously. This is one of the main problems for providing funds to support space activities not only for developed countries but also for developing countries.). Thus these are the main problems for the sustainable development of space activities not only in developed countries but also in developing countries. For example, after the Cold War, the two space superpowers (The United States and Russia) tried to find a solution to the problems by changing the concept of their space programmes. At present, NASA needs to change its focus from big projects to

2 *Ibid*. p. 2-7
3 *Ibid*. p. 2-9
4 *Ibid*. p. 2-10
5 *Ibid*. p. 2-11

a new philosophy: "Faster, Better and Cheaper" and on a smaller scale;[6] the Russian space agency concentrates mainly on commercial purposes in accordance with the world situation by dominating space commercialization.[7] In the 21st century, the developing countries have been experiencing an increase in space utilization and space exploration by the world community and they are faced with many problems, for example:

1 *Inadequate information*
Inadequate information is a direct result of the differences between the developed and developing countries in space development, namely, the distribution and reception of information. Information is considered to be the most powerful system which many countries seek;
2 *Data access and cost*
Until now, data involving national security have been secured by developed countries which have highly sophisticated space technology, which prevent other countries from hacking into their databases. Also, currently, space operations tend towards commercialized space activities. Therefore, space operation data are expensive and have become a monopolized business. The effect thereof is that the developed countries have a distinct advantage from the developing countries. The developing countries have to pay a high price for any data they want;
3 *No involvement of end users*
The policies and plans of developing countries do not take into consideration the importance of the benefits which these countries may gain from space activities which could lead them to a sustainable development in the future; and,
4 *Sustainability of transferred technologies and commercialization of space activities*
These problems are becoming huge and developing countries will find it increasingly difficult to fulfill their needs for development in space activities and they will be unable to obtain the benefits from such activities. This is due to a rapidly increasing commercialization of space operations, especially at present with an unstable world economy.

Furthermore, they think there is inequality among developed and developing countries in space benefits that may lead to international conflict between those countries.

As for the above mentioned causes and results, this research would like to propose solutions in order to solve these problems and would also like to propose ways to increase the possibility of sustainable space development and to obtain space benefits for developing countries, based on the concept of international cooperation. This concept has also been confirmed by the Outer

6 *Ibid*. p. 2-15
7 *Ibid*. p. 2-16

Space Treaty 1967 and the UN Declaration 1996 on International Cooperation in Exploration and Use of Outer Space for the Benefit and the Interest of All States, Taking into Particular Account the Need of Developing Countries. The United Nations has urged the developing countries to share the benefits from space projects so that the differences in space development between the developed and developing countries shall be minimal. Moreover, the concept of international cooperation was proposed during the UNISPACE III conference by the United Nations in 1999; it states that this idea, as written in section (e), is a basic objective to promote the international cooperation in space development and utilization in accordance with space technology and its application. Although the concept of international cooperation in space activities has been conceived many times since the beginning of Space Age by the United Nations, this concept was not as successful as it should have been. This was due to the Cold War which took place in this period of time and consequently there was very little honesty and friendship among countries and people. The Age of Globalization at present has helped change this behavior. The sustainable space development should concern the United Nations which is now trying to improve and update it up by using the concept of international cooperation.

Since the beginning of the Space Age, the concept of international cooperation in space activities has been developed similarly for the benefits of space and for peaceful purposes. When considering the international cooperation in relation to space activities, we perceive and believe that it leads each country to pay more attention to space benefits and can theoretically be divided into three groups: 1) global cooperation, 2) regional cooperation and 3) bilateral cooperation.

In this research, regional cooperation should naturally become the instrument for providing sufficient space technology benefits. Countries that are located within the same geographical region which cooperate in space utilization and exploration certainly stand to gain many substantial benefits such as significant reductions in the consumption of natural resources. This in turn will result in increased job opportunities and distribution and will nurture the development and building of knowledge in the field of space technology whilst simultaneously decreasing competition in similar fields of space.

Cooperation among the members of the Association of Southeast Asian Nations (ASEAN) in space activities should, hence, function to promote effectiveness in the implementation of the concept of international cooperation in international space law. This concept can also help to solve problems and promote the exploration and use of outer space among ASEAN countries. Furthermore, such regional cooperation naturally accommodates equal rights in space technology benefits because it does not restrict those benefits exclusively to

the first user making claim to the newly discovered or acquired space technology and accompanying benefits, thereby spreading the benefits equally among the other associated members.

Accordingly, this research has the objective of studying and analyzing the feasibility of the establishment of an ASEAN Space Organization from both a theoretical and practical perspective for the overall and critically important space benefits of mankind as a whole, and in particular for the people of the ASEAN countries. This initiative to create a model for establishing an ASEAN Space Organization, whilst being based on the basic concept of international cooperation, would be expected to confirm the concept that international cooperation can change the structure of space benefits in international space law.

OBJECTIVES OF THE RESEARCH

This research is designed to investigate and analyze the following three questions:

1 What is the concept of international cooperation?
  How has it been developed?
  What is the current legal status in international space law?
2 What are the developments of space activities in ASEAN?
  How is the above notion applied and implemented in ASEAN for sustainable space development?
3 What is the contribution made by this scheme to the development of international space law and ASEAN?

THE ADVANTAGES

The advantages of the research, in as much as they relate to the establishment of an ASEAN Space Organization, are:

- The establishment of ASEAN Space Organization will provide space benefits not only for the ASEAN members but also for all mankind.
- The establishment of the ASEAN Space Organization will lead to the possibility of wide open new dimensions in international space law among ASEAN members.
- This research will not only develop and promote the good understanding and relationship of all ASEAN member countries with respect to space benefits but will also reflect the way of thought, life, and consciousness of humankind when living together peacefully.

METHODOLOGY

The methodologies applied in this thesis are the following: data acquisition, analysis of acquired data and information, and presentation of the analyzed data and information. This thesis represents a normative legal research based upon the data and information acquired by conducting more library work than field work. Furthermore, the legal data and information primarily comprises:

a primary legal sources (positive law either in the framework of international law, regional law, or even national law and States practices);
b secondary legal sources (books, articles, reports, proceedings, and results of researches, etc); and,
c tertiary legal sources (thesaurus, dictionary, etc).

After compiling the data and information, they are classified in order of substance for further analysis and/or in chronological order. For analyzing such data and information, several methodologies (qualitative, descriptive and legalistic, intergalactic and comprehensive, futuristic and interdisciplinary) are applied. However, the time frame of the data and information of this research is up-dated until 31 December 2007 as it is not actually possible to up-date the data and information with the latest developments.

SYSTEMATIC

This research aims to analyze the application of the concept of international cooperation in international space law by taking the Association of South-East Asian Nations (ASEAN) as case study. The space cooperation of ASEAN countries will be examined to determine whether or not, and to what extent this concept is practical for this area of law and to what extent it actually exists and has contributed to the evolution of international space law with relation to space benefits.

This thesis is divided into six chapters. However, to provide a simple understanding of the content of this thesis and also to describe the framework of thought in order to achieve its objectives, the elaboration of this thesis shall be presented in the following systematic order:

Chapter 1: International Space Cooperation
This chapter deals with the concept of international cooperation and the international legal evolution of space activities. Therefore, it provides general information regarding the concept of international cooperation which includes its definition, its legal status both in international law and in space law and its implementation in space activities.

Chapter 2: The ASEAN Organization: A Case Study of Regional Cooperation
This chapter focuses on the evolution and recent status of ASEAN Organization as well as considering its space activities in order to formulate the framework for enhancing collaboration in space technology and applications and to implement space programmes and projects for sustainable development in the ASEAN region.

Chapter 3: The Space Activities of ASEAN Countries
This chapter investigates the potential of ASEAN member countries in order to promote sustainable cooperation as regional space cooperation. In order to accomplish the objective of sustainable space development in the ASEAN region and to know both weak and strong points, it shall be necessary to explore the past, present and future space activities of ten ASEAN member countries.

Chapter 4: Modern Regional Space Organizations: A Comparative Study for Launching an ASEAN Space Organization
This chapter is designed to explore and investigate the application of the concept of international cooperation in international space law from the modern regional space organizations and to consider the fundamental structure and experience of those organizations useful for setting up an appropriate and practical model of the regional space organization in the ASEAN region.

Chapter 5: The ASEAN Space Organization (ASO): A Feasible Model for Sustainable Space Development
Chapter 5 will simulate the regional institute model of space activities functional for the ASEAN community, namely an ASEAN Space Organization (ASO) and analyze the legal status of the ASO and the problems and prospects within the implementation of the concept of international cooperation in international space law for sustainable space development in ASEAN region.

Chapter 6: Conclusions and Recommendations
This chapter will illustrate the result of this research and will suggest some useful recommendations for the effective implementation of the concept of international cooperation in international space law.

1 International Space Cooperation

Space is a vast realm into which the human species is expanding physically and intellectually. This expansion not only has the potential to enhance the human condition but also the power to transform it radically. As Tsiolkovsky[1] said:

> "Men are weak now, and yet they transform the Earth's surface. In millions of years their might will increase to the extent that they will change the surface of the Earth, its oceans, the atmosphere, and themselves. They will control the climate and the Solar System just as they control the Earth. They will travel beyond the limits of our planetary system; they will reach other suns, and use their fresh energy instead of the energy of their dying luminary."

Tsiolkovsky's expression may be criticized on the grounds that it places humans at the center of universe. However, more importantly, it is essential to note that despite intelligence and capacity, humans cannot excel in space activities without coordination and cooperation. These sentiments are described in the following quote: "No longer can nations, or people, live in isolation. They must come together in education and global (space) cooperation."[2]

1.1 The International Legal Evolution of Space Activities

1.1.1 Introduction

The evolution of use and exploration in outer space in its broadest sense covers many different fields, including science and technology and the social sciences.

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1 Konstantin Tsiolkovsky (1857-1935) was the first person to study rocket powered space flight and was the father of Russian cosmonautics. He wrote many books, inspired Soviet rocket engineers, and was the first to elaborate on the theory of multistage rockets. He also proposed liquid oxygen and liquid hydrogen as fuel. See, the life of Konstantin Eduardovitch Tsiolkovsky, at http://www.informatics.org/museum/tsiol (31/03/2007)

2 UNISPACE III 'Background Paper 6: Space Science and Microgravity Research and Their Benefits, Third United Nations Conference on the Exploration and Peaceful Uses of Outer-space', A/CONF.184/BP/6, 62 May 1998, p. 4.

With respect to the legal evolution, the space age[3] not only commenced on October 4, 1957, when Sputnik-1 was successfully launched into orbit around the Earth, but also that date marked the birth of international space law as serious discussions began regarding the legal status of outer space[4] in the international community, especially within the United Nations. The rapid evolution of space activities incited governments to accelerate debate to fill the legal vacuum that existed in outer space. As a result, in 1958, the United Nations established an Ad Hoc Committee on the Peaceful Uses of Outer Space and in 1961 it became a permanent committee of the United Nations General Assembly. The United Nations Committee on the Peaceful Uses of Outer Space (UNCOPUOS)[5] serves as an example of a standing group whose purpose is to coordinate the activities of national governments in space. This Committee

3 The real breakthrough in launcher technology came with the development during the Second World War of V1 and V2 Launchers. This technology was subsequently used by the USSR and the USA for the development of a series of more powerful launchers, the use of which would not be limited to military purposes. In 1955 the President of the United States announced that his country would build and launch a small satellite as a contribution to the International Geophysical Year (1957 -1958). The launch attempts failed and it was the USSR who succeeded on October 4, 1957, with Sputnik 1, to launch and put into orbit the first man-made satellite. See, Rene Oosterlinck, *The Exploration of Outer Space, The Law of International Relations*, ed. the Local Public Entity Study Organization, Chuogakuin University: Japan, 1997, p. 479-480.

4 Outer Space is a newly "discovered" area. Once so identified several legal concepts in public international law could be applied. One could define outer space as a *res nullius*, which would imply that a state could acquire parts of outer space by occupation or annexation. Others considered outer space as a part of states (an expansion of state sovereignty) because outer space was seen as adjacent to air space which is under the sovereignty of the states. Finally, a third interpretation suggested that, like the high sea and Antarctica, outer space was considered a *res communis* that is not subject to sovereignty by any state.

5 The United Nations Committee on the Peaceful Uses of Outer Space (UNCOPUOS) was set up by the General Assembly in 1959 (resolution 1472 (XIV)) to review the scope of international cooperation in peaceful uses of outer space, to devise programmes in this field to be undertaken under United Nations auspices, to encourage continued research and the dissemination of information on outer space matters, and to study legal problems arising from the exploration of outer space. The Committee has two standing Subcommittees of the whole: (1) the Scientific and Technical Subcommittee and (2) the Legal Subcommittee. Each subcommittee and the parent UNCOPUOS meet at least once a year to discuss various agenda items. UNCOPUOS activity in particular reflects the interests of the majority of United Nations member states, who are interested in the contribution of space to their development. Currently there are 67 countries of member states in the Committee and decisions of the committee are reached through consensus rather than majority vote or other voting schemes. See, http://www.unoosa.org/oosa/en/COPUOS/copuos.html (31/03/2007)

has developed additional principles beyond the space treaties,[6] the declarations and resolutions to guide international space activities.

Although the origins of space law lie in the late 1950s and early 1960s with UNCOPUOS playing a central role in drafting and negotiating space law, prior to the beginning of the space age, some concepts of international space law had already been developed. Early authorities[7] on space law developed the basic principles of all space treaties including, the freedom of outer space, the limits of national sovereignty, the regulation of military purposes, state liability, state responsibility, the rescue and return of space objects and astronauts, and international cooperation in the use of outer space. In those early days, like other activities, there was no need for global participation in order to create international rules governing human space activities.

Especially with respect to the concept of international cooperation in the use of outer space, many space scholars urged that international cooperation was the only means to achieve and guarantee peaceful use of space and travel

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6 Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies (Resolution 2222 (XXI)), adopted on 19 December 1966, opened for signature on 27 January 1967, entered into force on 10 October 1967; Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space (Resolution 2345 (XXII)), adopted on 19 December 1967, opened for signature on 22 April 1968, entered into force on 3 December 1968; Convention on International Liability for Damage Caused by Space Objects (Resolution 2777 (XXVI)), adopted on 29 November 1971, opened for signature on 29 March 1972, entered into force on 1 September 1972; Convention on Registration of Objects Launched into Outer Space (Resolution 3235 (XXIX)), adopted on 12 November 1974, opened for signature on 14 January 1975, entered into force on 15 September 1976; and, Agreement Governing the Activities of States on the Moon and Other Celestial Bodies (Resolution 34/68), adopted on 5 December 1979, opened for signature on 18 December 1979, entered into force on 11 July 1984.

7 In 1910, the first reference to a proposed space law was found in the paper "Comment s'appellera le droit qui regira la vie de l'air?" by Emile Laude in *Revue Internationale de la Locomotion Aerienne*, vol 1. However, it was not until 1932 that the first purposeful discussion of space law was written. Vladimir Mandl in a paper Das Weltraumrecht entitled "Ein Problem der Raumfahrt" argued that it was not premature to examine the legal problems which space travel would pose. Furthermore, in the pre-space age there were rocket tests by both the Soviets and Americans as part of for plans to launch the first artificial satellite into outer space. These tests focused on new legal questions. Pioneer scholars such as Oscar Schachter envisaged that "Outer space and the celestial bodies would be the common property of all mankind, over which no nation would be permitted to exercise domination." The principle of free and equal use for the object of furthering scientific research and investigation was developed. Alex Meyer argued that the principle of sovereignty could not extend to outer space. Welf Heinrich, Prince of Hanover, confirms that space beyond the atmosphere must be considered free. For further discussion, see Jenks, C.W., *Space Law*, Stevens & Sons: Great Britain, 1956, p. 97-179; and, Gyula Gai, *Space Law*, Oceana Publications, Inc. – Dobbs Ferry: USA, 1969. p. 23-30.

therein.[8] This concept was confirmed in 1959 when the United Nations General Assembly (UNGA) adopted a resolution on international co-operation in the peaceful uses of outer space believing that the exploration and use of outer space should only be for the improvement of mankind and to the benefit of states irrespective of the stage of their economic or scientific development. The resolution also stressed that the United Nations should promote international co-operation in the peaceful use of outer space.[9] Other basic principles of international space law, including the international cooperation principle, were set forth in a 1963 UNGA declaration[10] and in the five space treaties.

Space law itself is a concept that only reflects a classification of regulations applicable to a certain area of human activities. Influenced by the international politics of the Cold War era, the legal regime developed for space activities, at the time of drafting space law, was preceded by many, sometimes conflicting, proposals and the outcome of long debates and difficult negotiations. As a result, with a view to maintaining international peace and security, space law was anticipatory and expressed obligations and rights in general broad terms meant to regulate relations between states, to determine rights and duties resulting from all activities directed towards outer space and within it and to do so in the interest of mankind as a whole, in addition to offering protection to life, terrestrial and non-terrestrial, wherever it may exit.[11]

8 Doyle, S.E., "Concepts of Space Law before Sputnik", *Colloquium on the Law of Outer Space* 40 (1997): p. 4-6.

9 UNGA Resolution 1472 (XIV) 12 December 1959.

10 UNGA Resolution 1962 (XVIII), (taking into consideration Resolutions 1721 (XVI) of 20 December 1961 and 1802 (XVII) of 14 December 1962) entitled the Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space, adopted 13 December 1963 declares that (a) the exploration and use of outer space shall be carried on for the benefit and in the interests of all mankind; (b) outer space and celestial bodies are free for exploration and use by all states on the basis of equality and in accordance with international law; (c) outer space and celestial bodies are not subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other means; (d) the activities of states in the exploration and use of outer space shall be carried on in accordance with international law, including the Charter of the United Nations; (e) states bear international responsibility for national activities in outer space, whether carried on by governmental agencies or by non-governmental entities; (f) in the exploration and use of outer space, states shall be guided by the principle of cooperation and mutual assistance; (g) the states on whose registry an object launched into outer space is carried shall retain jurisdiction and control over such object and any personnel thereon, while in outer space; (h) a state which launches or procures the launching of an object into outer space or whose territory or facility an object is launched, is internationally liable for damage to a foreign state or to its natural or juridical person by such object or its component parts on the Earth, in air space, or in outer space; and (i), with respect to astronauts, as envoys of mankind in outer space states shall regard and render to them all possible assistance in the event of accident.

11 Lachs, M., "The International Law of Outer Space", *Recueil des cours*, 1964-III, p. 33.

1.1.2 Sources of International Space Law

Space law[12] can be used to mitigate or solve legal problems arising from the exploration and use of outer space. To identify the rules of space law, it is essential to investigate the sources of space law.[13] Due to the fact that space law is a relatively new branch of international law,[14] its sources can also be found principally in international law.[15] Consequently the most important sources of space law are the following:

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12 Space law, in a wider sense, also covers all the national (constitutional law, state-administrative law, civil, criminal and private international law) rules which relate to space activity or its effects. Space law, in a narrower sense, regulates the international relations connected with the exploration and use of outer space. See, Gyula Gai, *Space Law*, Oceana Publications, Inc. – Dobbs Ferry: USA, 1969. p. 36-37.

13 There are discussions about the particular meaning of the terms "source" and "sources": one as "meaning place where the law can be found" and the other as meaning "in the sense of basis of the binding force of international law." However, G.J.H. van Hoof disagreed with these interpretations and he offered the following alternative meaning: "With respect to these so-called procedural provisions relating to the sources of international law we will discern three levels of analysis. At the first level the term 'source', used in the singular, is designed to indicate *the basis of the binding force of international law.* This first level or meaning of the term 'source' is the most abstract and probably also the most controversial." At the second level van Hoof uses "source" in the sense of *constitutive element for rules of international law.* By this he means "source" in the form of a criterion by which one can decide whether or not a rule is in fact a rule of international law. At the third level, the term "sources" is used to mean *the relevant manifestation on the basis of which the presence or absence of the constitutive element can be established. This* third level, which is closely related to the second, is typical for international law. In developed national legal systems the third level of sources is constituted by formalized legislative procedures. See, G.J.H. van Hoof, *Rethinking the Sources of International Law*, Kluwer: The Netherlands, 1983, p. 57-60.

14 International space law is taking shape as a branch of general international law. The natural process whereby any new branch of international law arises is through the conclusion of international treaties and the establishment of international custom. See, Zhukov, G.P. and Kolosov, Y., *International Space Law*, Praeger: NY, 1984, p. 10. For discussions regarding space law (in its narrow sense) regarded as part of international law, see, Gyula Gai, *Space Law*, Oceana Publications, Inc. – Dobbs Ferry: USA, 1969. p. 41. The sources of space law are generally to be found in those of international law, see, Jenks, C.W., *Space Law*, p. 183.

15 Article 38 of the Statute of the International Court of Justice; The sources of international law consist of (i) "international conventions, whether general or particular, establishing rules expressly recognized by the contesting States", (ii) "international custom, as evidence of a general practice accepted as law", and (iii) "the general principles of law recognized by civilized nations", supplemented by (iv) "judicial decisions and the teachings of the most highly qualified publicists of various nations". However, other possible sources of international law may be juristic witting, many treaty-contracts and some judicial decisions both at the international and municipal level. Each source is capable of both developing new law and identifying existing law. These results partly form the disorganized state of international law and partly from the terms of article 38 itself. See, Malcolm N. Shaw, International Law, fifth edition, UK: Cambridge University Press, 2003, p. 107.

a) International Treaty:[16]

Today this source consists mainly of the five space treaties concluded in the framework of UNCOPUOS. In particular, the Outer Space Treaty 1967 served as a "Magna Carta" providing the basic general principles for the exploration and use of outer space. Several of its principles were elaborated in more specific provisions in the four other space treaties that will be discussed in the next section. This category also currently includes not just the five space treaties but also other relevant treaties,[17] bilateral and regional agreements,[18] statutes of international space organizations outside the United Nations structure,[19] space related regulations of the United Nations specialized agencies,[20] and sources of interpretation.[21]

16 An international treaty is an agreement by two or more participants in international relations concerning their mutual rights and obligations, which express the agreed will of the parties, and is concluded voluntarily and on the basis of sovereign equality; see, Zhukov, G.P. and Kolosov, Y., *International Space Law*, p. 10. With respect to the proliferation of treaties, (i) their nature as a source of international law is quite unambiguous and uncontroversial, although, certainly, there are debates and differences of opinion on certain aspects of law of treaties; (ii) the process of treaty making is relatively quick compared to customary international law probably because the whole process of negotiating a law-making treaty is directed exclusively towards the end of creating rules of international law, results come rather fast, compared to law-creation through practice where other considerations other than law-making usually play an important or even dominant role; (iii) The instrument of language used in treaties constitutes a more clear and reliable method of conveying general standards of behavior than the instrument of precedent or example on which custom is based; and (iv) The present heterogeneous character of the international society has prompted the rise of treaties as the main source of international law, particularly in areas which belong to general international law. In particular multilateral treaties have a comparatively democratic character in that all states have the opportunity to participate in their drafting and thereby to contribute to the process of making international law; See, G.J.H. van Hoof, *Rethinking the Sources of International Law*, 1983, p. 117-9.

17 The relevant treaties on arms control, environmental protection, and liability, etc; see, Eilene Galloway, "The Definition of Space Law", *32nd Colloquium of the IISL*, 1989, p. 331-334.

18 Bilateral, Regional, and Multilateral Agreements, such as Arab Corporation for Space Communications, International Space Station Agreement; Ibid., p. 331-4.

19 Statutes of international space organizations outside the United Nations structure, such as INTELSAT, INMARSAT, INTERSPUTNIK, the European Space Agency; Ibid., p. 331-4.

20 Space-related regulations of the United Nations specialized agency such as International Telecommunication Union; Ibid., p. 331-4.

21 Sources for interpretation, e.g., the United Nations resolutions, negotiating histories, analysis by experts, and the Vienna Convention on the Law of Treaties; Ibid., p. 331-4.

b) Customary Law:[22]

International customs play a vital role not only in international law but also in space law.[23] Breaking from the traditional time requirement, a short period of time is not in itself a bar to the formation of a new rule of customary law:[24] the concept of "instant customary law"[25] has been introduced to the international community for space law. Space science and technology have advanced rapidly since international customary space law was constituted at the time of the first satellite launched into outer space. For example, the authority of the 1963 Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space may be expected to grow with the passage of years. While its status is somewhat less than a treaty, it is already regarded as a statement of custom.[26] Consequently, three principles from the Declaration, considered customary principles, were identified in the 1967 Outer Space Treaty, namely, the principle of non-appropriation, the principle of freedom for exploration and use of outer space, and the principle of use of outer space.[27] However, with respect to this source of space law, both general international customary law and more specifically international

22 International custom or customary international law is listed in second place in Article 38 (1) of the Statute of the International Court of Justice, but it is the oldest source. Customary international law is one of the most cumbersome sources of space law. Writing on customary international law is truly abundant and, in general, it cannot be said to be dull. The confusion and divergence of opinions which are said to prevail with respect to the doctrine of sources in general, reign supreme as far as customary international law is concerned; see, G.J.H. van Hoof, *Rethinking the Sources of International Law*, 1983, p. 85; General practice indicates that international custom is accepted as law. International custom may be understood as the expression of rule, external and superior to the will of state. This customary phenomenon implies the existence of two elements: one material or factual (general and constant use), and other psychological or intellectual (the *opino iuris* or *poinio necessitatis,* or *opinio iuris sive necessitatis*.); see, Aldo Armando COCCA, *The Sources of International Law, The Law of International Relations*, Edited and Published by the local Public Entity Study Organization, Chuogakuin University (Sup Ed by Kunihiko TATSUZAWA): Japan, 1997, p. 63-80.

23 International Custom plays a significant role in the following situations: (1) custom serves as a source of legal rights and obligations of states in the areas of their mutual relations from which treaty regulation is absent for one reason or another; (2) custom regulates the relations between states which are non-parties to a codifying convention, and the relations between states which are parties to a convention and states which are not; see, I.H.Ph. Diederiks-Verschoor, *An Introduction to Space Law*, 1999, p. 11.

24 I.H.Ph. Diederiks-Verschoor, *An Introduction to Space Law*, 1999, p. 12.

25 "Instant customary law" is a term first used by Prof. Dr. B. Cheng. Its main theme consists of the view that "Not only is it unnecessary that the usage should be prolonged, but there need also be no usage at all in the sense of repeated practice, provided that the *opinio juris* of the states concerned can be clearly established. Consequently, international customary law has in reality only one constitutive element, the *opinio juris*"; see, G.J.H. van Hoof, *Rethinking the Sources of International Law*, 1983, p. 86.

26 Malcolm N. Shaw, International Law, 2003, p. 109; and, Jenks, C.W., *Space Law*, p. 186.

27 Chia-Jui Cheng, *The Use of Air and Outer Space Cooperation and Competition*, (15: New Sources of International Space Law), Kluwer Law International, 1998, p. 218-219.

customary space law will be required to handle space problems effectively, to promote beneficial results and to avoid harmful consequences.[28]

c) The General Principles of Law:[29]
general principles of law, which may be derived from international law (international treaties or customary law rules[30]) as well as internal legal order,[31] are also sources of the space law governing the human exploration and use of outer space. Certainly the first general principle of space law was a direct consequence of the principle *pacta sunt servanda* being applied to such inter-state relations as govern space activities.[32]

d) The Instruments Issued by International Organization:[33]
The progressive development of space law in fact began with the UN Resolution 1721 (XVI) A of 1961, in which the UN General Assembly stated, for the guidance of states in their exploration and use of outer space, that international law, including the Charter of the United Nations, applied to outer space, and that it was free for exploration and use by all states and not subject to national appropriation.[34] However, as mentioned earlier, the UN Resolution 1348 (XIII)

28 Eilene Galloway, "The Definition of Space Law", *32nd Colloquium of the IISL,* 1989, p. 331-334.
29 The general principles of law recognized by civilized nations have been applied in deciding disputes. (It is interesting to note that this concept differentiates between civilized nations and those which would not be so classified. It is surprising that the statute of the world court enshrines unequal rights among nations. In any case, in practice this difference is irrelevant, as no person is able or empowered to determine if a nation is civilized or not). The general principles of law come into operation in the absence of relevant treaty obligations and of applicable rules of international law. Moreover, the general principles of law must already be part of the legal order in force. They are principles common to the internal and international legal order. They are not limited to the principles of private law, but they include some principles specifically applicable to inter-state relationships, nevertheless they are not to be confused with conventional or customary norms; see, Aldo Armando COCCA, *The Sources of International Law, The Law of International Relations*, Edited and Published by the local Public Entity Study Organization, Chuogakuin University (Sup Ed by Kunihiko TATSUZAWA): Japan, 1997, p. 63-80.
30 Gyula Gai, *Space Law*, p. 44-45.
31 Chia-Jui Cheng, *The Use of Air and Outer Space Cooperation and Competition*, (15: New Sources of International Space Law), p. 219.
32 Gyula Gai, *Space Law*, p. 44-45.
33 Nowadays, the situation about the standing of the resolutions and declarations of the General Assembly of the United Nations is more complicated because certain resolutions of the Assembly are binding upon the organs and member states of the United Nations while other resolutions are not legally binding and are merely recommended, putting forward opinions on various issues with varying degrees of majority support. However, the Assembly has produced a great number of highly important resolutions and declarations and it was inevitable that these should have some impact upon the direction adopted by modern international law. See, Malcolm N. Shaw, International Law, 2003, p. 107-109; and, Harris, D.J., Cases and Materials on International Law, sixth edition, London: Sweet & Maxwell, 2004, p. 55-61.
34 UNGA Res. 1721A (XVI), 20 December 1961.

of 1958 provided one of the most important basic principles of space law, namely the common interest principle.[35] Moreover, the UN Resolution 1962 (XVIII) of 1963 is the most important further elaboration of basic legal principles governing the activities of states in the exploration and use of outer space because, in 1963, the General Assembly adopted the Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space, as the first significant step in the development of space law.[36]

Notwithstanding these key sources of space law, over the past forty years, space law has continued to develop through different stages due to the impact of social movements and the evolution of space technology. Consequently, space law itself is not only limited to the traditional sources of international law but also includes national space law.[37] Currently space law is a body of national and international legal norms governing mankind's activities for the exploration and use of outer space, as well as the impact of such activities on the rights of individual persons.

1.1.3 Outer Space Conventions: An Overview

The development and the codification of international space law have been achieved by the United Nations with the aspirations of the maintenance of international peace and security, the promotion of international co-operation and understanding, and the establishment of harmony with the global nature of space activities. However, a significant first step towards the formulation of international rules in outer space was the Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space in 1963. The concepts of this Declaration are mentioned in the Outer Space Treaty 1967. In addition, four other treaties may be said to deal specifically with particular concepts included in the Outer Space Treaty 1967.

1.1.3.1 Outer Space Treaty, 1967

The Outer Space Treaty 1967[38] provides a framework for the developing law

35 UNGA Res. 1348 (XIII), 13 December 1958.

36 UNGA Res. 1962 (XVIII), 13 December 1963; Malcolm N. Shaw, International Law, 2003, p. 109; and, Nandasiri Jasentuliyana, International Space Law and the United Nations, Kluwer Law International, 1999, p. 29.

37 Haanappel, *The Law and Policy of Air Space and Outer Space: A Comparative Approach*, Kluwer Law International: The Netherlands, 2003, p. 10; Gyula Gai, *Space Law*, 1969. p. 46; and, Eilene Galloway, "The Definition of Space Law", 1989, p. 331-334.

38 The "Outer Space Treaty", adopted by the General Assembly in its Resolution 2222 (XXI), opened for signature on 27 January 1967, entered into force on 10 October 1967, 98 ratifica-

of outer space and furnishes a general legal basis for the peaceful explorations and uses of outer space.[39] It particularly includes, for example:

a) Rights to use but not to appropriate outer space

This principle can be found in Articles I[40] and II.[41] These articles provide the framework for the peaceful exploration and use of outer space. In contrast to air space[42] but like the high seas,[43] outer space is considered a *res communis*[44] where every state is free to use and access all areas on the basis

tions and 27 signatures (as of 1 January 2008) ; see, United Nation Treaties and Principles on Space Law: Office for Outer Space Affairs, www.oosa.unvienna.org

39 Some legal basic principles of the Outer Space Treaty, 1967 include the following: (a) the exploration and use of outer space, including the moon and other celestial bodies, shall be carried out for the benefit and in the interest of all countries; (b) freedom of exploration and use of outer space by all states on a basis of equality; (c) non-appropriation of outer space, including the moon and other celestial bodies; (d) activities in the exploration and use of outer space must be carried out in accordance with international law, including the Charter of the United Nations; (e) demilitarization of outer space (no nuclear weapons or any other kind of weapons of mass destruction shall be allowed); (f) international responsibility of states for national activities in outer space, including liability for damage caused by space objects; (g) states parties keep jurisdiction and control over space objects and the personnel recorded in their register; (h) astronauts shall be given every possible assistance; (i) international cooperation and understanding in the peaceful exploration and use of outer space are to be promoted; (j) prevention of potentially harmful consequences of experiments in outer space; (k) all stations, installations etc. shall be open to representatives of other state parties on the basis of reciprocity. See, I.H.Ph. Diederiks-Verschoor, *An Introduction to Space Law*, 1999, p. 26-27; and, Zhukov, G.P. and Kolosov, Y., *International Space Law*, Praeger: NY, 1984, p. 39-40.

40 Article I of the Outer Space Treaty, 1967 states: 'The Exploration and use of outer space, including the Moon and other celestial bodies, shall be carried out for the benefit and in the interests of all countries, irrespective of their degree of economic or scientific development, and shall be the province of all mankind.
Outer space, including the Moon and other celestial bodies, shall be free for exploration and use by all States without discrimination of any kind, on a basis of equality and in accordance with international law, and there shall be free access to all areas of celestial bodies.
There shall be freedom of scientific investigation in outer space, including the Moon and other celestial bodies, and States shall facilitate and encourage international cooperation in such investigation.'

41 Article II of the Outer Space Treaty, 1967 states:
Outer space, including the Moon and other celestial bodies, is not subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other means.

42 There are two theories about air space, the first is the theory of air sovereignty, the second is the theory of free air. Nicolas Mateesco Matte, Air, *Internatinal Law: Achievements and Prospects*, edited by Mohammed Bedjaoui, Martinus Nijhoff Publishers: the Netherlands, 1991, p. 949-953.

43 Tullio Treves, *High Seas: Encyclopedia of public international law*. published under the auspices of the Max Planck Institute for Comparative Public Law and International Law, ed. Rudolf Bernhardt, North-Holland, 1995, Vol. II, p. 705-710.

44 Armel Kerrest, "Outer Space: Res Communis, Common Heritage or Common Province of Mankind?", Notes for a lecture in the Nice 2001 ECSL Summer Course.

of equality and without discrimination of any kind. In addition, this principle excludes any national appropriation by claim of sovereignty, by any other means of use or occupation.

b) Obligation to use outer space for peaceful purpose

There is general ambiguity and controversy among jurists about the meaning of the term "peaceful purpose".[45] The demilitarization of outer space is one of the most important successes of the Outer Space Treaty. Article IV[46] of the Outer Space Treaty contains two important clauses: first, all state parties are forbidden from placing in orbit around the Earth any objects carrying nuclear weapons or other weapons of mass destruction; and second, all state parties are restricted to using the moon and other celestial bodies for peaceful purposes only.

c) Application of general international law

As a *lex specialis* and as with all international agreements, this Treaty creates new law and rights and duties arising under general international law.[47] However, Article III[48] of the Outer Space Treaty also provides for applicability of international law, including the Charter of United Nations, to govern the activities of states in the exploration and use of outer space.

d) Retention of jurisdiction and control

According to the model of the law regarding flags on ships while out on the high seas,[49] the basis for jurisdiction over objects in space is registration.[50]

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45 The term of "peaceful purpose" has been another source of varying interpretations and extensive discussions, some parties interpreting peaceful purposes as 'non-aggressive' and others as 'non-military'; see, I.H.Ph. Diederiks-Verschoor, *An Introduction to Space Law*, 1999, p. 29.

46 Article IV of the Outer Space Treaty, 1967 states: 'States Parties to the Treaty undertake not to place in orbit around the Earth any objects carrying nuclear weapons or any other kinds of weapons of mass destruction, install such weapons on celestial bodies, or station such weapons in outer space in any other manner.
The Moon and other celestial bodies shall be used by all States Parties to the Treaty exclusively for peaceful purpose. The establishment of military bases, installations and fortifications, the testing of any type of weapons and the conduct of military manoeuvres on celestial bodies shall be forbidden. The use of military personnel for scientific research or for any other peaceful purpose shall not be prohibited. The use of any equipment or facility necessary for peaceful exploration of the Moon and other celestial bodies shall also not be prohibited.'

47 Gyula Gai, *Space Law*, 1969. p. 129-134

48 Article III of the Outer Space Treaty, 1967 states: 'States Parties to the Treaty shall carry on activities in the exploration and use of outer space, including the Moon and other celestial bodies, in accordance with international law, including the Charter of the United Nations, in the interest of maintaining international peace and security and promoting international cooperation and understanding.'

49 Article 6 of Geneva Convention: All ships sailing on the high seas are under the exclusive jurisdiction of the state of the flag. See also Gyula Gai, *Space Law*, 1969, p. 213-215.

The subject retaining jurisdiction and control is the state which has registered the space objects.[51] This principle has application in the interpretation of rules not merely regarded as public international space law but also as private international space law, on international state responsibility and supervision (for private space activities) in Article VI[52] and on international state liability for damage in Article VII.[53]

Nevertheless, the Outer Space Treaty does not provide a definition of "outer space". The issue of the delimitation of outer space in particular has long been discussed in the world community. In spite of initial criticisms that the principles of the Outer Space Treaty were vague, the Outer Space Treaty currently still provides a strong basis for the regulation of space activities.[54]

1.1.3.2 Rescue Agreement, 1968

The rescue of astronauts is one of the great international cooperation efforts among the world community's peaceful exploration and use of outer space.

50 The requirements for registration are summed up in Article IV of the Registration Convention of 1975 as follows: 'Each state of registry shall furnish to the UN Secretary-General, as soon as practicable, the following information:
a) Name of launching state or states;
b) An appropriate designator of the space object or its registration number;
c) Data and territory or location of launch;
d) Basic orbital parameters, including: i) Nodal period; ii) Inclination; iii) Apogee; iv) Perigee;
e) General function of space object.'

51 Gyula Gai, *Space Law,* 1969, p. 213-215.

52 Article VI of the Outer Space Treaty, 1967 states: 'States Parties to the Treaty shall bear international responsibility for national activities in outer space, including the Moon and other celestial bodies, whether such activities are carried on by governmental agencies or by non-governmental entities, and for assuring that national activities are carried out in conformity with the provisions set forth in the present Treaty. The activities of non-governmental entities in outer space, including the Moon and other celestial bodies, shall require authorization and continuing supervision by the appropriate State Party to the Treaty. When activities are carried on in outer space, including the Moon and other celestial bodies, by an international organization, responsibility for compliance with this Treaty shall be borne both by the International organization and by the States Parties to the Treaty participating in such organization.'

53 Article VII of the Outer Space Treaty, 1967 states: 'Each State party to the Treaty that launches or procures the launching of an object into outer space, including the Moon and other celestial bodies, and each State Party from whose territory or facility an object is launched, is internationally liable for damage to another State Party to the Treaty or to its natural or juridical persons by such object or its component parts on the Earth, in air space or in outer space, including the Moon and other celestial bodies.'

54 Jasentuliyana, N., *International Space Law and the United Nations*, 1999, p. 33.

The Rescue Agreement 1968[55] is based on the humanitarian idea of saving the lives of the personnel of a spacecraft in case of an accident, distress, emergency or unintended landing.[56] This agreement was developed from the concepts of Article V of the Outer Space Treaty.[57] State parties to this agreement have an obligation to not only provide assistance to astronauts but also an obligation with respect to the return of space objects or their component parts to the launching authority.[58]

55 The "Rescue Agreement", adopted by the General Assembly in Resolution 2345 (XXII), opened for signature on 22 April 1968, entered into force on 3 December 1968, 90 states ratifications, 24 states signatures, and 1 acceptance of rights and obligations (as of 1 January 2008).

56 The preamble of the Rescue Agreement reads: 'The contracting parties, noting the great importance of the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and other celestial bodies, which calls for the rendering of all possible assistance to astronauts in the event of accident, distress or emergency landing, the prompt and safe return of astronauts, and the return of objects launched into outer space.' See also, Zhukov, G.P. and Kolosov, Y., *International Space Law*, Praeger: NY, 1984, p. 93-100; and, Jasentuliyana, N., *International Space Law and the United Nations*, 1999, p. 33-35.

57 Article V of the Outer Space Treaty, 1967 states: 'States Parties to the Treaty shall regard astronauts as envoys of mankind in outer space and shall render to them all possible assistance in the event of accident, distress, or emergency landing on the territory of another State Party or on the high seas. When astronauts make such a landing, they shall be safely and promptly returned to the State of registry of the space vehicle.
In carrying on activities in outer space and on celestial bodies, the astronauts of one State Party shall render all possible assistance to the astronauts of other States Parties.
States Parties to the Treaty shall immediately inform the other States Parties to the Treaty or the Secretary-General of the United Nations of any phenomena they discover in outer space, including the Moon and other celestial bodies, which could constitute a danger to the life or health of astronauts.'

58 Articles 1 through 5 of the Rescue Agreement 1968 extend the obligations of state parties to take all possible steps to return and rescue an astronaut and/or a space object. Article 1 deals with the case of an accident or emergency of a spacecraft under the jurisdiction of a state party or on the high seas or in any other place not under the jurisdiction of a state (in outer space including the moon and other celestial bodies). Each state party, who receives information or discovers such an event, is immediately obliged to notify not only the launching authority but the UN Secretary-General as well. Articles 2 and 3 deal with practical measures related to the rescue and help of spacecraft personnel. Moreover, for the effective conduct of search and rescue operations, the launching authority must co-operate with the contracting party for the greatest effect. Article 4 designates that the personnel of a spacecraft in an accident, in distress, in an emergency or in an unintended landing must be returned safely and promptly to representatives of the launching authority. Article 5 deals with cooperation in the discovery of a spacecraft and its component part after an accident and other effective steps aimed at recovery and return.

1.1.3.3 Liability Convention, 1972

Owing to the global character of space activities, the question of damages arising from space activities is one that affects a wide circle of states.[59] The United Nations General Assembly (UNGA) adopted the Liability Convention[60] in 1971 because states recognised,

> 'The need to elaborate effective international rules and procedures concerning liability for damage caused by space objects and to ensure, in particular, the prompt payment under the terms of this convention of a full and equitable measure of compensation to victims of such damage.'[61]

This convention is essentially an elaboration of Article VII of the Outer Space Treaty 1967[62] and embodies the principles of peaceful coexistence and strengthening international cooperation as applied to space.[63] With respect to negotiations,[64] the purpose of the Convention is the treatment of liability and dispute resolution for damage caused by space activities. There are two kinds of liability for damage caused by space activities: (1) an absolute liability for damage occurring on the surface of the Earth or to aircraft in flight,[65] and (2) a fault liability for damage to another space object elsewhere.[66] However, with the dangers caused by space debris, this Convention has simultaneously raised additional questions about its applicability to solve this problem.[67] Space debris is currently a growing serious problem that many people are unaware of. As a result, the international community especially UNCOPUOS needs to find other possible solutions.[68]

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59 Gyula Gai, *Space Law*, 1969, p. 228.

60 The "Liability Convention", adopted by the General Assembly in its Resolution 2777 (XXVI), opened for signature on 29 March 1972, entered into force on 1 September 1972, 86 ratifications, 24 signatures, and 3 acceptances of rights and obligations (as of 1 January 2008).

61 See the preamble of the Liability Convention 1972.

62 *Supra,* note 53.

63 The preamble of the Liability Convention 1972 which states, "The States Parties believe that the establishment of such rules and procedures will contribute to the strengthening of international cooperation in the field of the exploration and use of outer space for peaceful purposes."; and, Zhukov, G.P. and Kolosov, Y., *International Space Law*, Praeger: NY, 1984, p. 101-108.

64 Hurwitz, B.A., *State Liability for Outer Space Activities*, Dordrecht, 1992, p. 10.

65 Article II of Liability Convention, 1972 states: 'A launching State shall be absolutely liable to pay compensation for damage caused by its space object on the surface of the Earth or to aircraft in flight.'

66 Article III of Liability Convention, 1972 states: 'In the event of damage being caused elsewhere than on the surface of the Earth to a space object of one launching State or to persons or property on board such a space object by a space object of another launching State, the latter shall be liable only if the damage is due to its fault or the fault of persons for whom it is responsible.'

67 Jasentuliyana, N., *International Space Law and the United Nations*, 1999, p. 36.

68 *See* UNISPACE III: A/CONF.184/BP/12, 8 May 1998.

1.1.3.4 Registration Convention, 1975

The Registration Convention of 1975[69] deals with national registration by states of objects launched into outer space. This Convention is an elaboration of Article VIII[70] of the Outer Space Treaty 1967. The purpose of this Convention is intended to preserve the exploration and use of outer space for peaceful purposes and to support the application of the three preceding treaties.[71] On a mandatory basis,[72] this Convention creates an obligation for states and for the Secretary-General of the United Nations to maintain appropriate registries.[73] However, despite the mandatory system of the Convention which

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69 The "Registration Convention", adopted by the General Assembly in its Resolution 3235 (XXIX), opened for signature on 14 January 1975, entered into force on 15 September 1976, 51 ratifications, 4 signatures, and 2 acceptances of rights and obligations (as of 1 January 2008).

70 Article VIII of the Outer Space Treaty, 1967 states: 'A State Party to the Treaty on whose registry an object launched into outer space is carried shall retain jurisdiction and control over such object, and over any personnel thereof, while in outer space or on a celestial body. Ownership of objects launched into outer space, including objects landed or constructed on a celestial body, and of their component parts, is not affected by their presence in outer space or on a celestial body or by their return to the Earth. Such objects or component parts found beyond the limits of the State Party to the Treaty on whose registry they are carried shall be returned to that State Party, which shall, upon request, furnish identifying data prior to their return.'

71 In the preamble of the Registration Convention 1975, state parties recall that the Outer Space Treaty 1967 affirms that states shall bear international responsibility for their national activities in outer space and refers to the state on whose registry an object launched into outer space is carried, and the Rescue Agreement 1968 provides that a launching authority shall, upon request, furnish identifying data prior to the return of an object it has launched into outer space found beyond the territorial limits of the launching authority. As well as the Liability Convention 1972 establishes international rules and procedures concerning the liability of launching states for damage caused by their space objects. Also state parties recognize the common interest of all mankind in furthering the exploration and use of outer space for peaceful purposes. See also Jasentuliyana, N., *International Space Law and the United Nations*, 1999, p. 36-37.

72 The preamble of the Registration Convention 1975 states that state parties believe that a mandatory system of registering objects launched into outer space would, in particular, assist in their identification and would contribute to the application and development of international law governing the exploration and use of outer space.

73 Articles II through III of the Registration Convention 1975 create not only the obligation of state parties to register but also an obligation on the UN Secretary-General. to record and maintain information on the registries. Article II states the following:
'1. When a space object is launched into Earth orbit or beyond, the launching State shall register the space object by means of an entry in an appropriate registry which it shall maintain. Each launching State shall inform the Secretary-General of the United Nations of the establishment of such a registry.
2. Where there are two or more launching States in respect of any such space object, they shall jointly determine which one of them shall register the object in accordance with paragraph I of this article, bearing in mind the provisions of article VIII of the Outer Space Treaty, and without prejudice to appropriate agreements concluded or to be concluded

assumes that all space objects will be registered, there are in fact still unregistered space objects over which it is not clear which state has jurisdiction and control.[74]

1.1.3.5 Moon Agreement, 1979

In order to prevent the moon from becoming a target of international conflict[75] and to promote, on the basis of equality, international cooperation,[76] the Moon Agreement of 1979[77] was established. The moon, a natural satellite of the Earth, has an important role to play in the exploration of outer space.[78] The United Nations, consequently on a free and equal basis, developed the provisions of international instruments in order to encourage the exploration of the natural resources of the moon and other celestial bodies exclusively for peaceful purposes.[79] However, the status of this Agreement is unclear as it has not been ratified by the major space faring nations and its principles,

among the launching States on jurisdiction and control over the space object and over any personnel thereof.
3. The contents of each registry and the conditions under which it is maintained shall be determined by the State of registry concerned.'
Article III specifies that:
'1. The Secretary-General of the United Nations shall maintain a Register in which the information furnished in accordance with article IV shall be recorded.
2. There shall be full and open access to the information in this Register.'

74 I.H.Ph. Diederiks-Verschoor, *An Introduction to Space Law*, 1999, p. 48.

75 *See* the preamble of the Moon Agreement 1979.

76 Article 4 of the Moon Agreement 1979 states:
'1. The exploration and use of the Moon shall be the province of all mankind and shall be carried out for the benefit and in the interests of all countries, irrespective of their degree of economic or scientific development. Due regard shall be paid to the interests of present and future generations as well as to the need to promote higher standards of living and conditions of economic and social progress and development in accordance with the Charter of the United Nations.
2. States Parties shall be guided by the principle of cooperation and mutual assistance in all their activities concerning the exploration and use of the Moon. International cooperation in pursuance of this Agreement should be as wide as possible and may take place on a multilateral basis, on a bilateral basis or though international intergovernmental organization.'

77 The "Moon Agreement", adopted by the General Assembly in its Resolution 34/68, opened for signature on 18 December 1979, entered into force on 11 July 1984, 13 ratifications and 4 signatures (as of 1 January 2008).

78 *See* the preamble of the Moon Agreement 1979.

79 Article 3 (1) of the Moon Agreement 1979 affirms that "The Moon shall be used by all States Parties exclusively for peaceful purpose." In the preamble of the Moon Agreement 1979 state parties determine to promote on the basis of equality the further development of cooperation among states in the exploration and use of the Moon and other celestial bodies; see also, I.H.Ph. Diederiks-Verschoor, An *Introduction to Space Law*, 1999, p. 50-54.

amongst other concerning the exploration of the moon's resources, remain controversial.[80]

1.2 Concept of 'International Cooperation'

Definitions of the term "cooperation" include "action of cooperating or acting jointly with anther or other"[81] and "action taken by a group of people or cooperative work done by a team".[82] In keeping with these definitions, cooperation[83] must involve obligations on the part of each party to enter into such coordinated action so as to achieve a specific goal. Thus international cooperation is the obligation[84] of states to cooperate with each other. Furthermore, international cooperation is considered a political-legal concept as explained in the following:

> 'It is a political concept in the sense of being based on the premise that, according to certain principles, states and their governments are motivated by a constructive and positive spirit of seeking peace through an organized international community in order to fundamentally change the nature of relations among independent states. In the legal concept, it arises from the implementation of the principle of international cooperation of states which has certain repercussions not only in the institutions established through this cooperation, but primarily in the content which jurists are obliged to give to this principle.'[85]

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80 Paul Henry Tuinder, International Space University, *KEY TO SPACE: An Interdisciplinary Approach to Space Studies*, Ed. A. Houston and M. Rycroft, International Space University Publication, USA: The McGraw-Hill Companies, Inc., 1999, p. 12-9.

81 *Black's Law Dictionary*, sixth edition, USA: West Publishing Co., 1990.

82 www.thefreedictionary.com/cooperation (31/03/2007)

83 "Cooperation" must be distinguished from "interdependence" and "solidarity". Interdependence describes a factual situation of mutual dependence among states but not obligations or rights to act. Interdependence consequently is a sociological term without direct legal consequence though the steadily increasing interdependence of states leads to an intensification of cooperation. Solidarity refers to the obligation of an individual state to take into consideration in its policy the interests of other states or their subjects or the common interests of the world community. This can also lead to the intensification of cooperation for development; see, Rüdiger Wolfrum, *International Law of Cooperation: Encyclopedia of public international law*, published under the auspices of the Max Planck Institute for Comparative Public Law and International Law, ed. Rudolf Bernhardt, North-Holland, Vol. II, 1995, p. 1242-1247.

84 *Ibid*., the obligation to cooperate has been established through international agreement. Legal obligations for mutual cooperation among states were already recognized in legal writings as well as in the practice of international law before the principle of sovereignty and its protection became the key element in international law in the 19th century.

85 Bogdan Babovic, *The Duty of States to Cooperate with One Another in Accordance with the Charter: Principles of International Law Concerning Friendly Relations and Cooperation*, Ed by Malan Sahovic, The Institute of International politics and economics, Oceana Publications, inc: New York, 1972, p. 289-290.

Since 1945 the term "international cooperation" had been declared within the UN Charter (Article 1 par. 3). Thereafter it has been significantly defined again in the UN General Assembly Resolution 2625 (XXV) proclaiming the 1970 Declaration on Principles of International Law concerning Friendly Relations and Cooperation Among States in accordance with the UN Charter.[86] This Declaration described "international cooperation" as the voluntary coordinated action of two or more states which takes place under a legal regime and serves a specific objective.[87] Accordingly, the objective of international cooperation is, principally, not only to promote the interests of all those states involved in effectively working together on a particular activity, but also to foster the development of developing countries as well.[88]

1.3 Legal Status of International Cooperation

The idea of the international cooperation of states with one another is not particularly new. After the Second World War, the term "international coopera-

86 U.N. Doc: *Commemorative Session of the General Assembly on the Occasion of the Twenty-fifth Anniversary of the United Nations* (G.A. Res. 2625, UN. GAOR, 25th Sess., Supp. No 18, U.N. Doc A/8018 (1970).

87 Rüdiger Wolfrum, *International Law of Cooperation: Encyclopedia of public international law*, Vol. II, 1995, p. 1242-1247.

88 The U.N. General Assembly Resolution 2625 (XXV): the Declaration on Principles of International Law Concerning Friendly Relations and Co-operation among States in accordance with the Charter of the United Nations, 1970 which states: *'The duty of States to co-operate with one anther in accordance with the Charter*. States have the duty to co-operate with one anther, irrespective of the differences in their political, economic and social systems, in the various spheres of international relations, in order to maintain international peace and security and to promote international economic stability and progress, the general welfare of nations and international co-operation free from discrimination based on such differences. To this end:
a) states shall co-operate with other states in the maintenance of international peace and security;
b) States shall co-operate in the promotion of universal respect for, and observance of, human rights and fundamental freedoms for all, and in the elimination of all forms of racial discrimination and all forms of religious intolerance;
c) States shall conduct their international relations in the economic, social, cultural, technical and trade fields in accordance with the principles of sovereign equality and non-intervention;
d) States Members of the United Nations have the duty to take joint and separate action in co-operation with the United Nations in accordance with the relevant provisions of the Charter.
States should co-operate in the economic, social and cultural fields as well as in the field of science and technology and for the promotion of international cultural and educational progress. States should co-operate in the promotion of economic growth throughout the world, especially that of the developing countries.' (G.A. Res. 2625, UN. GAOR, 25th Sess., Supp. No 18, U.N. Doc A/8018 (1970)

tion" was enshrined in the UN Charter.[89] Evidently, the legal status of this idea was firstly asserted as a basic principle of international law.[90] Identified as one of the purposes of the United Nations, Article 1 (par. 3) of Chapter I of the UN Charter states that the United Nations would like "to achieve international co-operation in solving international problems of an economic, social, cultural, or humanitarian character, and in promoting and encouraging respect for human rights and for fundamental freedoms for all without distinction as to race, sex, language, or religion".[91] For peaceful and friendly relations among nations, Article 56 of Chapter IX of the UN Charter likewise recites that all UN member-states pledge themselves "to take joint and separate action in co-operation with the (UN) Organization for the achievement of the purposes based on respect for the principle of equal rights and self-determination of peoples"[92] [set forth in Article 55].[93]

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89 The Charter of the United Nations currently represents one of the principal documents for the regulation of international affairs. As such it serves as a constitution for the international community organized on the basis of the maintenance of peace, and it represents a collection of principles, rules and obligations of international law whose enforcement should not only ensure a more just international order and prevent the outbreak of new wars, but also permit and facilitate a proper development of international relations; see, Bogdan Babovic, *The Duty of States to Cooperate with One Another in Accordance with the Charter: Principles of International Law Concerning Friendly Relations and Cooperation*, 1972, p. 287.

90 The concept of co-operation in contemporary international law is part of the "new" international law of the post-Second World War era and is the product of an historical-dialectical process of law-making drawing, variously on old customary law, court jurisprudence (international and national), legal *doctrines*, states practices, treaties (bilateral, regional, and general), and international legislation; see, Edward McWhinney, *The Concept of Co-operation, International Law: Achievements and Prospects*, Ed by Mohammed Bedjaoui, UNESCO: Martinus Nijhoff Publishers: the Netherlands, 1991, p. 425-436

91 Article I of United Nations Charter: one of the Purposes of the United Nations.

92 The principle of equal rights and self-determination of peoples states: 'By virtue of the principle of equal rights and self-determination of peoples enshrined in the Charter of the United Nations, all peoples have the right feely to determine, without external interference, their political status and to pursue their economic, social and cultural development, and every State has the duty to respect this right in accordance with the provisions of the Charter.

Every state has the duty to promote, through joint and separate action, realization of the principle of equal rights and self-determination of peoples, in accordance with the provisions of the Charter, and to render assistance to the United Nations in carrying out the responsibilities entrusted to it by the Charter regarding the implementation of the principle, in order: To promote friendly relations and co-operation among State.'

See, the Declaration on Principles of International Law Concerning Friendly Relations and Co-operation Among States in Accordance with the Charter of the United Nations, 1970 (G.A. Res. 2625, UN. GAOR, 25th Sess., Supp. No 18, U.N. Doc A/8018).

93 Article 55 of United Nations Charter: Chapter IX (International Economic and Social Co-operation) reads: 'With a view to the creation of conditions of stability and well-being which are necessary for peaceful and friendly relations among nations based on respect for the principle of equal rights and self-determination of peoples, the United nations shall promote:

1.3.1 International Cooperation in International Law

With regard to the level of development of international cooperation in international law in the post-Second World War era, it is essentially proven that the concept of international cooperation is part of contemporary international law and is a major principle of international law as expressed in the UN Charter. Furthermore, the existence and importance of this principle in "new" international law have been confirmed by the UN Declaration on Principles of International Law concerning Friendly Relations and Co-operation Among States of 1970.[94] The fundamental objectives of international cooperation among states are not only to contribute to the maintenance of world peace and the stability of international security[95] but also to promote human rights and international economic and social cooperation.[96] Accordingly, states should attempt to choose the means by which to attain the objective of international cooperation because, as a result of the UN Declaration, they are under a general legal obligation to cooperate with one another,[97] irrespective of the

a) higher standards of living, full employment, and conditions of economic and social progress and development;
b) solutions of international economic, social, health, and related problems; and international cultural and educational cooperation; and
c) universal respect for, and observance of, human rights and fundamental freedoms for all without distinction as to race, sex, language, or religion.

94 The U.N. General Assembly Resolution 2625 (XXV): the Declaration on Principles of International Law Concerning Friendly Relations and Co-operation Among States in Accordance with the Charter of the United Nations, 1970 (G.A. Res. 2625, UN. GAOR, 25th Sess., Supp. No 18, U.N. Doc A/8018).

95 In order to ensure the peaceful coexistence among all sovereign states, the emphasis of traditional international law is placed on the preservation of peace understood as the abolition of the use of force. To achieve this goal international law uses two interrelated approaches. The first path tries to rule out war as a means of national policy by way of general treaties prohibiting resorting to armed force. The other approach has tried to strengthen the organizational structure of international society by creating a system of collective security. Both means were combined in the United Nations. The obligation to cooperate derived from the Charter entails cooperation with other states and cooperation with United Nations for the maintenance of international peace and security; see, Rüdiger Wolfrum, *International Law of Cooperation: Encyclopedia of public international law*, Vol.II, 1995, p. 1242-1247.

96 The U.N. General Assembly Resolution 2625 (XXV): the Declaration on Principles of International Law Concerning Friendly Relations and Co-operation among States in accordance with the Charter of the United Nations, 1970 (G.A. Res. 2625, UN. GAOR, 25th Sess., Supp. No 18, U.N. Doc A/8018).

97 The duty of States to co-operate with one another in accordance with the Charter: 'States have the duty to co-operate with one another, irrespective of the differences in their political, economic and social systems, in the various spheres of international relations, in order to maintain international peace and security and to promote international economic stability and progress, the general welfare of nations and international co-operation free from discrimination based on such differences.' Ibid: (G.A. Res. 2625, UN. GAOR, 25th Sess., Supp. No 18, U.N. Doc A/8018 (1970).

differences in their political, economic and social systems, the differences in the various spheres of international relations, and regardless of issues based on respect for the principles of sovereign equality of states[98] and non-intervention.

Since the UN Declaration on Friendly Relations merely includes the principal contents of international cooperation found in the UN Charter, the principle of international cooperation has been applied in many fields of international law. In particular, this principle is a fundamental principle for legal regimes dealing with areas beyond national sovereignty. Areas beyond national sovereignty, including natural resources found there, are characterized by the fact that they are not subject to national appropriation in any form or by any means. For reasons of politics, security, economics, and the environmental safety of mankind, there is a need for proper international regulation of these areas. Without proper regulation, increasing competition among states and groups of states for economic resources and for control and supremacy over strategic positions in these regions could easily lead to unrestrained struggle and resulting in instability, or indeed open conflict.[99] Legal regulation in these areas could be vital to human well-being and prosperity, even to the very survival of mankind.[100] Thus, the exploration, exploitation and access to these areas beyond national sovereignty should be regulated by international treaties with founding principals based on peace, the prohibition of legal abuse, and especially a commitment to cooperation, based upon sovereign equality and equal rights.[101] At present, the areas beyond national sovereignty are considered to include not merely the high seas, seabeds and Antarctica but also outer space (see section 1.3.2.).

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98 The principle of sovereign equality of states: 'All States enjoy sovereign equality. They have equal rights and duties and are equal members of the international community, notwithstanding differences of an economic, social, political or other nature.
In particular, sovereign equality includes the following elements:
a) States are juridicially equal;
b) Each State enjoys the rights inherent in full sovereignty;
c) Each State has the duty to respect the personality of other States;
d) The territorial integrity and political independence of the State are inviolable;
e) Each State has the right to choose freely and develop its political, social, economic and cultural systems;
f) Each State has the duty to comply fully and in good faith with its international obligations and to live in peace with other States.
Ibid: (G.A. Res. 2625, UN. GAOR, 25th Sess., Supp. No 18, U.N. Doc A/8018 (1970).

99 Nagendra Singh, *Introduction to International Law of the Sea and International Space Law, International Law: Achievements and Prospects*, Ed by Mohammed Bedjaoui, UNESCO: Martinus Nijhoff Publishers: the Netherlands, 1991, p. 827.

100 *Ibid*; p. 826-7.

101 Reinhard Müller and Mario Müller, "Cooperation as a Basic Principle of Legal Régimes for Areas Beyond National Sovereignty-with Special Regard to Outer Space", *German Yearbook of International Law*, Vol. 31, 1988, p. 555.

The High Seas and the Deep Seabed

The high seas consist of the zone of sea that is open to all states, whether coastal or land-locked based on the principle of freedom of the high seas.[102] However, any state claiming this freedom must consider the interests, rights[103] and duties[104] of all other states under the 1982 Law of the Sea Convention, which states that "this area shall be reserved for peaceful purpose"[105] and "no State may validly purport to subject any part of the high seas to its sovereignty."[106] The legal status of the international seabed and their resources is described as the "common heritage of mankind"[107] and:

> 'No State shall claim or exercise sovereignty or sovereign rights over any part of the Area or its resources, nor shall any States or natural or juridical person appropriate any part thereof. No such claim or exercise of sovereignty or sovereign rights nor such appropriation shall be recognized.'[108]

Further, this area must be used exclusively for peaceful purposes and, without discrimination and prejudice, is open to all states, whether coastal or land-locked.[109] With respect to the effective protection of human life,[110] the exploration and exploitation in this area shall be carried out for the benefit of mankind[111] and controlled by the authority under the Convention.[112] Therefore, in order to maintain international peace and security and promote international cooperation, the general conduct of states in relation to this area and its resources must be organized in accordance with the provisions of Part XI of the 1982 Law of the Sea Convention, the UN Charter and international law.[113]

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102 Article 87 of the 1982 Law of the Sea Convention; and, P.P.C. Haanappel, Comparisons between the Law of the Sea and Outer Space Law: Exploration and Exploitation, *Proceedings of the Twenty-Eighth Colloquium on the Law of Outer Space*, October 7-12, 1985: Sweden, p. 145-148.

103 Articles 90, 110 and 111 of the 1982 Law of the Sea Convention.

104 Articles 94, 98 and 100 of the 1982 Law of the Sea Convention.

105 Article 88 of the 1982 Law of the Sea Convention; and, *see* also P.P.C. Haanappel, s*upra*, note 102, p.146.

106 Article 89 of the 1982 Law of the Sea Convention; and, *see* also P.P.C. Haanappel, s*upra*, note 102, p.146.

107 Article 136 of the 1982 Law of the Sea Convention.

108 Article 137(1) of the 1982 Law of the Sea Convention.

109 Article 141 of the 1982 Law of the Sea Convention; and, *see* also P.P.C. Haanappel, s*upra*, note 102, p. 146.

110 Article 14 of the 1982 Law of the Sea Convention.

111 Article 140 of the 1982 Law of the Sea Convention; and, *see* also P.P.C. Haanappel, s*upra*, note 102, p. 146.

112 Articles 140 (2), 152 and 153 of the 1982 Law of the Sea Convention.

113 Article 138 of the 1982 Law of the Sea Convention.

Antarctica

The main legal regime to regulate the activities of states in Antarctica[114] is the Antarctic Treaty 1959.[115] The objective of this Treaty is to prevent the escalation of an arms race into this area and to promote international cooperation among all nations for peaceful coexistence in the interest of all mankind as Antarctica is recognized as a commonwealth of mankind[116] because it has "frozen" territorial claims.[117] Thus Antarctica must be used exclusively for peaceful purposes and demilitarization[118] as well as "denuclearization".[119] Furthermore, in order to strengthen international cooperation on the basis of freedom of scientific investigation, the contracting parties to the Treaty have a duty to exchange to the greatest extent feasible and practicable information regarding plans for scientific programs and scientific personnel as well as make scientific observations and results freely available.[120]

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114 Antarctica was the last continent to be discovered, with Great Britain, the Soviet Union and the United States each claiming that distinction. In 1773 Captain Cook first crossed the Southern polar circle, searching for Antarctica, the terra australis. However, systematic scientific exploration of Antarctica only started at the turn of this century. Antarctica has a surface area of more than 14 million square kilometers including its large ice-shelves; thus, it represents about nine per cent of the Earth's landmass. Some 98 per cent of Antarctica is covered with ice, with an average thickness of 2300 meters, which may reach up to 4800 meters. Unlike the Arctic, Antarctica had no native inhabitants; see, Rüdiger Wolfrum and Ulf-Dieter Klemm, *Antarctica: Encyclopedia of Public International Law*, published under the auspices of the Max Planck Institute for Comparative Public Law and International Law, ed. Rudolf Bernhardt, North-Holland, 1992, Vol. I, p. 173.

115 The Antarctic Treaty, Dec. 1, 1959, 12 U.S.T. 794, T.I.A.S. No. 4780, 420 U.N.T.S. 71.

116 In 1956, India asked the General Assembly of the United Nations to consider the matter of the pacific use of Antarctica. In a memorandum, it stated that it would be appropriate and opportune for all nations to agree and assert that the area should be used entirely for peaceful purposes and general welfare. All nations should therefore agree to promote the harmonization of their actions to that end and to ensure that no activity in Antarctica might have any adverse effects on climate and other natural conditions. The idea of the internationalization of Antarctica by declaring it a "common heritage of mankind" was raised again by the Non-Aligned Countries at the meeting of New Delhi, in 1983, and Luanda (Angola), in 1985. See, Ernesto J. Rey Caro, *Antarctica, International Law: Achievements and Prospects*, Ed by Mohammed Bedjaoui, UNESCO: Martinus Nijhoff Publishers: the Netherlands, 1991, p. 984.

117 Article IV of the Antarctic Treaty 1959, There is strong support for the internationalization of Antarctica or at least excluding the exercise of any state sovereignty or jurisdiction in the region; Ibid., Ernesto J. Rey Caro, p. 984.

118 Article I (1) of the Antarctic Treaty 1959.

119 Article V of the Antarctic Treaty 1959.

120 Article II and III of the Antarctic Treaty 1959.

1.3.2 International Cooperation in International Space Law

With regard for the corresponding benefit and interests of all humankind, states shall be guided by the principle of international cooperation in peaceful exploration and use of outer space. The principle of international cooperation is a crucial element[121] in the exploration and utilization of outer space and is enshrined not merely in all outer space treaties[122] and the five sets of legal principles[123] but also in those United Nations General Assembly (UNGA) resolutions concerned with outer space activities.[124] Because outer space, including the moon and other celestial bodies, is declared as the province of all mankind[125] (*res communis*), exploration and use in this area, exclusively for peaceful purposes, is free for all states.[126] This area is also not subject to national

121 P.P.C. Haanappel, "Co-operation between Canada and the United States in Civilian Space Activities", *AASL*: Vol. XII, 1987, p. 235.

122 *Supra*, note 6

123 Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space, adopted on 10 December 1963 (Resolution 1962 (XVIII)); Principles Governing the Use by States of Artificial Earth Satellites for International Direct Television Broadcasting, adopted on 10 December 1982 (Resolution 37/92); Principles Relating to Remote Sensing of the Earth from Outer Space, adopted on 3 December 1986 (Resolution 41/65); Principles Relevant to the Use of Nuclear Power Sources in Outer Space, adopted on 14 December 1992 (Resolution 47/68); and, Declaration on International Cooperation in the Exploration and Use of Outer Space for the Benefit and in the Interest of All States, Taking into Particular Account the Needs of Developing Countries, adopted on 13 December 1996 (Resolution 51/122).

124 See Question on the Peaceful Uses of Outer Space, UNGA Res. 1348 (XIII) 13 December 1958; International Co-operation in the Peaceful Uses of Outer Space, UNGA Res. 1472 (XIV) 12 December 1959; UNGA Res. 1721 (XVI) 20 December 1961; UNGA Res.1802 (XVII) 14 December 1962; UNGA Res.1963 (XVIII) 13 December 1963; UNGA Res.2130 (XX) 12 December 1965; UNGA Res.2223 (XXI) 19 December 1966; UNGA Res.2453 (XXIII) 20 December 1968; UNGA Res.2600 (XXIV) 16 December 1969; UNGA Res.2601 (XXIV) 16 December 1969; UNGA Res.2733 (XXV) 16 December 1970; UNGA Res.2776 (XXVI) 29 November 1971; UNGA Res.2915 (XXVII) 9 November 1972; UNGA Res.3182 (XXVIII) 18 December 1973; UNGA Res.3234 (XXIX) 12 November 1974; UNGA Res.3388 (XXX) 18 November 1975; UNGA Res.31/8 November 1976; UNGA Res.32/196 20 December 1977; UNGA Res.33/16 10 November 1978; UNGA Res.34/66 5 December 1979; UNGA Res.36/35 18 November 1981; UNGA Res.37/89 10 December 1982; UNGA Res.38/80 15 December 1983; UNGA Res.39/96 14 December 1984; UNGA Res.40/162 12 December 1985; UNGA Res.41/64 3 December 1986; UNGA Res.42/68 2 December 1987; UNGA Res.43/56 6 December 1988; UNGA Res.44/46 8 December 1989; UNGA Res.45/72 11 December 1990; UNGA Res.46/45 9 December 1991; UNGA Res.47/67 14 December 1992; UNGA Res.48/39 10 December 1993; UNGA Res.49/34 9 December 1994; UNGA Res.50/27 6 December 1995; UNGA Res.51/123 13 December 1996; UNGA Res.52/56 10 December 1997; UNGA Res.53/45 3 December 1998; UNGA Res.54/67 6 December 1999; UNGA Res.55/122 8 December 2000; UNGA Res.56/51 10 December 2001; UNGA Res.57/116 11 December 2002; and UNGA Res.58/89 9 December 2003.

125 Article I of the Outer Space Treaty 1967.

126 *Ibid.* ; and, *see* also P.P.C. Haanappel, *supra*, note 102, p. 145-148

appropriation by claim or any other means of sovereignty of any state.[127] Furthermore, since the beginning of the space era, the world community has recognized the great importance of international cooperation in exploration and use of outer space for peaceful purposes[128] and has believed that such cooperation will contribute to the development of mutual understanding and to the strengthening of friendly relations between states and peoples[129] irrespective of the stage of their economic or scientific development.

The international space regime regulating human space activities consequently creates the rights and obligations[130] of all states with respect to their activities in outer space. In particular, with a view to the benefit and interests of all mankind, there is the urgent need to strengthen specific and important aspects of international cooperation with respect to the exploration and use of outer space. The five treaties[131] provide for the non-appropriation of outer space by any one country and the freedom of exploration,[132] arms control,[133] liabil-

127 Article II of the Outer Space Treaty 1967.

128 *See* Question of the Peaceful Use of Outer Space, UNGA Res. 1348 (XIII) 13 December 1958.

129 *See* the preamble of the Outer Space Treaty of 1967.

130 An analysis of the detailed interpretation of the "common-benefit clause" in the Outer Space Treaty (Articles II, III, IX, X, and XI) and The Moon Agreement (2, 4, 5) reveals the following constellation of rights and duties:
a) each state has the rights to national activities; however, national programs which exclude other states from the exploration and use of outer space are prohibited;
b) international cooperation based on equality, in accordance with international law, has to be shaped in such a way as to ensure that exploration and use of outer space is carried out for the benefit and in the interests of all countries;
c) those states engaged in the exploration and use of outer space shall afford other states party to the Treaty on the basis of equality an opportunity to observe the flight of space objects whereby the nature and conditions of such an observation shall be determined by agreement between the states concerned;
d) finally, the state party to the Treaty commit themselves to informing the Secretary-General of the United Nations as well as the public and the international scientific community "to the greatest extent feasible and practicable" of their outer space activities and in particular the results of such activities.
See, Reinhard Müller and Mario Müller, "Cooperation as a Basic Principle of Legal Régimes for Areas Beyond National Sovereignty-with Special Regard to Outer Space", *German Yearbook of International Law*, Vol. 31, 1988, p. 563.

131 *Supra* note 6

132 Under Articles I, II and III of the Outer Space Treaty of 1967 and Articles 6 and 11 the Moon Agreement of 1979, exploration and use of outer space are governed by the principles of freedom, the prohibition of appropriation and the requirement of cooperation in research activities on the basis of equality of sovereignty, non-discrimination of states and in accordance with international law. Outer Space Treaty, *supra* note 6, at article. I, II & III; and, the Moon Agreement, *supra* note 6, at article. 6 &11.

133 Article IV of the Outer Space Treaty, with the aim of complete demilitarization and denuclearization definitely prohibits all states from the specific acts or attitudes that infringe the concept of peace and security. Furthermore, the Moon Agreement of 1979 insist that, as the province of all mankind, the Moon shall be used by all states exclusively for peaceful purposes and also guided by the principle of international cooperation. Due to the moon's

ity for damages caused by space objects, the safety and rescue of spacecraft and astronauts, the prevention of harmful interference with space activities and the environment,[134] the notification and registration of space activities, scientific investigation and the exploitation of natural resources in outer space and the settlement of disputes. Each of the treaties greatly stresses the notion that the domain of outer space, the activities carried out therein and whatever benefits might accrue therefrom should be devoted to enhancing the well-being of all countries and humankind, and each includes elements elaborating the common idea of promoting international cooperation in outer space activities. Moreover, the five sets[135] of legal principles adopted by the United Nations General Assembly provide for the application of international law and promotion of international cooperation and understanding in space activities,[136] the dissemination and exchange of information through transnational direct television broadcasting via satellites[137] and remote satellite observations of

status as a demilitarized region, this Agreement prohibits the following: the threat or use of force or any other hostile act or threat of hostile act on the moon, the placing of nuclear weapons and other weapons of mass destruction on orbit around, or other trajectory to or around the moon or upon its military bases, installations, the testing of weapons, and the conduct of military maneuvers. Outer Space Treaty, *supra* note 6, at article. IV.

134 Under Article IX of the Outer Space Treaty of 1967 and Article 7 of the Moon Agreement of 1979, exploration and use of outer space are guided by the principle of cooperation. All outer space activities of states have to be conducted with due regard to the corresponding interests of other parties to the Treaty. In particular, any harmful contamination of outer space, including the moon and other celestial bodies, should be avoided and also adverse changes in the environment of the earth resulting from the introduction of extraterrestrial matter. To ensure the observance of this important duty, a consultative mechanism on an international level has been envisaged. Outer Space Treaty, *supra* note 6, at article. IX; and, Moon Agreement, *supra* note 6, at article. 7.

135 *Supra*, note 123.

136 *See* Declaration on International Cooperation 1996, s*upra*, note 123.

137 Principles Governing the Use by States of Artificial Earth Satellites for International Direct Television Broadcasting, adopted on 10 December 1982 (Resolution 37/92): In the Preamble of this principles, UNGA believes that the establishment of principles for international direct television broadcasting will contribute to the strengthening of international cooperation in this field and further the purposes and principles of the Charter of the United Nations. Beside, Article D of these Principles confirms that: 'Activities in the field of international direct television broadcasting by satellite should be based upon and encourage international cooperation. Such cooperation should be the subject of appropriate arrangements. Special consideration should be given to the needs of the developing countries in the use of international direct television broadcasting by satellite for the purpose of accelerating their national development.'

the Earth[138] and general standards regulating the safe use of nuclear power sources[139] necessary for the exploration and use of outer space.[140]

When comparing the legal regimes governing areas beyond national sovereignty, Table No. 1.1 shows that they are too diverse to expect any uniform or comparable legal developments owing to the history of discovery and exploration of these areas as well as economic and technological factors. However, it can be noted that within certain limits across these areas there has been a development of rules of international cooperation in international law and international space law such as the promotion of the international community, the alteration of the rights and duties of states, and the change in the status of those subject to international law. Finally, in the conclusion of international cooperation in international law and international space law, it can be said that there are two fundamental purposes of international cooperation in relation to the areas beyond national sovereignty, first, to preserve these areas for peaceful purposes, and second, to promote exploration and use in these areas.

138 Principles Relating to Remote Sensing of the Earth from Outer Space, adopted on 3 December 1986 (resolution 41/68); In the Preamble of this principle, UNGA indicates that the adoption of the principles relating to remote sensing of the Earth from space will contribute to the strengthening of international cooperation in this field. In particular, Principle V provides the following: 'States carrying out remote sensing activities shall promote international cooperation in these activities. To this end, they shall make available to other States opportunities for participation therein. Such participation shall be based in each cases on equitable and mutually acceptable terms.' Further, with regard to the needs of developing countries, Principle XIII provides that: 'To promote and intensify international cooperation, a State carrying out remote sensing of the Earth from space shall, upon request, enter into consultations with a State whose territory is sensed in order to make available opportunities for participation and enhance the mutual benefits to be derived therefrom.'

139 Principles Relevant to the Use of Nuclear Power Sources in Outer Space, adopted on 14 December 1992 (Resolution 41/68); Principle 7 states the following: 'In the spirit of international cooperation, all States possessing space monitoring and tracking facilities shall communicate the relevant information that they may have available on the malfunctioning space object with a nuclear power source on board to the Secretary-General of the United Nations and the States concerned as promptly as possible to allow States that might be affected to assess the situation and take any precautionary measures deemed necessary.'

140 *See* Office for Outer Space Affair, United Nations Office at Vienna, *The United Nations Treaties and Principles on Space Law*, at http:// www.oosa.unvienna.org (31/03/2007)

Table No.1.1: The Structure of Legal Regimes for Areas beyond National Sovereignty

Areas	Antarctica/ On the Earth	The Outer Space/ Outside of the Earth	The High Seas and the Deep Seabed/ On the Earth
Special Legal Regime	The Antarctic Treaty 1959	The Outer Space Treaty 1967	The Law of the Sea Convention 1982
Legal Status	A quasi-sovereignty-free area / "frozen" territorial claims (Art. IV)	The Province of all Mankind (Art. I)	The Common Heritage of Mankind (Art.89 and 136)
The principles Governing the Use & Exploration	- The Peaceful Purpose (Art.I) - Freedom of scientific investigation (Art.II) - International Co-operation (Art.III)	- Freedom of the Outer Space (Art.I) - Non-propriation (Art.II) - International Co-operation (Art.I, III, X and XI) - The Peaceful Pur-pose(Art.IV)	- Freedom of the high seas (Art.87) - Non-appropriation (Art. 89 and 137) - The Peaceful Purpose (Art.88 and 141) - International Co-operation (Art.98, 100 and 150)

1.4 APPLICATION OF THE CONCEPT OF INTERNATIONAL COOPERATION IN SPACE ACTIVITIES

In order to ensure that all countries have access to outer space and to its benefits, the application of the concept of international cooperation in space activities is indispensable. Though governments have largely shaped space activities, it is in fact recognized that many national space activities, such as satellite communication, and meteorology, require international cooperation in order to function successfully. Moreover, space activities have clearly shown how different countries, with widely varying political and legal systems, levels of development, and cultures, can work together for mutual benefit.[141] Thus governments choose to cooperate with others in the exploration and use of outer space on an equitable and mutually acceptable basis.

International cooperation should be guided, in particular, by the principles of the Declaration on International Cooperation in the Exploration and Use of Outer Space for the Benefit and in the Interest of All States, Taking into Particular Account the Needs of Developing Countries,[142] UNISPACE III,[143]

141 United Nations, *International Space Programmes and Policies,* UNISPACE (Vienna, Austria, August 1982), Editors: N. Jasentuliyana and Ralph Chipman, Elsevier Science Publishers B.V.: the Netherlands, 1984, p. 109.

142 *See* Declaration on International Cooperation 1996, s*upra*, note 123.

143 The Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE III), held in Vienna from 19 to 30 July 1999.

and the desire to enhance potential benefits including scientific payoff. It should also consider the benefit of sharing costs: increasing cost effectiveness, providing access to technology or experience possessed by others, increasing domestic support for space programs, strengthening relationships among allies or creating friendlier relationships with non-allies, influencing the content or direction of a partner's space efforts, and demonstrating leadership and enhancing prestige.[144] International cooperation should be conducted in the most effective and appropriate manner[145] as determined by the countries concerned, even though this course of action may create some associated risks such as a loss of autonomy, increasing interdependence, and increasing overall costs (cooperation itself may cost money), increasing managerial complexity, and creating political problems if one or more partners do not honor cooperative commitments.[146] Moreover, international cooperation should aim, *inter alia*, at the following goals, taking into account the need for technical assistance and rational and efficient allocation of financial and technical resources: (a) Promoting the development of space science and technology[147] and all of its applications,[148] (b) Fostering the development of relevant and appropriate

144 *Ibid.*

145 *See* Declaration on International Cooperation 1996, s*upra*, note 123.

146 International Space University, *KEY TO SPACE: An Interdisciplinary Approach to Space Studies*, Ed by A. Houston and M. Rycroft, International Space University Publication, USA: The McGraw-Hill Companies, Inc., 1999, p. 2-20.

147 International Cooperation for Developing Space Science and Technology: the most important areas for the promotion of sustainable international space cooperation are areas of space science (such as Earth mechanisms science, microgravity science, astrobiology and life science, space physics, astrophysics, and solar system exploration) and space technology (automation and robotics, miniaturization, advanced materials, data processing, and software development). This cooperation is an effective way of stimulating the utilization and evolution of space science and technology and helping bridge the gap in space science and technology knowledge between member countries. Moreover, not only among nations participated in the cooperation but also other countries, in particular developing countries, derive enhanced capabilities in developing space science and technology which can lead to accelerated economic, cultural and social growth and help them to leapfrog stages in development.

148 International Cooperation for Using Space Applications: this cooperation is very important because most nations, particularly the developing countries, can easily use or share the benefits of space technology. Moreover, several space applications have already had a significant economic development / impact such as the Following:
Telecommunications – Space can be a powerful tool for direct-to-home (DTH) delivery of information, including TV broadcasting and broadband services. Space can also be used to collect information from dispersed terrestrial entities (e.g. network of franchisees or subsidiaries of multinational enterprises [MNEs], monitoring of meters);
Navigation – Space-based navigation devices facilitate the management of mobile fleets (e.g. trucks, ships, taxis), improve the regulation of air and rail traffic, and assist individuals with navigation tasks.);
Earth observation – Remote sensing can be play a role, for example, in the design and implementation of new land infrastructure, the management of crops and natural resources, and the enforcement of agricultural policy and environmental treaties;

space capabilities in interested states, and (c) Facilitating the exchange of expertise and technology among states on a mutually acceptable basis.[149]

With respect to both general and specialized forms international cooperation at all levels of space development, not only between governmental and non-governmental agencies but also between commercial and non-commercial enterprises, at present, international space cooperation itself can be divided into three main groups: global cooperation, regional cooperation and, bilateral cooperation.

1.4.1 Global Space Cooperation Level

In considering the notion of a common heritage of mankind, the problem arises of access for developing countries to space technologies and the control of exports of "sensitive" technologies, particularly ballistics technologies. It is a fact which is becoming more and more clear that the exploration and use of outer space is one of the key contemporary global problems which can only be successfully settled through the mutual efforts of all states in the interest of humankind and through the efforts of each state separately by means of creating a corresponding mechanism to complement the interactions of states. Global problems require the internationalization of efforts and universal mechanisms.[150]

As a result, the idea of creating a World Space Organization (WSO) has been voiced within the international community.[151] The main goal of forming a

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Meteorology – Meteorological satellites help to improve weather forecasting and to anticipate extreme conditions and take appropriate mitigating action; and
Development assistance – For developing countries, space assets can offer ways to better manage their natural resources and extend services to their populations (e.g. telemedicine, distance education, telecommunications, broadcasting), particularly in remote areas. Although these space-based services require the deployment of appropriate ground equipment, they can be extremely valuable when terrestrial infrastructures are not fully developed. *See* Organization for Economic Co-operation and Development (OECD), *Space 2030: Exploring the Future of Space Applications*, OECD Publication: Paris, 2004, p. 31.

149 *See* Declaration on International Cooperation 1996, s*upra*, note 123.

150 Kamenetakaya, E., "On the Establishment of World Space Organization: Some Considerations and Remarks", *Proceedings of the 32 Colloquium on the Law of Outer Space*, 1989, p. 358.

151 The idea of creating a World Space Organization is not a new one. It has been set out either as a limited proposal in order to reserve specific purposes, or in a global form. The first expression of this idea was made during the UNISPACE-I session in Vienna in 1968. It was restated during the UNISPACE-II organized in 1982 with a view to undertake an international action program in the space field. Furthermore, many space academicians (such as Simone Courtelx, Alexander V. Yakovenko, K.B. Serafimov, E.Kamenetskaya, and Kenneth S. Pedersen) have offered their ideas to the world community for the establishment of the World Space Organization. *See*, Kamenetakaya, E., "On the Establishment of World

WSO would be to create conditions for all countries to utilize the benefits of space science and technology in order to promote the well-being of humanity and specifically economic, social and cultural development[152] and to reaffirm the common interest of all humanity in the progress of the exploration and use of outer space for peaceful purposes together with promoting the need to prevent an arms race in outer space as an essential condition for the promotion of international cooperation.[153] Currently and in the foreseeable future in canvassing global government organizations with general functions, no general purpose World Space Organization yet exits. Moreover, such an entity may never come into being because space activities until now have reflected a focus on security and commercial benefits. As a result, many states (especially space faring nations) will not likely support the establishment of such an organization and allow their projects to be subject to its authority.

However, there are other forms of global organizations that might be adopted for particular space activities. For example, global government organizations with specialized functions such as WMO[154] and ITU,[155] global non-govern-

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Space Organization: Some Considerations and Remarks", *Proceedings of the 32 Colloquium on the Law of Outer Space*, 1989; Alexander V. Yakovenko, "World Space Organization: Pro et Contra", *Proceeding of 3rd ECSL Colloquium on international Organizations and Space Law*, Perugia, 6-7 May 1999; Simone Courtelx, "Is it necessary to establish a World Space Organization?", *Proceedings of the 36 Colloquium on the Law of Outer Space*, 1993; K.B. Serafimov, "Achieving W*orldwide* Cooperation in Space", *Space Policy*, Vol. 5, No. 2, 1989; and, Kenneth S. Pedersen, "Is it Time to create a World Space Agency?", *Space Policy*, May 1993.

152 The principal aims of a World Space Organization are the following: to serve as a focal point for broad international co-operation for the exploration and use of outer space exclusively for peaceful purposes; to co-ordinate efforts undertaken by states and international organizations in the context of peaceful space activities; to facilitate for all states access to and participation in space activities and the benefits derived therefrom; and to verify compliance with international agreements to prevent the extension of an arms race into outer space. *See*, Alexander V. Yakovenko, "World Space Organization: Pro et Contra", *Proceeding of 3rd ECSL Colloquium on international Organizations and Space Law*, Perugia, 6-7 May 1999.

153 *See* the preamble of UNISPACE III "The Space Millennium: Vienna Declaration on Space and Human Development", held in Vienna, from 19 to 30 July 1999.

154 The World Meteorological Organization (WMO) is an intergovernmental organization with a membership of 187 Member States and Territories. It originated from the International Meteorological Organization (IMO), which was founded in 1873. Established in 1950, WMO became the specialized agency of the United Nations for meteorology (weather and climate), operational hydrology and related geophysical sciences. The purposes of WMO are the following: to facilitate world-wide cooperation in the establishment of networks of stations for the making of meteorological as well as hydrological and other geophysical observations related to meteorology, and to promote the establishment and maintenance of centers charged with the provision of meteorological and related services; To promote the establishment and maintenance of systems for the rapid exchange of meteorological and related information; to promote the standardization of meteorological and related observations and to ensure the uniform publication of observations and statistics; to further the application of meteorology to aviation, shipping, water problems, agriculture and other human

mental organizations with specialized function such as COSPAR,[156] as well as global organizations with both government and private sector membership such as INTELSAT[157] could be considered.

activities; to promote activities in operational hydrology and to further close co-operation between Meteorological and Hydrological Services; and to encourage research and training in meteorology and, as appropriate, in related fields and to assist in coordinating the international aspects of such research and training.

155 The Union was established last century (On 17 May 1865) as an impartial, international organization. In 1947, after the Second World War, ITU held a conference in Atlantic City with the aim of developing and modernizing the organization. Under an agreement with the newly created United Nations, it became a UN specialized agency on 15 October 1947. The purposes of ITU are the following:
'(a) to maintain and extend international cooperation between all its Member States for the improvement and rational use of telecommunications of all kinds
(b) to promote and enhance participation of entities and organizations in the activities of the Union, and to foster fruitful cooperation and partnership between them and Member States for the fulfillment of the overall objectives embodied in the purposes of the Union
(c)to promote and offer technical assistance to developing countries in the field of telecommunications, and also to promote the mobilization of the material, human and financial resources needed to improve access to telecommunications services in such countries
(d) to promote the development of technical facilities and their most efficient operation, with a view to improving the efficiency of telecommunication services, increasing their usefulness and making them, so far as possible, generally available to the public
(e) to promote the extension of the benefits of new telecommunication technologies to all the world's inhabitants
(f) To promote the use of telecommunication services with the objective of facilitating peaceful relations
(g) to harmonize the actions of Member States and promote fruitful and constructive cooperation and partnership between Member States and Sector Members in the attainment of those ends
(h) to promote, at the international level, the adoption of a broader approach to the issues of telecommunications in the global information economy and society, by cooperating with other world and regional intergovernmental organizations and those non-governmental organizations concerned with telecommunications.

156 The Committee on Space Research (COSPAR) was established during an international meeting in London in 1958. COSPAR's first Space Science Symposium was organized in Nice in January 1960. COSPAR's objectives are to promote on an international level scientific research in space, with emphasis on the exchange of results, information and opinions, and to provide a forum, open to all scientists, for the discussion of problems that may affect scientific space research. These objectives are achieved through the organization of Scientific Assemblies, publications and other means.

157 In 1964, Intelsat established the first commercial global satellite communications system and changed the way the world connects. This landmark achievement enabled people, businesses and governments to communicate instantly, reliably and simultaneously, for the first time, from all corners of the globe. With a global workforce representing more than 90 countries, and a satellite fleet that covers more than 99% of the world's population, Intelsat is the definition of an international company.

1.4.2 Regional Space Cooperation Level

In the evolution of the international community, regional cooperation plays a vital role. Regional cooperation may be defined as cooperation among states of a specific area or a group of states with the same political identity by establishing international organizations for the purpose of serving the interests of the member states such as economy, culture, and technology. At the end of the nineteenth century, the first real such regional organization was created on the American continent, namely the Organization of American States (OAS).[158] However, after the Second World War the use of regional organizations became worldwide, especially within the growing interdependence of states in space activities. Governments realized that they could achieve far more important results through cooperation than when they acted individually.[159] By the 1960s in Western Europe, two new international cooperative programs were established, the European Space Research Organization (ESRO) and the European Launcher Development Organization (ELDO), both to facilitate cooperative space development in Western Europe. In 1975, ESRO and ELDO were consolidated into the European Space Agency.

Nowadays, with respect to regional government organizations with general functions, the European Space Agency (ESA)[160] is considered the most successful regional organization. With respect to regional government organizations with specialized functions, the European organization for satellite meteorology

158 The Organization of American States (OAS) is an international organization. Its members are the thirty-five independent states of the Americas. The notion of closer hemispheric union in the Americas was first put forward by Simon Boliver who, at the 1826 Congress of Panama, proposed creating a league of American republics, with a common military, a mutual defense pact, and a supranational parliamentary assembly. In 1890, the first International Conference of American States, held in Washington, D.C., established the International Union of American Republics and its secretariat, the Commercial Bureau of American Republics-the forerunner of the OAS. Furthermore, this organization became the Pan American Union in 1910 and at the ninth International American Conference, participants signed the OAS Charter in 1948. See, http://www.oas.org; and, http://en.Wikipedia.org/wiki/ Organization_of_American_States (07/07/2008).

159 E.R.C. van Bogaert, *Aspects of Space Law*, the Netherlands: Kluwer Law and Taxation Publishers, 1986, p. 264-276.

160 The European Space Agency is Europe's gateway to space. Its mission is to shape the development of Europe's space capability and ensure that investment in space continues to deliver benefits to the citizens of Europe. ESA has 17 Member States: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom. In addition, Canada and Hungary participate in several projects under cooperation agreements. By coordinating the financial and intellectual resources of its members, it can undertake programmes and activities far beyond the scope of any single European country.

(EUMETSAT)[161] and the Arab Satellite Communications Organization (ARABSAT)[162] are two leaders.

1.4.3 Bilateral Space Cooperation Level

Bilateral cooperation between countries is the primary method used to realize and promote international activities, especially in the field of space. Since recognizing the importance of space science and space applications in the understanding of the Universe, education, health, environmental monitoring, management of natural resources, disaster management, meteorological forecasting and climate modeling, satellite communications and navigation, and the major contribution that space science and technology make to the higher standards of living and conditions of economic, social and cultural progress and development, many states have entered into bilateral agreements and conventions, each with their own objectives.[163] Agreements range from arrangements for technical assistance, education and training, financial assistance for space projects, to the establishment of a network of satellite communication systems. Cooperation extends from basic science to operational application.

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161 The European Organisation for the Exploitation of Meteorological Satellites is an intergovernmental organisation created through an international convention agreed by 18 European Member States: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, and the United Kingdom. These States fund the EUMETSAT programmes and are the principal users of the systems. EUMETSAT also signed 11 Cooperating State Agreements. Those with Croatia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia have entered into force whereas the agreements with Bulgaria, the Czech Republic and Serbia and Montenegro are to be ratified by the respective governments in the near future.

162 The Arab Satellite Communication Organization (ARABSAT) was established by the member states of the Arab League with a broader goal; to serve the needs of Telecommunication, Information, Culture and Education sectors. ARABSAT was given a mandate to design, configure and operate a satellite system, as well as to define and deliver a portfolio of satellite-based, public and private telecommunications services to the Arab States, in accordance with International Standards.

163 The list of activities promoted by such cooperation includes: (a) the provision of a launch for satellites; (b) the "loan" of an orbiting satellite or of part of its capacity; (c) the loan of ground equipment; (d) the provision of sound rockets for scientific experiments; (e) the provision of tracking support for spacecraft; (f) the Provision of the reception of data; (g) the exchange or provision of scientific and other data; (h) the provision of training facilities; (i) the provision of advice and consultancy; (j) joint planning, development and manufacturing of space systems; (k) integration of payloads/experiments of one country in the other country's satellites/space vehicles; (l) rendezvous of space vehicles; (m) complementary space missions; and, (n) joint flights by cosmonauts from two countries on space stations of one of these countries. *See, International Space Programmes and Policies*, *supra* note 141, p. 121.

It includes bilateral cooperation between space faring countries[164] (such as: USA and Russia[165] or USA and Japan,[166] etc.) and between the space faring nations and developing nations[167] (such as: USA and India[168] or Russia and China[169]) as well as between international organizations and developed countries (for example: ESA and Russia[170]) or developing countries.[171] However,

164 *Ibid*., Bilateral cooperation between developed countries or space faring countries has also been very productive. It has enabled a pooling of skills and sharing of cost, to mutual advantage and resulting in the development of new technologies and systems; *see also,* UNISPACE III: A/CONF.184/BP/12, 8 May 1998.

165 The United States and Russia have joined a working group on space biomedicine since 1971. This working group has organized 31 experiments on 13 different space flights on Russian and American spacecraft. Current plans include joint pre-and post-flight experiments on biosystems. The aim of these experiments is to measure the effects of weightless environment and cosmic radiation on lizards, water lizards, snails and bacteria. Furthermore, the USA and Russia set up two working groups (GPS-GLONASS and COAPAS-SARSAT working groups) in order to foster cooperation in the sphere of radio-satellite global navigation and search and rescue operations. Presently they are working on an agreement to provide for interoperability of the respective global positioning satellite navigation systems. See, Partnership: US – Russia Space Cooperation, http://moscow.usembassy.gov/200th/anniversary.php?record_id=space (25 January 2008).

166 Since 1969, the cooperation on space development between the United States and Japan have stared. The United States and Japan have close cooperation in the area of satellite navigation (the Global Position System: GPS). See, Joint Announcement on United States-Japan GPS cooperation, http://tokyo.usembassy.gov/e/p/tp-2006127-77.html (25 January 2008); and, http://www.jaxa.jp/about/int/index_e.html

167 *International Space Programmes and Policies*, *supra* note 141, p. 121. Bilateral cooperation between space faring nations and some developing nations has had very beneficial results. It has often started the processes of space technology development and application in developing countries and has, in many cases, led to a demonstration or experimental projects in space applications and science. Such demonstration projects have been of great importance for the adoption of various space applications in developing countries; and, UNISPACE III, *Promotion of International Cooperation,* A/CONF.184/BP/12, 8 May 1998.

168 Currently the United States and India have space cooperation by setting up the US-India Working Group on Civil Space Cooperation (JWG) to build closer ties in space exploration, satellite navigation and launch, and in the commercial space programmes. See, US-India Space Cooperation, http://www.state.gov/p/sca/ris/fs/2006/62489.html (25 January 2008).

169 China will launch a joint mission with Russia to Mars in 2009, this will be "an important milestone "in space cooperation between the two countries. A small satellite developed by China will be launched along with a Russian spacecraft called "Phobos Explorer", probably in October 2009. See, China and Russia to launch joint Mars mission, http://space.newscientist.com/article/dn11490 (31 January 2008).

170 The European Space Agency and the Russia Aviation and Space Agency (Rosaviakosmos) have identified global satellite navigation as an area of immediate mutual interest with scope for reinforcing Euro-Russian space collaboration. See, Euro/Russia Co-operation in Space, Satellite Navigation, http://ec.europa.eu/comm/space/russia/sector/satellite_navigation_en.html (31 January 2008).

171 UNISPACE III, *Promotion of International Cooperation,*A/CONF.184/BP/12, 8 May 1998: As a regional intergovernmental organization, ESA has also entered into several bilateral agreements with both space faring and non-space faring states covering different space activities such as ESA and Russia reinforcing space cooperation in the areas of global satellite navigation and global monitoring.

there has been increasingly little bilateral cooperation between the developing countries.[172]

1.5 Conclusion

There is, *de jure*, no question as to the importance and binding character of the principle of international cooperation as defined in the UN Charter, international law, and international space law. Without a doubt, greater benefits from space can be derived by intensifying international cooperation. However, since the dawn of the space age, international cooperation in space activities has not been, *de facto*, entirely successful as evidenced by the widening gap between industrialized and underdeveloped countries so evident in this era. As a result of complex political, economic, educational, scientific and technological, and other global problems, there has been international cooperation for sustainable space development almost exclusively among the developed countries. The United Nations has urged nations, particularly the developing countries, to cooperate in the exploration and peaceful use of outer space. International, regional and bilateral cooperation is beginning to be recognized by many as an effective way of stimulating the use and development of space science and technology and helping to bridge the gap in space science and technology knowledge between member countries.

In order to move this process forward, any cooperation for sustainable space development among developing countries should be identified and its benefits shared among states. In particular, there should be regional cooperation within geographically close countries, such as members of the Association of Southeast Asian Nations (ASEAN). The benefits of such cooperation in the exploration and use of outer space are numerous including the reduction of natural resource consumption, increase in job distribution, development and coordinated building of space knowledge and decrease in competition among participating countries. If, despite widely varying levels of economic, scientific, technological and industrial development, there is regional space cooperation between ASEAN nations, this cooperation could be an effective way of stimulating the use of space applications and the development of space science and technology, and

172 *International Space Programmes and Policies*, *supra* note 141, p. 122; and, UNISPACE III, *Promotion of International Cooperation,* A/CONF.184/BP/12, 8 May 1998. However, presently there is the cooperation between China and Brazil on the project of an earth resources satellite. In addition to cooperation on complete satellites, China and Brazil are cooperating in satellite technology, satellite application and satellite components. The cooperation between China and Brazil in the space sector has set a good example for the developing countries in the "South-South Cooperation" in the high-tech field. See, White Paper on China's Space Activities, International Cooperation, http://english.peopledaily.com.cn/features/spacepaper/spacepaper5.html (30 January 2008).

helping bridge the gap in space science and technology knowledge between member countries. These advancements could also contribute to accelerate economic, cultural and social growth and help these poorer countries leapfrog stages in development.

2 The ASEAN Organization: A Case Study of Regional Cooperation

"A region (Southeast Asia) can stand on its own feet, strong enough to defend itself against any negative influence from outside the region." (Adam Malik, Minister for Foreign Affairs, Indonesia August 1967)

"The nations and peoples of Southeast Asia must get together and form by ourselves a new perspective and a new framework for our region. With the establishment of ASEAN, we have taken a firm and a bold step on that road." (Tun Abdul Razak, Deputy Prime Minister of Malaysia August 1967, Minister of Defence & Minister of National Development)

"*ASEAN could marshal the still untapped potentials of this rich region through more substantial united action."* (Narciso Ramos, Secretary of Foreign Affairs, the Philippines August 1967)

"We must think not only of our national interests but posit them against regional interests: that is a new way of thinking about our problems. We must make these painful and difficult adjustments. If we are not going to do that, then regionalism remains a utopia." (S. Rajaratnam, Minister of Foreign Affairs, Singapore August 1967)

"Building a new society that will be responsive to the needs of our time and efficiently equipped to bring about, for the enjoyment and the material as well as spiritual advancement of our peoples, conditions of stability and progress." (Thanat Khoman, Minister of Foreign Affairs, Thailand August 1967)

These excerpts from key speeches from early August 1967 showcase the five leaders who would subsequently be hailed as the founding fathers of the Association of Southeast Asian Nations (ASEAN).

Southeast Asia,[1] a tropical area of geographic proximity, is a region of great diversity in history, culture, political and economic systems, language, and religion.[2] It consists of ten countries: Brunei, Cambodia, Indonesia, Laos,

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1 The name "Southeast Asia" came into popular use after World War II and has replaced such phrases as "Further India," "the East Indies," "Indo-China," and "the Malay Peninsula," which formerly designated all or part of the region. See, www.infoplease.com.

2 Southeast Asia is located between the Indian subcontinent on the west, China on the north, and the Pacific Ocean on the east. It can be divided into two main sub-regions: mainland Southeast Asia which includes Cambodia, Laos, Myanmar, Thailand, and Vietnam, and insular Southeast Asia which includes Brunei, Indonesia, Malaysia, the Philippines, and

Malaysia, Myanmar, the Philippines, Singapore, Thailand, and Vietnam. In part because of Southeast Asia's strategic location between the Indian and the Pacific Oceans, and the importance of shipping routes that traverse these bodies of water, the region was, during the colonial period, controlled by Europeans who diverted profits from Asia to Europe. Only Thailand remained independent from colonial occupation. The other Southeast Asian countries share some similar history: a colonial past, a postwar struggle for independence, and finally reemergence as independent nations after the Second World War. From colonialism[3] to nationalism,[4] Southeast Asian countries have been plagued by political turmoil, weak economics, ethnic strife, and social inequities, despite some improvements during the 1980s and 90s. Furthermore, throughout the 1960s and early 1970s, there were open conflicts between communist and non-communist factions throughout most of the region, especially in Vietnam, Laos, and Cambodia.[5]

Singapore. This region covers a total land area of 4.5 million square kilometers and has a population of about 500 million. Peninsular Southeast Asia is a rugged region traversed by many mountains and drained by great rivers such as the Thanlwin, Ayeyarwady, Chao Pharya, and Mekong. Insular Southeast Asia is made up of numerous volcanic and coral islands. This region has a generally tropical rainy climate, with the exception of the northwestern part, which has a humid subtropical climate. In this region many different languages are spoken and religions include Buddhism, Hinduism, Islam, Roman Catholicism, and Confucianism. Animism is still practiced among many isolated peoples of the region. See, www.infoplease.com and Lim Chung Yah, *Southeast Asia: the Long Road Ahead*, World Scientific Publishing Co. Pte. Ltd: Singapore, 2001, p. 1-29

3 Colonialism was responsible for the growth of economic structures such as ports, railways, and roads. Colonial rule also resulted in the formation of nation-states with viable boundaries introducing a sense of stability and order to the region. However, the further impacts of colonial rule differed depending on the colonizing power: (1) Great Britain and the United States, two liberal colonial governments, maintained a good record with respect to the rule of law, civil liberties, political participation, open education, and economic opportunity. Both were willing to allow their colonies to become independent; (2) the Spanish, Dutch, and French had a very different attitude toward their colonies. These repressive colonial governments generally placed European nationals in superior legal position, and limited civil liberties. Political activities were discouraged. Access to modern education was restricted in numbers and to certain social groups. Censorship was common. Southeast Asians were not encouraged to engage in modern economic activities. There were also major problems of corruption in the Spanish and French colonial governments. See, Dr. Constance Wilson, "Colonialism and Nationalism in Southeast Asia", www.seasite.niu.edu/crossroads/wilson/colonialism.htm; and, Clark D. Neher, *Southeast Asia in the New International Era*, fourth edition, Westview press: USA, 2002, p. 2.

4 Nationalism – organized political movements which had as their goal the restoration of their country's independence. More moderate nationalist movements appeared in those countries with liberal colonial governments while more radical nationalist movements developed in countries with repressive colonial governments. Nationalism in Southeast Asia developed from three sources: (1) indigenous religions; (2) western education; and (3) contact with social radicals such as socialists and communists. See, Dr. Constance Wilson, "Colonialism and Nationalism in Southeast Asia", www.seasite.niu.edu/crossroads/wilson/colonialism.htm.

5 See "Encyclopedia – History of Southeast Asia", www.infoplease.com.

The motivation to create a regional organization included the promotion of regional economic growth, political stability, social progress, and cultural developments as well as the following key concerns:

> 'Firstly, the most important of them was the fact that, with the withdrawal of colonial powers, there would have been a power vacuum which could have attracted outsiders to step in for political gain. As the colonial masters had discouraged any form of intra-regional contact, the idea of neighbors working together in a joint effort was thus to be encouraged. Secondly, as many of us knew from experience, especially with the Southeast Asia Treaty Organization or SEATO,[6] cooperation among disparate members located in distant lands could be ineffective. We therefore had to strive to build cooperation among those who lived close to one another and shared common interests. Thirdly, the need to join forces became imperative for the Southeast Asian countries in order to be heard and to be effective. This was the truth that we sadly learned. The motivation for our effort to bond together was thus to strengthen our position and protect ourselves against Big Power rivalry. Finally, it is common *knowledge that cooperation and ultimately* integration serve the interests of all-something that individual efforts can never achieve.[7]'

Following a model of regionalism, this region desired to establish a firm organization for common action to promote regional cooperation in Southeast Asia within the spirit of ASEAN (equality and closer partnership).

2.1 The Evolution of ASEAN

On 8 August 1967, in Bangkok, the Association of Southeast Asian Nations (ASEAN) was established by five Southeast Asian nations, namely Indonesia, Malaysia, the Philippines, Singapore, and Thailand. The establishment was by way of a Declaration rather than a treaty, which has left doubt about the

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6 The Southeast Asia Treaty Organization (SEATO) was an alliance organized in 1954 under the Southeast Asia Collective Defense Treaty by representatives of Australia, France, Great Britain, New Zealand, Pakistan, the Philippines, Thailand, and the United States. Established under Western auspices after the French withdrawal from Indochina, SEATO was created to oppose further communist gains in Southeast Asia. The treaty was supplemented by a Pacific Charter, affirming the rights of Asian and Pacific peoples to equality and self-determination and setting forth goals of economic, social, and cultural cooperation between the member countries. The civil and military organizations established under the treaty had their headquarters in Bangkok, Thailand. SEATO relied on the military forces of member nations and joint maneuvers were held annually. SEATO's principal role was to sanction the U.S. presence in Vietnam, although France and Pakistan withheld support. Unable to intervene in Laos or Vietnam due to its rule of unanimity, the future of the organization was in doubt by 1973, and SEATO was ultimately disbanded in 1977.

7 Thanat Khoman, "ASEAN Conception and Evolution" in the ASEAN Reader, Institute of Southeast Asian Studies, Singapore, 1992; see, "ASEAN History" www.aseansec.org/thanat.htm.

legal personality of ASEAN.[8] ASEAN currently has ten member states: the five original members; Brunei Darussalam joined on 8 January 1984, Vietnam on 28 July 1995, Laos and Myanmar on 23 July 1997, and Cambodia on 30 April 1999. The Bangkok Declaration states that the aims and purposes of ASEAN are the following:

> '1. To accelerate the economic growth, social progress and cultural development in the region through joint endeavours in the spirit of equality and partnership in order to strengthen the foundation for a prosperous and peaceful community of Southeast Asian nations;
> 2. To promote regional peace and stability through abiding respect for justice and the rule of law in the relationship among countries of the region and adherence to the principles of the UN Charter;
> 3. To promote active collaboration and mutual assistance on matters of common interest in the economic, social, cultural, technical, scientific and administrative fields;
> 4. To provide assistance to each other in the form of training and research facilities in the educational, professional, technical and administrative spheres;
> 5. To collaborate more effectively for the greater utilization of their agriculture and industries, the expansion of their trade, including the study of the problems of international commodity trade, the improvement of their transportation and communications facilities and the raising of the living standards of their peoples;
> 6. To promote South-East Asian studies;
> 7. To maintain close and beneficial cooperation with existing international and regional organizations with similar aims and purposes, and explore all avenues for even closer cooperation among themselves.[9]'

In addition, in 1995 the ASEAN Heads of States and Government re-affirmed that "Cooperative peace and shared prosperity shall be the fundamental goals of ASEAN."[10]

In view of its success in developing a sense of community among its very disparate members, and in finding a road for them to closer cooperation, ASEAN is probably one of the most successful regional inter-governmental organizations in the developing world today.[11] Furthermore, the establishment of

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8 The *ASEAN Declaration (Bangkok Declaration)* of 8 August 1967 did not explicitly mention any legal personality for ASEAN. However, the Declaration essentially stated some shared goals and purposes and announced an annual meeting of foreign ministers.

9 ASEAN Declaration (Bangkok Declaration), Bangkok, 8 August 1967.

10 See "Overview: Association of Southeast Asian Nations", www.aseansec.org.

11 See the address of UN Secretary-General Kofi Annan to the Indonesian Council on World Affairs in Jakarta, Indonesia, on 16 February 2000: "Today, ASEAN is not only a well-functioning, indispensable reality in the region. It is a real force to be reckoned with far beyond the region. It is also a trusted partner of the United Nations in the field of development…"'

ASEAN in 1967 was one of the greatest events in the history of Southeast Asia. Since 1967, ASEAN has been representing the collective will of the nations of Southeast Asia to bind together in friendship and cooperation to strengthen the economic and social stability of the region and to ensure peaceful and progressive national development.[12] The end of the Cold War and the collapse of communism[13] have been the most important development for the recent evolution of ASEAN. ASEAN has consequently served economic rather than military purposes as the distinction between noncommunist and communist nations no longer made sense. Regional economic cooperation is also being pursued in other areas, including investment, services, tourism and air travel, enterprises, transportation, information and communications technology, energy, minerals, food, agriculture, forestry, science and technology, and statistics.[14]

Although preliminary cooperation showed that ASEAN was founded primarily to provide a framework for regional political and economic cooperation, recently ASEAN has developed an organizational structure that encompasses not merely political and economic issues but also social development issues in the region.[15] In particularly, ASEAN members have agreed to pursue the comprehensive integration of ASEAN towards the realization of an open, dynamic and resilient ASEAN community by the year 2015.[16] In order to achieve this goal by 2015, ASEAN would need to be based on three pillars:

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12 *ASEAN Declaration (Bangkok Declaration)*, Bangkok, 8 August 1967.

13 The founding of the Association of Southeast Asian Nations (ASEAN) in 1967, initiated by the noncommunist Southeast Asian nations in response to a perceived communist threat, at one time led to still another means by which to categorize the Southeast Asian nations. Noncommunist ASEAN nations included Thailand, Malaysia, Singapore, Indonesia, the Philippines, and Brunei. Laos, Cambodia, and Vietnam composed the communist Indo-Chinese nations. Myanmar remained neutral. Towards the end of the 20th Century, this categorization of noncommunist no longer made sense because Laos, Vietnam, Cambodia, and Myanmar had all joined ASEAN. See, Clark D. Neher, *Southeast Asia in the New International Era*, fourth edition, Westview press: USA, 2002, p. 6; and, ASEAN Focus Group, *Focus on Southeast Asia*, Ed. by Peter Church, Heinemann Asia: Singapore, 1995, p. 10.

14 See Executive Summary of *ASEAN Annual Report 2003-2004*.

15 International Council on Social Welfare, *An ICSW Briefing Paper: Civil Society & the Association of Southeast Asian Nation (ASEAN*), Published by ICSW, November 2001, p. 4.

16 The first goal of ASEAN was to complete building the ASEAN Community by the year 2020; See, The vision of an ASEAN Community in 2020 is embedded in ASEAN Vision 2020, the Declaration of ASEAN Concord I (1976), the Declaration of ASEAN Concord II (2003), and the Hanoi Plan of Action. However, in the Twelfth ASEAN Summit in Cebu, the Philippines in January 2007, ASEAN leaders agreed to accelerate the establishment of an ASEAN Community by the year 2015 along the lines of ASEAN Vision 2020 and the Declaration of ASEAN Concord II, in the three pillars of the ASEAN Security Community, The ASEAN Economic Community and The ASEAN Socio-Cultural Community. Moreover, ASEAN's strong determination to accelerate the full implementation of the ASEAN Community's programme areas, measures and principles, with appropriate flexibility; see, Cebu Declaration on the acceleration of the Establishment of an ASEAN Community by 2015.

(1) political and security cooperation (in the form of ASEAN Security Community[17]), (2) economic integration (in the form of ASEAN Economic Community[18]), and (3) socio-cultural cooperation (in the form of ASEAN Socio-Cultural Community[19]). These three pillars shall be developed and implemented in a parallel and balanced manner[20] and they are closely intertwined and mutually reinforcing for the purpose of ensuring durable peace, stability and shared prosperity in the region.[21]

2.2 The Current Status of ASEAN

ASEAN clearly is a *de facto* international organization with an international structure and headquarters but, as mentioned before, may not have (full) international legal personality.[22] Presently, ASEAN is widely recognized in the international community as an example of enlightened and successful regionalism, despite the varying levels of economic and technological development and cultures and historical backgrounds of its members. Furthermore, in order to build a community of cohesive, equitable and harmonious societies

17 ASEAN Security Community (ASC) embodies ASEAN's aspirations to achieve peace, stability, democracy and prosperity in the region where ASEAN member countries live at peace with one another and with the world at large in a just, democratic and harmonious environment. The ASC subscribes to the principle of comprehensive security, which acknowledges the strong interdependencies of political and social stability, economic prosperity, and equitable development as strong foundations for the ASEAN community, and will pursue programmes that will build on these foundations accordingly. See, *Vientiane Action Programme*, the 10th ASEAN Summit, 29 November 2004.

18 The ASEAN Economic Community (AEC) embodies ASEAN's aspiration of a stable, prosperous and highly competitive region, functioning as a single market and production base by 2020, in which there is a free flow of goods, services and skilled labour, and a freer flow of capital, along with equitable economic development and reduced poverty and socio-economic disparities within and across its member countries. See, *Vientiane Action Programme*, the 10th ASEAN Summit, 29 November 2004.

19 The ASEAN Socio-Cultural Community (ASCC) represents ASEAN's aspirations to lift the quality of life of its peoples, to use natural resources sustainably and to strengthen its cultural identity to become a people-centered ASEAN. See, *Vientiane Action Programme*, the 10th ASEAN Summit, 29 November 2004.

20 See *ASEAN Security Community Plan of Action*, www.aseansec.org.

21 See *Declaration of ASEAN Concord II* (2003).

22 More precisely, ASEAN is an international organization in the sense that only independent states can apply for its membership. However, ASEAN currently has no regional council with law-making powers, no power of enforcement and no judicial system. However, ASEAN was granted observer status at the United Nations in December 2006 and ASEAN entered into treaties in its own right such as the 1979 Agreement Relating to the Privileges and Immunities of the ASEAN Secretariat between the Government of Indonesia and ASEAN, the 2000 MOU with Australia on Haze, and the 2002 MOU with China on Agricultural Cooperation, Therefore, it is important that Article 3 of the 2007 ASEAN Charter specifically states that "ASEAN, as an inter-governmental organization, is hereby conferred legal personality" (see footnote 33 and text).

by 2015, ASEAN has the concurrent cooperative responsibility for strengthening prosperity and social stability, and ensuring durable peace in the region by continuing to develop in social, economic, political, and technological areas.

2.2.1 Policy and Legal Aspects

The formal creation of ASEAN ushered in concrete institutional mechanisms for cooperation in many fields ranging from culture to science, industry, and agriculture. In order to carry out its goals and to provide for effective implementation of projects and activities, ASEAN established the following major structures and mechanisms: the ASEAN Summit,[23] the ASEAN Secretariat,[24] the ASEAN Ministerial Meeting,[25] as well as other special bodies and committees.[26]

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23 The ASEAN Summit is the highest decision-making organ of ASEAN. It is the meeting of the ASEAN heads of states and government. In 1992, the Fourth ASEAN Summit in Singapore decided that the ASEAN heads of government would meet formally every three years and informally at least once in between to lay down directions and initiatives for ASEAN activities. In 1995, the Fifth ASEAN Summit in Bangkok decided to hold annual informal summits in between the formal ASEAN Summits which take place every three years. The first informal summit was held in Jakarta in December 1996. See, Association of Southeast Asian Nation: www.itcilo.it/english/actrav/telearn/global/ilo/blokit/asean.htm.

24 The ASEAN Secretariat, established on 24 February 1976 at Jakarta, Indonesia by the Foreign Ministers of ASEAN and headed by the Secretary-General of ASEAN, is mandated to "initiate, advise, coordinate, and implement ASEAN activities." The Secretary-General of ASEAN, who has a five-year term, is appointed on merit and accorded ministerial status. The members of the professional staff of the ASEAN Secretariat are appointed on the principle of open recruitment and region-wide competition.

25 The ASEAN Ministerial Meeting (Foreign Ministers) is held on an annual basis. However, ministerial meetings in several other sectors are also held: economics, finance, agriculture and forestry, energy, environment, investment, information, labour, law, regional haze, rural development and poverty alleviation, science and technology, social welfare, transnational crime, transportation, tourism, youth, the AIA Council and the AFTA Council. Furthermore, supporting these ministerial bodies are 29 committees of senior officials and 122 technical working groups.

26 ASEAN has several specialized bodies and arrangements promoting inter-governmental cooperation in various fields: ASEAN University Network, ASEAN-EC Management Centre, ASEAN Centre for Energy, ASEAN Agricultural Development Planning Centre, ASEAN Earthquake Information Centre, ASEAN Poultry Research and Training Centre, ASEAN Regional Centre for Biodiversity Conservation, ASEAN Rural Youth Development Centre, ASEAN Specialized Meteorological Center, ASEAN Tourism Information Centre, and ASEAN Timber Technology Centre. To support the conduct of ASEAN's external relations, ASEAN has established committees composed of heads of diplomatic missions in the following capitals: Brussels, London, Paris, Washington D.C., Tokyo, Canberra, Ottawa, Wellington, Geneva, Seoul, New Delhi, New York, Beijing, Moscow, and Islamabad. In addition, ASEAN promotes cooperative activities with organizations with related aims and purposes: ASEAN-Chambers of Commerce and Industry, ASEAN Business Forum, ASEAN Tourism Association, ASEAN Council on Petroleum, ASEAN Ports Association, ASEAN Vegetable Oils Club, and the ASEAN-Institutes for strategic and International Studies.

The ASEAN summit creates the top policy level of ASEAN, because it is the highest authority of ASEAN and the Meeting of the ASEAN heads of government. In accordance with the main ASEAN objectives, namely to promote the economic, social and cultural development of the region through cooperative programmes, to safeguard the political and economic stability of the region, and to serve as forum for the resolution of intra-regional differences, all of the ASEAN summits[27] have contributed good and efficient policy and action plans to ASEAN such as a single ASEAN market and production unit policy, the policy of strengthening and intensifying intra-ASEAN cooperation, the policy of a peace, freedom and neutrality zone, and a dynamic, cohesive, resilient and integrated ASEAN community. The majority of policy and action plans adopted at ASEAN summits have become ASEAN basic documents. The ASEAN basic documents currently include the following:

'a. ASEAN Declaration 1967[28]
b. Zone of Peace, Freedom and Neutrality Declaration (Kuala Lumpur Declaration), 1971[29]
c. Declaration of ASEAN Concord 1976[30]
d. Treaty of Amity and Cooperation in Southeast Asia 1976

Furthermore, there are 53 non-governmental organizations (NGOs), which have formal affiliations with ASEAN. See, "About ASEAN", www.aseansec.org.

27 The following is a list of ASEAN summits including formal and informal summits: (a) First ASEAN Summit, Bali, 23-24 February 1976, (b) Second ASEAN Summit, Kuala Lumpur, 4-5 August 1977, (c) Third ASEAN Summit, Manila, 14-15 December 1987, (d) Fourth ASEAN Summit, Singapore, 27-29 January 1992, (e) Fifth ASEAN Summit, Bangkok, 14-15 December 1995, (f) First Informal Summit, Jakarta, 30 November 1996, (g) Second Informal Summit, Kuala Lumpur, 14-16 December 1997, (h) Sixth ASEAN Summit, Ha Noi, 15-16 December 1998, (i) Third Informal Summit, Manila, 27-28 November 1999, (j) Fourth Informal Summit, Singapore, 22-25 November 2000, (k) Seventh ASEAN Summit, Bandar Seri Begawan, 5-6 November 2001, (l) Eighth ASEAN summit, Phnom Penh, 4-5 November 2002, (m) Ninth ASEAN Summit, Bali, 7-8 October 2003, (n) Tenth ASEAN Summit, Vientiane, 29-30 November 2004, (o) Eleventh ASEAN Summit, Kuala Lumpur, 12-14 December 2005, (p) Twelfth ASEAN Summit, Cebu, 9-15 January 2007, and (q) Thirteenth ASEAN Summit, Singapore, 18-22 November 2007: see, www.aseansec.org/4933.htm.

28 The ASEAN Declaration 1967 was established and adopted by the ASEAN Foreign Ministers in order to unite the ASEAN Member Countries in a joint effort to promote economic cooperation and the welfare of the people in the region. The declaration set out guidelines for ASEAN's activities and defined the aims of the organization.

29 The Zone of Peace, Freedom and Neutrality Declaration 1971 was also established and adopted by the ASEAN foreign ministers in order to secure the recognition of, and respect for, Southeast Asia as a zone of peace, freedom and neutrality, free from any form or manner of interference by outside powers.

30 The Declaration of ASEAN Concord 1976 was adopted by the First ASEAN Summit at Indonesia in order to endeavor to promote peace, progress, prosperity and the welfare of the peoples of member states.

e. Agreement on the Conservation of Nature and Natural Resources 1985[31]
f. Protocol Amending the Treaty of Amity and Cooperation in Southeast Asia 1987
g. Agreement on the Common Effective Preferential Tariff (CEPT) Scheme for the ASEAN Free Trade Area (AFTA) 1992
h. Protocol to Amend the Framework Agreement on Enhancing ASEAN Economic Cooperation 1995
i. Treaty on the Southeast Asia Nuclear Weapon-Free Zone 1995
j. ASEAN Vision 2020 (1997)
k. Second Protocol Amending the Treaty of Amity and Cooperation in Southeast Asia 1998
l. Ha Noi Plan of Action 1998
m. Declaration on the Conduct of Parties in the South China Sea 2002
n. Declaration of ASEAN Concord II 2003[32]
o. The ASEAN Charter 2007[33]

Although not stated in the documents themselves, some of the major ASEAN basic documents[34] have provided the legal framework of the ASEAN community as primary source of ASEAN law. In particular the ASEAN Declaration is a legal framework, providing broadly stated objectives and obligations. Also, in order to guide the relations between ASEAN member countries, the other major accords of ASEAN set out general rules such as non-interference, equality, peaceful dispute settlement, renunciation of threat or use of force, and international cooperation, which apply uniformly throughout ASEAN.[35] In addition,

31 The Agreement recognizes the importance of natural resources for present and future generations and covers natural resources (such as some species, forest, soil, water and air) under the jurisdiction of contracting parties. However, this agreement does not include the natural resources in outer space.

32 www.aseansec.org/145.htm.

33 The ASEAN Charter was adopted and signed by the ASEAN Heads of Government at the Thirteenth ASEAN Summit in Singapore on 20 November 2007. Moreover, the Charter establishes ASEAN as a legal entity (Article 3), creating permanent representation for members at its secretariat in Jakarta (Article 12) and committing head of state to meeting twice a year (Article 7). The ASEAN Charter, which will come into effect thirty days after the tenth instrument of ratification, has been deposited with the ASEAN Secretary-General. It has already been ratified by six of the ten members (Brunei, Cambodia, Laos, Malaysia, Singapore and Vietnam). It is expected to enter into force soon as currently Indonesia, the Philippines and Thailand are completing their domestic procedures of ratification. At the moment of writing, no information on Myanmar is available. See, www.aseansec.org/145.htm.

34 The basic documents of ASEAN include: the ASEAN Declaration 1967, the Zone of Peace, Freedom and Neutrality Declaration 1971, the Declaration of ASEAN Concord 1976, the Treaty of Amity and Cooperation in Southeast Asia 1976, the Agreement on the Conservation of Nature and Natural Resource 1985, the ASEAN Declaration on the South China Sea 1992, the Treaty on the Southeast Asia Nuclear Weapon-Free Zone 1997, the 2020 ASEAN Vision 1997, the Declaration of ASEAN Concord II 2003, and the ASEAN Charter 2007.

35 www.aseansec.org/64.htm.

when entered into force, the ASEAN Charter shall provide a new legal foundation[36] to bring about the ASEAN Community in 2015. The ASEAN Charter will also provide a firm footing for the international legal personality of the organization as provided for in its Article 3: "ASEAN, as an inter-governmental organization, is hereby conferred legal personality".

36 The ASEAN Charter is a constitution for the Association of Southeast Asian Nations (ASEAN) and contains the preamble and 13 chapters, 55 articles and 4 annexes. After adoption and signature by the ASEAN Heads of Government on 20 November 2007 the Charter will be ratified by all ASEAN Member States. It will come into force on the 30th day after the deposit of the tenth instrument of ratification (or acceptance) with the Secretary-General of ASEAN (Article 47). Furthermore, on the legal fundamental principles, Article 2 of the ASEAN Charter stipulates:
'1. In pursuit of the Purposes stated in Article 1, ASEAN and its Member States reaffirm and adhere to the fundamental principles contained in the declarations, agreements, conventions, concords, treaties and other instruments of ASEAN.
2. ASEAN and it Member States shall act in accordance with the following Principles:
(a) respect for the independence, sovereignty, equality, territorial integrity and national identity of all ASEAN Member States;
(b) shared commitment and collective responsibility in enhancing regional peace, security and prosperity;
(c) renunciation of aggression and of the threat or use of force or other actions in manner inconsistent with international law;
(d) reliance on peaceful settlement of disputes;
(e) non-interference in the internal affairs of ASEAN Member States;
(f) respect for the right of every Member States to lead its national existence free from external interference, subversion and coercion;
(g) enhanced consultations on matters seriously affecting the common interest of ASEAN;
(h) adherence to the rule of law, good governance, the principles of democracy and constitutional government;
(i) respect for fundamental freedoms, the promotion and protection of human rights, and the promotion of social justice;
(j) upholding the United Nations Charter and international law, including international humanitarian law, subscribed to by ASEAN Member States;
(k) abstention from participation in any policy or activity, including the use of its territory, pursued by any ASEAN Member States or non-ASEAN States or any non-State actor, which threatens the sovereignty, territorial integrity or political and economic stability of ASEAN Member States;
(l) respect for the different cultures, languages and religions of the peoples of ASEAN, while emphasizing their common values in the spirit of unity in diversity;
(m) the centrality of ASEAN in external political, economic, social and cultural relations while remaining actively engaged, outward-looking, inclusive and non-discriminatory; and
(n) adherence to multilateral trade rules and ASEAN's rules-based regimes for effective implementation of economic commitments and progressive reduction towards elimination of all barriers to regional economic integration, in a market-driven economy.'

2.2.2 Social Aspects

In order to enhance peoples' quality of life, create sustainable use of natural resources, and strengthen cultural identity in the ASEAN region, social aspects[37] must be addressed as economic integration and security alone will not suffice to realize an ASEAN community. Notably, cultural and social development, as one of the ASEAN's aims and purposes,[38] is important for promoting an ASEAN community and covers such functional cooperation areas as cultural exchange and understanding,[39] ASEAN university network,[40] disaster management,[41] education,[42] health,[43] labour,[44] rural development and poverty

37 Social aspects in this context covers the division of "Functional Cooperation" in ASEAN which includes: culture and information, ASEAN university network, disaster management, drugs and narcotics, education, health and nutrition, HIV/AIDS, labour, rural development and poverty eradication, SARS, women, youth and children, and science and technology.

38 *ASEAN Declaration (Bangkok Declaration)*, Bangkok, 8 August 1967.

39 The ASEAN Committee on Culture and Information (ACOCI) continued to implement its mandate to enhance ASEAN awareness towards promoting regional identity and solidarity among the peoples of Southeast Asia. See, *ASEAN Annual Report 2003-2004*, p. 55-56; and, www.aseansec.org.

40 The ASEAN University Network (AUN) presently continues to promote collaborative studies and research programs among its member educational institutions. The AUN continues to implement activities such as developing the ASEAN studies programme, the student and faculty exchange programme, scholarships for graduate students in ASEAN countries, information networking among ASEAN universities, and collaborative research. Other major AUN activities include AUN-Quality Assurance (QA) which aims to promote the development of a quality assurance system as an instrument for maintaining, improving and enhancing teaching, research and the overall institutional academic standards for higher education of AUN member countries. See, *ASEAN Annual Report 2003-2004*, p. 55; and, www.aseansec.org.

41 The ASEAN Experts Group on Disaster Management (AEGDM), which was established in 1971, was restructured into the ASEAN Committee on Disaster Management (ACDM) in September 2002 in Hanoi, Vietnam. The ASEAN Committee on Disaster Management will enhance cooperation in disaster management, including natural and man-made disasters, in order to minimize the adverse consequences of disasters on the social and economic development of ASEAN member countries. To intensify ASEAN cooperation in disaster management, the ACDM also decided to meet annually instead of once every two years. Furthermore, the ACDM has adopted the ASEAN Regional Programme on Disaster Management (ARPDM), which was earlier developed by the AEGDM. It was formulated with the assistance of the Asian Disaster Preparedness Centre (ADPC). Under the ARPDM, cooperation among the member countries will cover capacity building, sharing of information and resources, engaging external partnerships, and public education, awareness and advocacy in disaster management. See, *ASEAN Annual Report 2003-2004*, p. 67; and, www.aseansec.org (social development).

42 In order to promote ASEAN awareness in primary and secondary school, the ASEAN Committee on Education (ASCOE) has agreed to develop a framework for a Plan of Action on Promoting ASEAN Awareness in Schools. Member countries will share information on their existing activities to promote ASEAN awareness with a view to opening appropriate activities for participation by other ASEAN countries. See, *ASEAN Annual Report 2003-2004*, p. 54; and, www.aseansec.org.

eradication,[45] women,[46] children and youth,[47] and social welfare and devel-

43 Prevention and control of communicable diseases and health surveillance is becoming an increasingly important area of regional collaboration. Public health in ASEAN member countries continues to be threatened by emerging or re-emerging infectious diseases such as cholera, meningitis, tuberculosis, and typhoid fever. HIV/AIDS continues to demand effective response at national and regional levels. More recently, the outbreak of the Severe Acute Respiratory Syndrome (SARS) and the avian flu has required an even greater vigilance and swift response by governments in the region. See, *ASEAN Annual Report 2003-2004*, p. 51; and, www.aseansec.org.

44 For labour and employment, ASEAN continues to undertake activities to address the impact on labour and employment of globalisation and trade liberalisation, including preparing the region's workers to take full advantage of the socio-economic opportunities they bring. ASEAN aims to adopt an integrated approach to social protection towards assisting workers to cope with changes brought about by industrial restructuring as a result of closer regional economic integration. To ensure that workers' skills and capacities remain relevant to changing industrial needs, and to tap the vast potential of ASEAN's human resources, projects are being carried out to enhance mutual skills recognition in ASEAN member states and to facilitate labour mobility in the region. Furthermore, ASEAN is working with the International Labour Organization (ILO) to carry out a research project on the labour and employment implications of the ASEAN Free Trade Area (AFTA) and other trade liberalisation. See, *ASEAN Annual Report 2003-2004*, p. 52-53; and, www.aseansec.org.

45 ASEAN has identified new priorities for cooperation in rural development and poverty eradication with an emphasis on effectively responding to the challenges arising from globalization, trade liberalisation and regional integration. The initial phase of the implementation of the Framework of the ASEAN Plan of Action on Rural Development and Poverty Eradication and the ASEAN Action Plan on Social Safety Nets has proceeded well with the assistance of AusAID and the UNDP. Currently a new Framework Action Plan on Rural Development and Poverty Eradication is being formulated. The Plan aims to contribute to the realization of the United Nations Millennium Development Goals. See, *ASEAN Annual Report 2003-2004*, p. 48-49; and, www.aseansec.org.

46 The ASEAN Committee on Women (ACW) has agreed to formulate a Declaration Against Gender-Based Violence in the ASEAN Region. The ACW is in the process of preparing a work plan on women's advancement and gender equality, within a time frame of five years (2005-2010) and addressing priority areas in gender integration, policy and research, protecting vulnerable women and promoting employability of women, and preparing women for the challenges of globalisation. See, *ASEAN Annual Report 2003-2004*, p. 50; and, www.aseansec.org.

47 ASEAN has requested that UNICEF consider prioritizing the area of child protection with a view to moving forward the ASEAN-UNICEF work planning process as a guide for long–term cooperation. The work plan will address priorities identified in (a) the Declaration of Commitments on Children in ASEAN adopted by the 4th Meeting of the ASEAN Ministers Responsible for Social Welfare (AMRSW) in August 2001, (b) "A World Fit for Children" adopted by the United Nations General Assembly of Special Session on Children, and (c) the Convention on the Rights of the Child (CRC). For youth in ASEAN, the present global agenda for the youth highlights the need for a holistic approach to address sustainable youth employment as the main vehicle for ensuring their active and meaningful participation in an integrated society. Accordingly, the ASEAN Work Programme on Preparing ASEAN Youth for Sustainable Employment and Other Challenges of Globalisation has included four areas of priority as follows: (a) policy development, (b) promoting ASEAN awareness/civic responsibility, (c) promoting employability of youth, and (d) information exchange/promoting partnerships. See, *ASEAN Annual Report 2003-2004*, p. 49-50; and, www.aseansec.org.

opment.[48] ASEAN's social agenda is currently being promoted by the ASEAN Socio-Cultural Community (ASCC)[49] as one of the pillars of the ASEAN Community. Moreover, in order to support other ASEAN Community goals and to promote social protection, cultural identity, the conservation of natural resources and the protection of the environment, fuel, economic growth and sustainable life, the ASCC has four core objectives:

'1. Building a community of caring societies,[50]

48 The ASEAN Work Programme on Social Welfare, Family and Population (2003-2006) was adopted at the inaugural ASEAN Senior Officials Meeting on Social Welfare and Development (ASOMSWD) in October 2002. The Work Programme identifies priorities for regional cooperation on social welfare, family and population, taking into account emerging challenges arising from demographic developments in the region and the implications of the changing structure of the family. See, *ASEAN Annual Report 2003-2004*, p. 51; and, www.aseansec.org.

49 The ASEAN Social-Cultural Community (ASCC) Plan of Action is ASEAN's goal of a community of cohesive, equitable and harmonious societies, bound together in solidarity for deeper understanding and cooperation. This ASCC Plan stems from ASEAN Vision 2020, the Declaration of ASEAN Concord I (1976), the Declaration of ASEAN Concord II (2003) and the Hanoi Plan of Action (HPA). The major features of the ASCC are:
'· Equitable access to opportunities will be universal – rising above the barriers of religion, race, language, gender, and social and cultural background;
· Human potentials are nurtured to the fullest, so that all individuals can participate meaningfully in a competitive world in a manner that gives paramount importance to their welfare and dignity;
· Norms of social and distributive justice are upheld by addressing issues of poverty and equity, and special care is given to vulnerable groups – children, youth, women, the elderly, and persons with disabilities – who could be the subject of abuse, neglect and discrimination;
· The environment and natural resources are protected and managed to sustain development and as a legacy for future generations;
· Civil society is engaged in providing inputs for policy choices;
· People are healthy in mind and body and living in harmony in safe environments; and
· ASEAN citizens interact in a community conscious of its ties of history, aware of its cultural heritage and bound by a common regional identity.'
See www.aseansec.org.

50 Building a community of caring societies is an objective which addresses issues of poverty, equity and human development. Furthermore, under the ASCC Plan of Action, the goal of building an ASEAN community of caring societies will address the following concerns:
'· Accelerating the goal of poverty reduction within the framework of the Millennium Development Goals (MDGs);
· Facilitating universal access to education for increased employability, good citizenship, and as a means of empowerment and life-long learning;
· Promoting the welfare of children by safeguarding their rights, ensuring their survival and full development, and protecting them from abuse, neglect and violence;
· Promoting improved standards and access to education through networking and institutional collaboration, using existing regional bodies;
· Enabling youth to have a better future by developing their leadership skills, entrepreneurship, and technical and vocational abilities;

2. Managing the social impact of economic integration,[51]

· Promoting equitable participation of women in the development process by eliminating all forms of discrimination against them;
· Ensuring that the elderly are adequately cared for by promoting community-based support systems to supplement the role of the family as primary caregiver;
· Augmenting and supporting the efforts of sectoral bodies to prevent and combat human trafficking, particularly in women and children, through comprehensive policies and measures;
· Strengthening the system of social welfare through the enhancement of national capacities in responding to emerging social issues;
· Promoting health and nutrition, including through advocacy on health-related issues and healthy lifestyles;
· Preventing the spread of HIV/AIDS and other infectious diseases (including SARS and Avian influenza) through, among others, sharing of experiences and best practices and systems of surveillance;
· Ensuring access to safe, quality and affordable medicines by building ASEAN capacity and competitiveness in pharmaceutical as well as traditional medicines and complementary and alternative medicines;
· Enhancing food security and safety as a fundamental requirement of human security;
· Ensuring a drug-free ASEAN by 2015 through community-based drug prevention, treatment and control of drug abuse in parallel with eliminating drug-trafficking and illicit drug supply through law enforcement and alternative development for the sustainability of drug control;
· Promoting science and technology in ASEAN to improve regional human resources by developing science and technology culture and increasing cooperation in the utilization of appropriate applied science and technology in socio-economic activities to improve social well-being; and
· Establishing efficient and well-functioning regional mechanisms for disaster prevention and relief that are fully compatible with global disaster management systems'.

See www.aseansec.org; and, see also "*Vientiane Action Programme*", the 10th ASEAN Summit Vientiane, 29 November 2004, p. 16-17.

51 Managing the social impact of economic integration is achieved by building a competitive human resource base and adequate systems of social protection. Moreover, to this end, the following key goals will be pursued under the ASCC Plan of Action:

'· Promoting human resource development to build a competitive labour force, through, among others, closer cooperation among existing regional centers in the area of education;
· Promoting an efficient labour market through mutual skills recognition arrangements to enhance regional mobility so that ASEAN's workforce are prepared for and benefit from economic integration; such efforts would enable labour market to operate efficiently with appropriate matching of jobs and skills;
· Strengthening systems of social protection on a national level and working towards adoption of appropriate measures on a regional level to provide a minimum uniform coverage for skilled workers in the region;
· Addressing the impact of liberalisation in the health sector to meet the needs of ASEAN; and
· Promoting joint certification and accreditation of science and technology at the regional level to improve science and technology competence of ASEAN's human resources.'

See www.aseansec.org.

3. Enhancing environmental sustainability,[52] and
4. Strengthening the foundations of regional social cohesion.[53]'

The ASCC is nonetheless focused on poverty eradication and human development because of the development and enhancement of human resources as a key strategy for the employment generation; alleviating poverty and socio-economic disparities and ensuring economic growth with equity; and the commitment to foster cooperation in social development aimed at raising the standard of living of disadvantaged groups and the rural population.[54] In particular, economic instability can exacerbate poverty, unemployment, hunger, illness and disease. Social instability can likewise emerge from environmental

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52 Under the ASCC Plan of Action, the following goals for enhancing environmental sustainability and sound environmental governance will be pursued:
'· Building national capacities to address issues and commitments to multilateral environmental agreements through awareness raising and informed policy choices;
· Effectively managing transboundary haze in accordance with the ASEAN Agreement on Transboundary Haze Pollution;
· Promoting the sustainable use of ASEAN's coastal and marine environment as a source of food supply and natural heritage;
· Conserving ASEAN's rich biological diversity and the fair and equitable sharing of the benefits from these biological and genetic resources;
· Promoting the sustainable management of forest resources and conserving critical ecosystems through the eradication of unsustainable practices and related activities, as well as strengthening preservation and management of ASEAN heritage parks;
· Promoting the sustainability of water resources to ensure adequate and quality water supply to meet ASEAN health and food needs;
· Promoting environmental education with the view to developing ASEAN citizens who are environmentally conscious;
· Promoting environmentally-sound technologies in partnership with the private sector;
· Ensuring quality living standards in ASEAN cities and urban areas;
· Augmenting and supporting the efforts of the ASEAN economic community through the energy sector in developing alternative fuels in order to prevent environmental devastation and resource exhaustion; and
· Promoting environmentally sound and socially responsible mineral development practices in the sustainable management and optimum utilization of mineral resources.'
See www.aseansec.org.

53 Under the ASCC Plan of Action, strengthening the foundations of regional social cohesion towards an ASEAN community in 2020, creating an ASEAN identity, involves:
'· Mainstreaming the promotion of ASEAN awareness, regional identity and values in national communications plan, educational curricula, people-to-people contract mainly through culture, arts and sports, especially among the youth, and the promotion of ASEAN languages learning through scholarships and exchanges of linguists;
· Preserving and promoting ASEAN cultural heritage and living traditions, as a vehicle to better understand the link between culture and development, and as a source of inspiration for future endeavours;
· Fostering dialogues among civilizations, cultures and religions as a means to foster better understanding, build confidence, and address threats to peace and security; and
· Promoting ASEAN's standing in the international community.'
See www.aseansec.org.

54 See *ASEAN Annual Report 2003-2004*, p. 48.

scarcity or the inequitable distribution among stakeholders of the use of environmental assets. Consequently, social inequities do not threaten economic development exclusively but can in turn undermine political regimes as well. In light of the above, the ASCC is linked inextricably with the economic and security pillars of the ASEAN community.[55]

2.2.3 Political and Security Aspects

One of the main objectives of ASEAN is to promote regional peace and stability through an abiding respect for justice and the rule of law[56] and enhancing regional resilience in the relations. Thus, ASEAN member countries have to bring ASEAN's political and security cooperation to a higher plane. The challenge lies in the diversity and complexity of the region, which becomes clear when the region is broken down into its four political categories:[57] democracy,[58] military authoritarianism,[59] absolute monarchy,[60] and communist authoritarianism.[61]

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55 See *Vientiane Action Programme*, p. 16; and, www.aseansec.org.

56 *ASEAN Declaration (Bangkok Declaration)*, Bangkok, 8 August 1967.

57 It is in ASEAN' s ability and readiness to resolve political differences affecting its members and other countries in the Asia-Pacific region that the association's commitment to political cooperation is put to the test. More often than not, that commitment has been affirmed and the ASEAN approach to solving potentially explosive issues vindicated. Recent issues include territorial and jurisdictional disputes in the South China Sea, self-determination for East Timor, nuclear proliferation, weapons of mass destruction, and the impact of globalization. As in many other parts of the world, in Southeast Asia, countries face territorial disputes. In these disputes ASEAN has consistently pursued a policy of cooperation in seeking peaceful settlements. The Manila Declaration of 1992, which proposed a modus vivendi in the South China Sea, represents one of the most remarkable demonstrations of political solidarity among ASEAN members on strategic issues of common concern. See, "Politics and Security: Overview", www.aseansec.org.

58 The democratic nations in Southeast Asia include Thailand (a parliamentary democracy with a constitutional monarch), Malaysia (a federated parliamentary democracy with a constitutional monarch), the Philippines (a presidential democracy), Singapore (a parliamentary democracy), Indonesia (a presidential democracy based on an amended 1945 Constitution), and Cambodia (a parliamentary democracy with a constitutional monarch). See, "Political Outlook", *Regional Outlook Southeast Asia 2004-2005*, Institute of Southeast Asian Studies: Singapore, 2004.

59 *Ibid*; Myanmar formerly Burma is the best example of a military authoritarian government featuring a dominant role for the military in all phases of political life.

60 *Ibid*; Brunei, as one of ASEAN member countries, currently has a monarchical system of government.

61 *Ibid*; Vietnam and Laos are the only two ASEAN member countries that have communist authoritarian governments in which the communist party has an exclusive role in political life, establishes command economies (now in the process of liberalizing), and provides a low level of civil liberties.

Since 1967, to affirm the desire of ASEAN to maintain peace and stability in the region in the spirit of peaceful coexistence and mutual understanding and cooperation, ASEAN has forged major political and security accords, declarations, and other legal instruments such as the Zone of Peace, Freedom and Neutrality Declaration 1971 (ZOPFAN),[62] the Declaration of ASEAN Concord,[63] the Treaty of Amity and Cooperation in Southeast Asia 1976 (TAC),[64] the Treaty on the Southeast Asia Nuclear Weapon-Free Zone 1995 (SEANWFZ),[65]

62 On 27 November 1971 the foreign ministers of the five ASEAN members met in Kuala Lumpur and signed the Zone of Peace, Freedom and Neutrality Declaration (ZOPFAN). It commits all ASEAN members to "exert efforts to secure the recognition of and respect for Southeast Asia as a Zone of Peace, Freedom and Neutrality, free from any manner of interference by outside powers," and to "make concerted efforts to broaden the areas of cooperation, which would contribute to their strength, solidarity and closer relationship." Furthermore, ZOPFAN recognizes the right of every state, large or small, to lead its national existence free from outside interference in its internal affairs as this interference would adversely affect is freedom, independence and integrity." See, "Politics and Security: *Zone of Peace, Freedom and Neutrality Declaration 1971"*, www.aseansec.org.

63 Departing from the more circumspect Bangkok Declaration, the Declaration of ASEAN Concord stated for the first time that the member countries would expand political cooperation. It also adopted principles for regional stability and a programme of action for political cooperation. The programme called for holding ASEAN summits among the heads of government; signing the Treaty of Amity and Cooperation in Southeast Asia; settling intraregional disputes by peaceful means as soon as possible; improving the ASEAN machinery to strengthen political cooperation; studying how to develop judicial cooperation including the possibility of an ASEAN extradition Treaty; and strengthening of political solidarity by promoting the harmonization of views, coordinating position and, where possible and desirable, taking common actions. See, "Politics and Security: *Declaration of ASEAN Concord of 1976*", www.aseansec.org.

64 The Treaty of Amity and Cooperation in Southeast Asia (TAC) raised the provisions of the Kuala Lumpur Declaration to the level of a treaty to which other Southeast Asian countries could accede and with which the non-regional countries could associate themselves. The purpose of this treaty is to promote perpetual peace, everlasting amity and cooperation among the peoples of signatory states which would contribute to their strength, solidarity and closer relationship. The treaty enshrines the following principles: mutual respect for one another's sovereignty; noninterference in internal affairs; the peaceful settlement of intraregional disputes; and effective cooperation. The treaty also provides for a code of conduct for the peaceful settlement of disputes and it mandates the establishment of a high council made up of ministerial representatives from the parties as a dispute-settlement mechanism. To this day, TAC remains the only indigenous regional diplomatic instrument providing a mechanism and processes for the peaceful settlement of disputes. See, "Politics and Security: *Treaty of Amity and Cooperation in Southeast Asia*, 1976", www.aseansec.org.

65 The Treaty of Southeast Asia Nuclear Weapon-Free Zone (SEANWFZ), a key component of ZOPFAN, expresses ASEAN's determination to contribute toward general and complete nuclear disarmament and the promotion of international peace and security as a whole. It also aims to protect the region from environmental pollution and the hazards posed by radio-active waste and other toxic materials. Currently, ASEAN is negotiating with the five nuclear-weapon member states on the terms of their accession to the protocol which lays down their commitments under the treaty. See, "Politics and Security: *Treaty of Southeast Asia Nuclear Weapon-Free Zone*, 1995", www.aseansec.org.

the Declaration on Join Action to Counter Terrorism of 2001,[66] and the Declaration on Terrorism of 2002.[67] Furthermore, in 1994 ASEAN and its dialogue partners decided to create ASEAN Regional Forum (ARF)[68] that has extensively contributed to regional peace and stability, and to its relations with other countries, regions and organizations.

Currently, recognizing the strong interconnections among political, economic and social realities and the goal of the ASEAN community, political and security cooperation is one of the three pillars of ASEAN. It takes the form of an action

66 The Declaration on Joint Action to Counter Terrorism of 2001 reaffirms the primary responsibilities of ASEAN members to ensure the peaceful and progressive development of their respective countries and the region. ASEAN members reject any attempt to link terrorism with any religion and race, believes terrorism to be a direct challenge to the attainment of peace, progress and prosperity of ASEAN, and commit to counter, prevent and suppress all forms of terrorist acts in accordance with the UN charter and international law. Furthermore, to ensure all cooperative efforts to combat terrorism at the regional level, ASEAN members shall consider joint practical counter-terrorism measures in line with specific circumstances in the region and in each member country. See, *Declaration on Joint Action to Counter Terrorism of 2001*; and, www.aseansec.org.

67 The focus of the Declaration on Terrorism of 2002 is against the use of terror, with its toll on human life and society across the globe regardless of the alleged cause or religious or ethnic aspiration, and to prevent, counter and suppress the activities of terrorist groups in the region. Pursuant to the declaration, ASEAN members shall continue with practical cooperative measures among themselves and with the international community. See, *Declaration on Terrorism of 2002*; and, www.aseansec.org.

68 The ASEAN Regional Forum (ARF) was established by ASEAN and its dialogue partners in 1994. The objectives of the ARF are to foster constructive dialogue and consultation on political and security issues of common interest and concern and to make significant contributions to efforts towards confidence-building and preventive diplomacy in the Asia-Pacific region. The ARF is mandated to analyse dispassionately the key challenges facing the region taking into account the following. Firstly, ARF acknowledges that periods of rapid economic growth are often accompanied by significant shifts in power relations, which can lead to conflict. The ARF will have to manage these transitions carefully to preserve the peace. Secondly, the region is remarkably diverse. The ARF must recognize and accept the different approaches to peace and security and try to forge a consensual approach to security issues. Thirdly, the region has residue unresolved territorial and other differences. Finally, ASEAN has a pivotal role to play in the ARF. ASEAN has fostered habits of cooperation and provided the catalyst for encouraging regional cooperation in the wider Asia-Pacific region. Although ASEAN has undertaken the obligation to be the primary driving force of the ARF, a successful ARF requires the active participation and cooperation of all participants. Recent participants in the ARF include, not only all ASEAN members, but also Australia, Canada, China, the European Union, India, Japan, the Peoples' Republic of Korea, the Republic of Korea, Mongolia, New Zealand, Pakistan, Papua New Guinea, Russian Federation, and the United States. See, www.aseansec.org.

plan, namely the ASEAN Security Community (ASC).[69] The ASC incorporates the following five components:

'1. Political development,[70]
2. Shaping and sharing of norms,[71]
3. Conflict prevention,[72]

69 The ASEAN Security Community (ASC) Plan of Action acknowledges the principle of comprehensive security, and commits to address the broad political, economic, social and cultural aspects of building an ASEAN community. It is also acknowledged that political and social stability, economic prosperity, narrowed development gap, poverty alleviation and reduction of social disparity would constitute strong foundation for a sustainable ASC. The ASC Plan stems from ASEAN Vision 2020, the Declaration of ASEAN Concord I (1976), the Declaration of ASEAN Concord II (2003) and the Hanoi Plan of Action (HPA). See, "ASEAN Security Community Plan of Action", www.aseansec.org.

70 Political Development: In support of ASC's commitment to enhance a political environment in which ASEAN member countries have strong adherence to peaceful ways of setting intra-regional differences and taking into account their individual security as fundamentally linked together and bound by geographic location, common vision and shared values, ASC's strategies for political development are:
'· Promote understanding and appreciation of political systems, culture and history of member countries through increasing people-to-people contacts and track-two activities;
· Promote human rights and obligations;
· Lay the groundwork to establish an institutional framework to facilitate the free flow of information among ASEAN member countries;
· Establish programmes for mutual support and assistance among ASEAN member countries in the development of a strategy for strengthening the rule of law, judiciary systems and legal infrastructure, effective and efficient civil services, and good governance in public and private sectors;
· Increase the participation of non-governmental organization such as the ASEAN Institute for Strategic and International Studies (AISIS), the ASEAN University Network (AUN), and the ASEAN Inter-Parliamentary Organization (AIPO); and
· Prevent and combat corruption.'
See www.aseansec.org; and, "Vientiane Action Programme", the 10th ASEAN Summit Vientiane, 29 November 2004, p. 6-7.

71 Shaping and Sharing of Norms: The action plan incorporates these norms in order to contribute to building collective responsibilities and forming a standard or common adherence to norms of good conduct among members of the ASEAN community; as a means to consolidating and strengthening ASEAN's solidarity, cohesiveness and harmony (the "we" feeling); and contributing to the establishment of a democratic, tolerant, participatory and transparent community in Southeast Asia. The strategies for shaping and sharing of norms include:
'· Non-alignment;
· Fostering of peace-oriented attitudes of ASEAN member countries;
· Conflict resolution through non-violent means;
· Renunciation of nuclear weapons and other weapons of mass destruction and avoidance of arms race in Southeast Asia; and
· Renunciation of the threat or the use of force.'

72 Conflict Prevention: Guided by the principle articulated in the TAC, this is ASEAN's key code of conduct governing relations between states and a key diplomatic instrument for the promotion of peace and stability in the region. The strategies for conflict prevention are:

4. Conflict resolution,[73] and
5. Post-conflict peace building.[74]'

The ASC principally promotes an ASEAN-wide political and security cooperation rather than a defense pact, military alliance or a joint foreign policy. It is cooperation based on shared norms and rules of good conduct in inter-state relation, effective conflict prevention and resolution mechanisms, and post-

· Strengthen confidence-building measures through increased opportunities for exchanges and interactions among military officials, and between military officials and civilian personnel, and promote the voluntary exchanges of observers at military exercises;
· Promote greater transparency and understanding of defence policies and threat perceptions through the publication and exchange of security outlook or defence white papers among ASEAN member countries, and voluntary briefings on political and security developments in the region;
· Develop an ASEAN early warning system based on an existing mechanism to prevent occurrence/escalation of conflicts;
· Strengthen the ASEAN Regional Forum (ARF) process;
· Combat transnational crimes and other transboundary problems through regional cooperation activities;
· Establish an ASEAN Arms Register to be administered by the ASEAN Secretariat, in line with a similar activity being conducted in the ARF; and
· Promote ASEAN maritime security cooperation.'

See www.aseansec.org; and, "Vientiane Action Programme", the 10th ASEAN Summit Vientiane, 29 November 2004, p. 7-8.

73 Conflict Resolution: In support of the collective interests of all member countries for comprehensive solutions to conflicts and establishing durable peace and security, and while continuing to use national, bilateral and international mechanisms for dispute settlement, the strategies for conflict resolution shall focus on exploring innovations and modalities such as:
'· Utilize existing and planned national peacekeeping centers in some ASEAN member countries to establish regional arrangements for the maintenance of peace and stability;
· Build upon the existing modes of pacific settlement of disputes to strengthen them with additional mechanisms as needed; and
· Undertake joint conflict management and resolution research studies and exchanges among ASEAN centers of excellence on peace.'

See www.aseansec.org; and, "Vientiane Action Programme", the 10th ASEAN Summit Vientiane, 29 November 2004, p. 8.

74 Post-Conflict Peace Building: This area of the plan recognizes that creating the conditions necessary for sustainable peace and preventing the resurgence of conflict requires certain types of multidisciplinary expertise and institutions. Thus the strategies for post-conflict peace building are:
'· Strengthen humanitarian assistance by providing safe havens in conflict areas;
· Implement human resources development and capacity building programmes in areas undergoing post-conflict resolution and rehabilitation;
· Work towards the establishment of an ASEAN [humanitarian crisis management/assistance] centre;
· Reduce inter-communal tensions through educational exchanges and curriculum reform; and
· Increase cooperation in reconciliation and promotion of a culture of peace.'

See www.aseansec.org; and, "Vientiane Action Programme", the 10th ASEAN Summit Vientiane, 29 November 2004, p. 8.

conflict peace building activities: the ASC would ensure that ASEAN member countries live in peace with one another and in peace with the world in a just, democratic and harmonious environment.[75] Moreover, the ASC would contribute to the further promotion of peace and security in the wider Asia Pacific region because it will reflect ASEAN's determination to move forward the stages of ASEAN Regional Forum (ARF) at an acceptable pace.[76] For the future political and security challenges, however, ASEAN member countries should share the responsibility for strengthening peace, stability and security of the region free from foreign military interference in any form or manifestation.

2.2.4 Economic Aspects

Since 1967 economic cooperation[77] has played an active role in joining the efforts of ASEAN member countries to promote the welfare of people in this region and enhancing ASEAN's efficiency and effectiveness as an organization. Although initially cooperation was limited to a few economic activities[78] and was more focused on political cooperation, economic cooperation in ASEAN was used to reinforce political unity.[79] The economic cooperative progress achieved by member states since 1970 appears in large part to be a result of unilateral economic reforms and policies,[80] especially, ASEAN's Preferential Trading Arrangement of 1977,[81] which accorded tariff preferences for intra-ASEAN trade. However, the economic cooperation schemes in the past were drastically changed after the Framework Agreement on Enhancing Economic Cooperation was adopted in 1992,[82] which included the launching of a scheme

75 See Executive Summary of *ASEAN Annual Report 2003-2004,* p. 4.

76 See "ASEAN Security Community Plan of Action", www.aseansec.org.

77 At present, ASEAN economic cooperation covers the following areas: trade, investment, industry, services, finance, agriculture, forestry, energy, transportation and communication, intellectual property, small and medium enterprises, and tourism. See, www.aseansec.org.

78 ASEAN Secretariat, *ASEAN Economic Co-operation: Transition & Transformation*, Institute of Southeast Asian Studies: Singapore, 1997, p. 39.

79 Narongchai Akrasanee, *ASEAN in the Past Thirty-Three years: Lessons for Economic Co-operation, Reinventing ASEAN*, Edited by Simon S.C. Tay, Jesus P. Estanislao and Hadi Soesastro, Institute of Southeast Asian Studies: Singapore, 2001, p. 35.

80 ASEAN Secretariat, *ASEAN Economic Co-operation: Transition & Transformation*, Institute of Southeast Asian Studies: Singapore, 1997, p. 36-45.

81 The principal instrument for carrying out ASEAN cooperation was the Preferential Trading Arrangement (PTA) signed in 1977. One of the earliest manifestations of ASEAN cooperation was the promotion of increased intra-ASEAN trade. As the lowest form of economic integration, the PTA provided for tariff preferences for trade among ASEAN countries. The margins of preferences (MOP) started at 10 percent. See, *ibid.*, *ASEAN Economic Co-operation: Transition & Transformation*, p. 43.

82 The purpose of the Framework Agreement on Enhancing ASEAN Economic Cooperation is to accelerate efforts enhancing intra-ASEAN economic cooperation and adopt appropriate

toward an ASEAN Free Trade Area (AFTA).[83] The main intention of AFTA is to increase ASEAN's competitive advantage as a single production base and to eliminate tariff barriers among ASEAN member countries.

Influenced by the various forces of globalization in the 1990s, ASEAN Vision 2020[84] and the subsequent Declaration of ASEAN Concord II of 2003[85] were introduced and adopted within the framework of ASEAN partnership in dynamic development and a community of caring societies because ASEAN member countries had recognized their interdependence. ASEAN members would consequently like to build a strong ASEAN community, primarily by means of closer economic integration within the region. In order to establish an ASEAN community and also to foster the end-goal of economic integration as a single market and production base by 2020, ASEAN presently has, as one of the three pillars of the ASEAN community, a plan of economic cooperation, namely "ASEAN Economic Community (AEC)".[86] The AEC's purpose is to actual-

new economic measures. See, *ibid.*, *ASEAN Economic Co-operation: Transition & Transformation*, p. 38.

83 The ASEAN Free Trade Area was establish in January 1992 to eliminate tariff barriers among the Southeast Asian countries with a view to integrating the ASEAN economies into a single production base and creating a regional market of 500 million people. The Agreement on the Common Effective Preferential Tariff (CEPT) Scheme for the ASEAN Free Trade Area requires that tariff rates levied on a wide range of products traded within the region be reduced to 0-5 percent. Currently, more than 99 percent of the products in the Common Effective Preferential Tariff (CEPT) inclusion lists have been brought down to the 0-5 percent tariff range in those states which were the original signatories to the scheme. The average tariff for ASEAN-6 under the CEPT Scheme is now down to 1.51 percent compared with 12.76 percent when AFTA began in 1993. Cambodia, Laos, Myanmar and Vietnam have placed about 80 percent of their products into the CEPT inclusion lists. Furthermore, in September 1994 the ASEAN member countries agreed to accelerate the establishment of AFTA by reducing the initial time frame of 15 years to 10 years. See, *ASEAN Annual Report 2003-2004*, p. 16.

84 The ASEAN leaders adopted the ASEAN Vision 2020 on 15 December 1997. The ASEAN Vision 2020 sets out a broad vision for ASEAN for the year 2020: an ASEAN as a collective of Southeast Asian nations, outward looking, living in peace, stability and prosperity, bonded together in a partnership of dynamic development and a community of caring societies. See, *ASEAN Vision 2020* of 1997.

85 The Declaration of ASEAN Concord II elaborates on the themes of ASEAN Vision 2020 by setting concrete milestones to reach the goals of a broad and comprehensive ASEAN Community. It is founded on the three pillars of political and security cooperation, economic integration and socio-cultural cooperation and set the foundation for the establishment of the ASEAN Security Community, the ASEAN Economic Community and the ASEAN Socio-Cultural Community by 2020. See, *Declaration of ASEAN Concord II* of 2003.

86 At the 9th ASEAN Summit in Bali, ASEAN leaders have agreed to establish an ASEAN Economic Community (AEC) as the end-goal of economic integration as outlined in the ASEAN Vision 2020. The idea of an AEC was first proposed by Singapore Prime Minister Goh Chok Tong at the 2002 ASEAN Summit in Phnom Penh. The AEC will establish a single market and production base with free movement of goods, services, investments, and capital with a goal to achieving the following: a zero-tariff free trade area and the elimination of all non-tariff barriers; an attractive regional production platform that would be a magnet for foreign direct investment (FDI); free movement of tourists from all ASEAN

ly create a stable, prosperous and highly competitive ASEAN economic region which does not entail only trade liberalization measures but also trade facilitation, non-border measures and investment promotion activities. Thus, accelerating the economic integration process to realize the ASEAN Economic Community, ASEAN should:

> 'a. Intensify current economic cooperation initiatives and measures targeted for completion on or before 2010 and implement new ones to accelerate integration in the eleven priority sectors,[87] as recommended by the High Level Task Force (HLTF) on ASEAN Economic Integration;
> b. Remove, to a feasible extent agreeable to all member countries, barriers to the free flow of goods, and services and skilled labour, and free flow of capital by 2010; and
> c. Develop and implement other measures to arrange all the essential elements or conditions for ASEAN to function as a single market and production base initially for the priority sectors by 2010. These measures include enhancing the attractiveness of ASEAN as an investment destination;[88] accelerating the liberation of trade in

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countries; harmonization of customs procedures and minimization of customs requirements; harmonization of standards that are consistent with international standards; free movement of skilled labour and creative talent; and, a well-developed institutional and legal infrastructure to facilitate the economic integration of ASEAN. See, Denis Hew, *Regional Outlook Southeast Asia 2004-2005*, Institute of Southeast Asian Studies: Singapore, 2004, p. 46-47; and, Denis Hew, *ASEAN Commits to Deeper Economic Integration*, Institute of South East Asian Studies: www.iseas.edu.sg.

87 Initial Eleven Priority Sectors for Integration: 'Acceleration of economic integration towards a single market and production base will begin with eleven sectors, selected on the basis of comparative advantage in natural resource endowments, labour skills and cost comparativeness, and value-added contribution to ASEAN's economy. These sectors are expected to demonstrate that integration enhances competitiveness and thereby ASEAN's attractiveness as an investment destination. As the institutional capacity of ASEAN for economic integration is built through experience, more sectors will be included in the accelerated integration programme. The following priority sectors have been identified to be fully integrated by 2010: (a) agro-based products, (b) automotive, (c) electronics, (d) fisheries, (e) rubber-based products, (f) textiles and apparels, (g) wood-based products, (h) air travel, (i) e-ASEAN (ICT), (j) healthcare, and (k) tourism.
The proposed approaches to integrate these priority sectors are premised on combining the economic strengths of ASEAN member countries for regional advantage, facilitating and promoting intra-ASEAN investment, improving the conditions to attract and retain manufacturing and other economic activities within the region, promotion of intra-industry trade and outsourcing within ASEAN, and promoting the development of "Made in ASEAN" products and services. A roadmap will serve as the basis for economic integration of each of the priority sectors, with active involvement of the private sector. The roadmaps in the form of framework agreements and protocols for each of the priority sectors will contain detailed and specific measures to be implemented between 2005 and 2010. See, *Vientiane Action Programme*, p. 9-10.'

88 ASEAN Investment Area:
'A free and open investment regime in ASEAN is the key to enhancing ASEAN's competitiveness as a single production base. Sustained inflows of investments will maintain the dynamic development of regional production and distribution network. The implementation

goods;[89] improving trade and business facilitation;[90] reducing trade transaction

of the ASEAN Investment Area (AIA) launched in 1998, will be intensified as follows:

1. *Investment Liberalization*:

Enhance the coverage of the AIA Agreement with a view towards establishment of ASEAN as a competitive investment area; collapse the different end dates for the liberalization process; open up all industries for investment; agree on a timetable for phasing out the sensitive lists; and grant national treatment to both ASEAN and non-ASEAN investors.

2. *Investment Facilitation*:

Improve the investment environment both unilaterally and regionally, comparing the competitiveness and ease of investing in ASEAN vis-à-vis other regions, identify clusters of impediments to be eliminated or reduced that hinder FDI, undertake continuous evaluations of the investment policy framework by benchmarking its relevance against emerging global and regional FDI trends, and strengthen ASEAN institutional capacity on all investment-related measures.

3. *Investment Promotion*:

Adopt a strategic promotion and outreach programme, focusing on high potential countries and regions such as, China, India, Japan, Korea, the US and the EU.

These strategies would be carried out by fully implementing the ASEAN Strategic Investment Action Plan (ASIAP) for 2004-2008 and the subsequent ASIAP 2 from 2008 onwards.' See *Vientiane Action Programme*, p. 10-11.

89 'Trade in Goods: The free flow of goods is a minimum necessary condition for the AEC to function as a single market and production base. Tariff and non-tariff barriers to the flow of goods in the product market will be gradually removed at a pace comfortable to member countries as follow:

1. Tariffs

Eliminate tariff for products by 2010 for ASEAN-6 (Brunei, Indonesia, Malaysia, the Philippines, Singapore, and Thailand) and 2015 for Cambodia, Laos, Myanmar and Vietnam (CLMV).

2. Non-Tariff Barriers

Ensure full transparency of Non-Tariff Measures (NTMs) through the maintenance of the database of ASEAN NTMs; set clear criteria to identify NTMs that are barriers to trade for elimination; set a clear and definitive work programme and schedule for removal of Non-Tariff Barriers (NTBs); and adopt and ensure compliance with the World Trade Organisation (WTO) Agreements on Technical Barriers to Trade, Sanitary Phyto-Sanitary and Import Licensing Procedures, along with implementation guidelines deemed appropriate for ASEAN.

3. ASEAN Integration System of Preference (AISP)

Improve the AISP for the benefits of CLMV and hasten their integration into ASEAN.

4. Trade in Minerals

Enhance trade and investment in the minerals sector.

5. Intellectual Property (IP)

Move intellectual property development and cooperation in ASEAN to a higher plane to achieve a culture of learning, innovation and creativity through:

a. Drawing on the diverse strength of ASEAN Member Countries in creativity and innovation;

b. Development of a regional identity and profile in IP harmonization, generation, commercialization, protection, enforcement and awareness; and

c. Optimising the benefit to businesses from intellectual property rights (IPR) by encouraging cross-border collaboration and networking for the widening and deepening of ASEAN's science and technology base and research and development activities, and commercialization of their results and outputs.

costs;[91] promoting regional trade in services;[92] upgrading competitiveness of

These strategies would be carried out through the full implementation of the ASEAN IPR Action Plan for 2004-2010.'

See, Vientiane Action Programme, p. 11-12.

90 Trade and Business Facilitation:

'1. Customs

Integrate customs structures in ASEAN for a harmonized customs environment by the adoption of the WTO agreement on customs valuation, customs-related agreements under the WTO, World Customs Organization (WCO), UN bodies and international organizations, and set up the service commitment charter for trade facilitation. The strategy would also include the development of the single window approach to modernize customs procedures and practices and improve customs control and compliance in cooperation with line ministries and business through the implementation of defined programmes of the 2005-2010 ASEAN Strategic Plan of Customs Development.

2. Rules of Origin

Continuously strengthen the Common Effective Preferential Tariff (CEPT) Scheme Rules of Origin (ROO) upon commencement of the VAP by 1 January 2005 by making it more transparent, predictable and standardized taking into account the best practices of other regional trading arrangements (RTAs), including the WTO ROO, and adopting substantial transformation as alternative criteria for conferring origin status.

3. Standards and Conformance

Focus on sectors with significant potential for trade, including acceleration of implementation of the framework agreement on mutual recognition arrangements (MRAs) and establishment of specific targets for harmonization of standards and technical regulations. Where possible, ASEAN technical regulations, based as appropriate on existing international performance criteria, will be developed for national application.'

See, Vientiane Action Programme, p. 11-12.

91 Finance Cooperation: 'Promote economic growth and financial stability in the region through strengthening surveillance mechanisms, enhancing domestic financial systems and facilitating the development and orderly integration of financial markets as part of the Roadmap for Financial and Monetary Integration of ASEAN.' See, Vientiane Action Programme, p. 13.

92 Trade in Services:

'Free flow of non-factor services such as finance, transportation and information and communication technologies (ICT) are critical inputs to the production and trade of goods. Trade in services will be liberalized at a pace comfortable to all member countries to enable the AEC to function as a single production base. High quality service industries in the region will be promoted to allow ASEAN to position itself as a global outstanding hub.

1. Services Liberalisation

Accelerate regional integration towards creating a single market in services through progressive liberalization earlier than 2020; subsequent rounds of negotiations should be launched with clear targets and parameters, and the use of the ASEAN minus-X formula. This is aimed at enhancing ASEAN's competitiveness in the area of services and as a hub for outsourcing activities.

Undertake facilitation and cooperation activities on an on-going basis to further enhance member countries' understanding of the services sector, the cost and benefits of liberation of trade in services, capacity building and to facilitate movement of business persons, experts, professionals, skilled labour and talents.

2. Tourism

To facilitate travel into and within ASEAN: (a) substantially reduce restrictions to trade in tourism and travel services; (b) enhance the development and promotion of ASEAN as a single tourism destination; (c) strengthen cooperation to develop, upgrade and expand tourism and travel facilities and services; and (d) create favorable conditions for the public

ASEAN SMEs,[93] strengthening the ASEAN Dispute Settlement System;[94] and such other integration support measures as may be required.'[95]

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and private sector to engage more deeply in tourism development, intra-ASEAN travel and investment in tourism services and facilities.'
See, Vientiane Action Programme, p. 13.

93 Industrial Cooperation and Enterprise Development:
'1. Industrial Cooperation
Enhance inter- and intra-industry linkages in ASEAN and promote suitable outsourcing, including the identification of strengths and weaknesses inherent to each ASEAN Member Country in order to foster industrial complementation within the region.
2. Small and Medium Enterprises (SME)
Nurture the growth and accelerate the transformation and integration of SMEs into regional and international production networks to be competitive and dynamic suppliers of the regional and global markets, building on the comparative and agglomeration advantages of member countries; promote a culture of entrepreneurship, innovation and networking; facilitate SMEs' access to information, markets, human resource and business development services, credit and finance, and modern technologies; improve public-private sector synergies in fostering SME support and linkages; facilitate networking between ASEAN SMEs for joint ventures; and facilitate the transformation of ASEAN SMEs into ASEAN MNCs. The strategies would be carried out through the full implementation of the ASEAN SME Action Plan for 2004-2010.'
See, Vientiane Action Programme, p. 12-13.

94 Institutional Strengthening:
'1. *Dispute Settlement Mechanism*
Establish an effective system to ensure proper implementation of all economic agreement and expedition's resolution of any disputes through appropriate advisory, consultative, and adjudicatory mechanisms.
The feasibility of establishing a common legal framework for the incorporation or registration of ASEAN companies to assist in dispute settlement would also be explored.
2. *Statistics*
Provide the necessary statistical support for ASEAN initiatives, planning and policy making improvements to the quality and availability of important statistics, adoption of international good practices, promotion of greater awareness of statistics, enhanced networking and close partnership between users in policy areas and statistical systems, and wider dissemination of ASEAN statistics through the annual publication of the ASEAN Statistical Yearbook and a continuous expansion of statistical coverage on Member Countries and the ASEAN Secretariat's Websites.'
See Vientiane Action Programme, p. 15.

95 Other integration support measures include the following:
'1. *Food, Agriculture and Forestry Sectors*
Enhance the competitiveness of the food agriculture and forestry sectors through developing appropriate technologies to increase productivity and by promoting inter-and extra-ASEAN trade and greater private sector investment in the food, agriculture and forestry sectors;
2. *Transport*
Gear up ASEAN transport as a critical logistics and services support sector through the implementation of the ASEAN Transport Action Plan for 2005-2010, focusing on cooperation activities towards facilitating seamless movement of people and goods; enhancing integration and efficiency of multimodal transport infrastructures, facilities and services; accelerating open sky arrangements; and advancing liberalization in air and maritime transport services;
3. *Telecommunication and IT*
Leverage on information and communications technology (ICT), via public-private sector

However, there is also a need to enhance cooperation and integration activities in other areas. These include, among others, human resources development and capacity building, recognition of educational qualifications, and enhancing private sector involvement.[96]

Based on a convergence of interests among ASEAN members to deepen and broaden economic integration efforts, the ASEAN Economic Community will give ASEAN a single market and production base, turning the diversity that

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partnerships and strong external linkages, to build a connected, vibrant and secure ASEAN Community by:

- Striving for universal access to ICT infrastructure and services;
- Encouraging the development of a pervasive, inter-connected and secure ASEAN information infrastructure;
- Strengthening the cooperation and assistance on regulatory policy and strategy issues;
- Creating digital opportunities through e-government, e-commerce and e-society initiatives;
- Enhancing the competitiveness and dynamism of the ASEAN ICT sector by promoting and facilitating trade and investment in ICT services; and
- Developing highly skilled ICT human resources.

4. *Energy*

Pursue sustainable energy development through the implementation of the ASEAN Plan of Action for Energy Cooperation for 2004-2009, based primarily on individual sectoral plans of action and roadmaps, including but not limited to the ASEAN Power Grid, the Trans-ASEAN Gas Pipeline (TAGP), Coal, Energy Efficiency and Conservation, Renewable Energy, and Regional Energy Policy and Planning, focusing on cooperation activities, including with the ASEAN Dialogue Partners, to enhance the integration of the regional energy infrastructures, promote energy security, create responsive policies to progressively enhance market reforms and liberalization, as well as preserve the sustainability of environment; and

5. *Economic Relations with Dialogue Partner*

The economic growth of the ASEAN region in past decades has been largely driven by FDI flows and exports. While exports have stabilized and are again beginning to expand, ASEAN has experienced a sustained decline in FDI flows since the 1997-1998 economic and monetary crisis. Since internal measures, aimed at creating a single ASEAN market and production base, may not be sufficient to attract the volume of investment required to sustain economic growth, efforts will be made to strengthen external economic relations and the terms of trade with major Dialogue Partners through the establishment of Free trade Areas (FTAs) and Closer Economic Partnerships (CEPs).

The strategy for ASEAN external economic cooperation will involve strengthening linkages and promoting the coherence of agreements with major trading partners such as China, Japan, Korea, the US, Australia, New Zealand, the EU and an emerging economy such as India. The promotion of the coherence of agreements might include increasing coordination of extra-ASEAN economic agreements and the closer alignment of MFN tariffs.'

See Vientiane Action Programme, p. 13-15.

96 Cooperation with the Private Sector is a reaffirmation of the ASEAN policy that the private sector shall be the engine of economic growth. Various channels of consultation have therefore been established since ASEAN's early years between ASEAN Senior Economic Officials and the representatives of ASEAN Chambers of Commerce and Industry (ACCI). See, ASEAN Secretariat, *ASEAN Economic Co-operation: Transition & Transformation*, Institute of Southeast Asian Studies: Singapore, 1997, p. 112-136; and, www.aseansec.org 'Economic Achievement'.

characterizes the region into opportunities for business complementation making the group of ASEAN members a more dynamic and stronger segment of the global supply chain. The various benefits of ASEAN economic integration will then be shared and enable all ASEAN member countries to move forward in a unified manner.

2.2.5 Science and Technological Aspects

Science and Technology (S&T) is also one of the major areas that is contributing to the realization of an ASEAN Community by the year 2015, although S&T is, in fact, not one of the three pillars of ASEAN: ASEAN Economic Community, ASEAN Security Community and ASEAN Socio-Cultural Community. Nevertheless, ASEAN cited S&T in its list of objectives since its inception in 1967.[97] To raise the cooperative level of scientific and technological advancement in the ASEAN region, in 1978 the ASEAN Committee on Science and Technology (COST) was established.[98] Since its formation, ASEAN-COST has been instrumental in developing and executing ASEAN's strategic plans for regional cooperation on science and technology.[99] These plans are also updated periodically.[100] For example, after recovering from the economic crisis of 1997, ASEAN agreed that, consistent with ASEAN Vision 2020,[101] it was time for ASEAN to create a new

97 The *ASEAN Declaration (Bangkok Declaration)*, Bangkok, 8 August 1967. "The guiding principle of regional collaboration and mutual assistance, first mandated in the ASEAN Declaration at the founding of ASEAN in 1967, has been consistently upheld and periodically refined and extended by heads of Government and Ministers of Science and Technology."

98 Cooperation among the ASEAN countries in the area of science and technology was established in 1971, when the ASEAN Ministerial Meeting established the ASEAN permanent Committee on Science and Technology. As a result of the restructuring of the ASEAN coordinating machinery, the Permanent Committee was renamed the ASEAN Committee on Science and Technology (COST) in 1978. Like most developing countries, all the ASEAN countries have depended heavily on imported or transferred technologies because these technologies are not only relatively cheap and easy to acquire, but they have been tested and standardized. While the development of indigenous technologies is perceived to be costly and risky, the experience of many countries has shown that the enhancement of such capacity requires a mixture of indigenous and imported technologies. In the formative stage of ASEAN, this provided a reason why ASEAN member countries wished to promote science and technology cooperation. See, Anuwar Ali, *Science and Technology Collaboration at the Regional Level: Lessons from ASEAN, The Emerging Technological Trajectory of the Pacific Rim*, Ed. by Denis Fred Simon, M.E. Sharpe Inc: London, 1995, p. 135-136.

99 See *the Plan of Action on Science and Technology:* ASEAN Secretariat, 2003.

100 See http://home.pacific.net.ph/~itdi/about.html (About ASEAN-COST); and, *Ibid*, p. 136

101 ASEAN members wished to accelerate the development of science and technology. This included information technology and to this end they established a regional information technology network and centers of excellence for the dissemination of and easy access to data and information. Science and technology is one of the many goals of ASEAN embodied in ASEAN Vision 2020 and, therefore, was included in ASEAN's goal to attain technological

plan of action to develop a dynamic and responsive science and technology enterprise poised to face future challenges. Today, ASEAN-COST has already adopted a new millennium plan of action on science and technology. The objectives of the plan are:

> 'a. to intensify 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;
> b. to expand 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;
> c. to establish a highly mobile and intelligent S&T community that thrives on knowledge creation and application, and is creative;
> d. to create a system of rewards and incentives in order to encourage innovation and technology commercialization and attract talent to a life-long career in science and technology;
> e. to ascertain a means of seeding and sustaining science and technology programmes through innovative ways of investing in S&T endeavors and generating revenue; and
> f. to enhance a system of management of the future S&T enterprise that is innovative, bold and entrepreneurial.'[102]

In order to satisfy the objectives of the S&T programmes of ASEAN's Vision 2020, ASEAN-COST, in particular, will, in the long term develop policies and mechanisms to sustain an active level of cooperation in science and technology commercialization in order to promote economic development and enhance a high quality of life for the peoples of ASEAN states.

Currently, ASEAN cooperation in science and technology has ten program areas: food science and technology,[103] meteorology and geophysics,[104] biotechno-

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competitiveness by 2020. To reach these goals, ASEAN adopted the Hanoi Plan of Action (HPA) at the Sixth ASEAN Summit held in Hanoi in December 1998. The HPA provides the general direction and outlines a road map for reaching the goals stated in ASEAN Vision 2020. Subsequently, ASEAN's Committee on Science and Technology agreed to prepare a strategic plan for implementing its programmes and other S&T-based activities that are included in the HPA. The implementation of these programmes and activities in an efficient manner will, notwithstanding, need careful planning and allocation of resources. See, *The 37th Meeting of the ASEAN Committee on Science and Technology (Joint Press Release)*, Yagon, Myanmar on 19-21 May 1999.

102 See the Plan of Action on Science and Technology: ASEAN Secretariat, 2003.

103 Food Science and Technology: Regional cooperation in food science and technology includes three broad areas:
'1. Food habits research and development, including the development of the ASEAN food data network;
2. Food technology research and development, including food standards; and
3. Management and utilization of food waste materials.

logy,[105] material science and technology,[106] information technology,[107] non-

The objectives of regional cooperation in food science and technology include: the development of technologies using resources endogenous to the ASEAN region and transferring these technologies to industry for commercialization; upgrading of the quality and value of food products in ASEAN; stimulating appropriate education and training in food science and technology and supporting progress in both theoretical and applied areas of food science in ASEAN and, consequently, generate trade, investment, and employment; and improvement of the nutrition in the ASEAN region.'
See, Anuwar Ali, *Science and Technology Collaboration at the Regional Level: Lessons from ASEAN, The Emerging Technological Trajectory of the Pacific Rim*, 1995, p. 139; http://home.pacific.net.ph/~itdi/about.html (About ASEAN-COST); and, *ASEAN Annual Report 2003-2004*, p. 39.

104 Meteorology and Geophysics: 'ASEAN cooperation in the field of meteorology and geophysics aims to develop climatological applications to address, among other areas, drought-related problems, water resources management, solar and wind energy resources, coastal and offshore installation, and urban and building climatology, and to improve forecasting services for the mitigation of natural disasters caused by adverse meteorological and geophysical phenomena. The ASEAN Specialized Meteorological Centre (ASMC) continues its services to all ASEAN member countries by providing meteorological data, training activities as well as haze monitoring information in the region. Furthermore, the ASEAN Sub-Committee on Meteorology and Geophysics (ASCMG) has completed a project, which aims to produce a compendium of climatic statistics for ASEAN in CD format including data up the year 2000.' See Anuwar Ali, *Science and Technology Collaboration at the Regional Level: Lessons from ASEAN*, p. 140; and, *ASEAN Annual Report 2003-2004*, p. 40.

105 Biotechnology: ASEAN cooperation in biotechnology emphasizes the following areas: development of drugs, diagnostics, and vaccines; improvement and production of selected biomaterials for agriculture and industry; application of biotechnology for improving quality and production of plants/animals and their products; pilot plant design and computer control of biological reactors; and lingo-cellulose conversion. In the area of biotechnology, the ASEAN Sub-Committee on Biotechnology (ASCB) published a book entitled "Agricultural Biotechnology: Principle and Practice" following training programme held in 2003 for Cambodia, Laos, Myanmar and Vietnam (CLMV) on agricultural biotechnology. Furthermore, the ASCB plans to formulate an ASEAN Bioinformatics Roadmap to serve as a guideline for identifying and developing specific activities and projects of ASEAN. In view of the richness of ASEAN member countries in biological resources which would provide a wealth of products which have industrial, medicinal, agricultural, and commercial applications, the ASCB began to expand its cooperation to include research work and information sharing on biological prospecting or bioprospecting to explore diverse species for commercially valuable biological and genetic resources. See, Anuwar Ali, *Science and Technology Collaboration at the Regional Level: Lessons from ASEAN*, p. 138; and, *ASEAN Annual Report 2003-2004*, p. 39.

106 Materials Science and Technology: Regional activities in materials science include four broad areas of cooperation: building materials, minerals and metals, materials for chemicals and medicines, and materials standardization and performance. See, Anuwar Ali, *Science and Technology Collaboration at the Regional Level: Lessons from ASEAN*, p. 139; and, *ASEAN Annual Report 2003-2004*, p. 42.

107 Information Technology: Regional cooperation in microelectronics covers the following activities: computer-aided design of integrated circuits; multi-project chip (MPC) fabrication; and electronic communication networks. In the future, funding will be secured from within ASEAN and from its dialogue partners to support the establishment of a regional research network on microelectronics. In addition to those areas already identified, regional cooperative activities will be expanded to cover applications of microelectronics in communications,

conventional energy research,[108] marine science and technology,[109] science and policy development,[110] human resources development,[111] and space tech-

process control, and instrumentation. Currently, the Sub-Committee on Microelectronics and Information Technology (SCMIT) continues to work with India under the ASEAN-India cooperation programme on information technology. See, Anuwar Ali, *Science and Technology Collaboration at the Regional Level: Lessons from ASEAN*, p. 139; and, *ASEAN Annual Report 2003-2004*, p. 42.

108 Non-Conventional Energy Research: Under the ASEAN Committee on Science and Technology, regional cooperation in the field of energy is limited to energy conservation and to non-conventional energy technologies in the research and development stage. Up to the mid-1990s ASEAN cooperation in non-conventional energy R&D was focused on bioenergy convention relating to industrial scale applications and cogeneration; coal technologies; energy conservation industry, buildings and transportation; and advanced industrial solar energy technology. Environmental issues relating to energy resources development and energy utilization were also addressed. Intra-ASEAN technology transfer and commercialization of energy technology and products developed is being actively promoted. Recently, the Sub-Committee on Non-conventional Energy Research (SCNCER) has completed all activities under the ASEAN Regional Drying Technology Workshops project, which aims to provide training in the design and operation of active convective and low temperature drying technologies and their applications to food, agricultural and forestry products. See, Anuwar Ali, *Science and Technology Collaboration at the Regional Level: Lessons from ASEAN*, p. 140; and, *ASEAN Annual Report 2003-2004*, p. 42.

109 Marine Science and Technology: Under the ASEAN-help-ASEAN scheme, the Philippines organized the Regional Training Course on Integrated Coastal Management (RCICM) and Training of Trainers (TOT) in Cebu in 2003. The training courses aimed to develop a core of coastal managers and trainers from the ASEAN region and bring together major stakeholders who will work together in the formulation of an integrated coastal management plan. In the future, ASEAN cooperation in marine science and technology will focus on marine biotechnology, regional oceanography, sustainable marine culture development and marine biodiversity conservation and management. See, Anuwar Ali, *Science and Technology Collaboration at the Regional Level: Lessons from ASEAN*, p. 141; and, *ASEAN Annual Report 2003-2004*, p. 43.

110 Science and Policy Development: The Sub-Committee on S&T Infrastructure and Resource Development (SCIRD) completed two activities addressing two policy areas: (1) development of innovative systems for programme management and revenue generation for ASEAN science and technology and (2) approaches to public-private collaboration in science and technology. The SCIRD has adopted a framework and mechanisms for revenue generation and programme management, which offer excellent opportunities for the Committee on Science and Technology (COST) to move onto a higher plane of intra-ASEAN and public-private sector cooperation on science and technology. See, Anuwar Ali, *Science and Technology Collaboration at the Regional Level: Lessons from ASEAN*, p. 141; and, *ASEAN Annual Report 2003-2004*, p. 43.

111 Human Resources Development: COST has established the ASEAN Virtual Institute of Science and Technology (AVIST), which aims to contribute the development of science and technology human resources in ASEAN member countries through continuing professional education in science and technology. A pilot project of AVIST was launched in Bangkok in May 2004. Hosted and coordinated jointly by the Thailand Graduate Institute of Science and Technology (TGIST) and the Asian Institute of Technology (AIT), three-month courses have been offered covering the topics of bioinformatics, ecotourism and technology and innovation management. See, *ASEAN Annual Report 2003-2004*, p. 44.

nology application.[112] Almost all of these program areas are relatively new to the ASEAN countries in view of a technological gap that exists between these countries and industrialized countries. Particularly, in the "space technology application" programme, there is much to be learned and acquired from industrialized countries given the huge expenses and investment involved in space technology, amounts prohibitively high for individual ASEAN countries.

2.3 ASEAN Organization and Space Activities

Space-based science and technology and the various space applications stemming from it presently play a vital role in the competitive development of the rapidly evolving hi-tech society of today's modern world. Thus, in order to develop a dynamic and functional ASEAN Community by the year 2015 through enhanced regional cooperation and integration, it will be necessary to consider the establishment of the following charters, communities and organizations.

1 The ASEAN Charter for strengthening cooperation in accordance with the basic and general rules of ASEAN.
2 The ASEAN Socio-Cultural Community for enhancing ASEAN's people quality of life.
3 The ASEAN Security Community for establishing a peaceful and stable region.
4 The ASEAN Economic Community for encouraging closer economic integration within the region (see Table No. 2.1).

The ASEAN Organization currently implements space technology applications as one of ten chartered scientific and technological programmes. Furthermore, ASEAN-COST has established an ASEAN Sub-Committee on Space Technology and Applications (SCOSA)[113] in order to formulate the framework for enhancing collaboration in space technology and applications and to implement programmes and projects (such as geo-informatics, communication and satellite technology applications and micro satellites, sensors and ground facilities) towards deployment of these technologies for sustainable development in the ASEAN region. In order to achieve the above objective, SCOSA focuses upon and commits to the following:

112 Space Technology and Applications: the Sub-Committee on Space Technology and Applications (SCOSA) aims to enhance the skills and capability of ASEAN space technology, especially 'remote sensing'. .See, *ASEAN Annual Report 2003-2004*, p. 43.

113 ASEAN-COST at its 37th meeting agreed in principle for the ASEAN Experts Group on Remote Sensing (AEGRS) to be elevated to an ASEAN Sub-Committee. ASEAN-COST at its 38th Meeting formally endorsed the elevation of AEGRS to the ASEAN Sub-Committee on Space Technology and Applications (SCOSA); See, Sub-Committee on Space Technology and Applications, http://www.astnet.org/index.php?name=Main&file=printer&cid=85 (11 January 2008).

'a. to formulate and coordinate collaborative and cooperative programmes and projects on space technology and its applications (in particular, remote sensing, satellite meteorology, communication and satellite technology applications for environmental and natural resource management, and development planning);
b. to review the status and capacity of space technology in the region, to promote space technology for natural resource and environment management and sustainable development;
c. to exchange information on national policies, programmes and planning in all areas of space technology and its applications among member countries;
d. to facilitate and accelerate the transfer of space technology and its applications to the ASEAN region;
e. to recommend mechanisms to involve government agencies, industries and academe in promoting and sustaining regional cooperation in space technology and its applications;
f. to advise ASEAN-COST on matters relating to space technology and it applications;
g. to assist in securing financial support and seek funding sources for ASEAN activities and projects relating to space technology and its applications; and
h. to promote collaborative activities and projects on space technology and its applications with relevant international organization.'[114]

It is understandable that the ASEAN organization (through the mission of SCOSA) incorporates space activities as one of the tools with which to serve the interests of the ASEAN community which currently has among its charters: strategic influence, scientific and technological progress, economic growth and social security. Presently the ASEAN's space activities under its obligations to SCOSA are only a training course and a workshop in cooperation with space technology power nations (and space power organizations[115]) such as China, India, Japan and ESA. Therefore, if the ASEAN organization would like to expand

114 Ibid., (the function of SCOSA).

115 The SCOSA is cooperating with other space faring nations and organizations such as (1) China (the ASEAN-China Workshop on Remote Sensing Technology Systems in 2000 and 2004 as well as ASEAN-China Training Course on Application of Satellite Remote Sensing and Satellite Communication Technologies in Disaster Reduction 2-15 December 2007, (2) India (the Indian Space Research Organisation (ISRO) and ASEAN who cooperate in a training programme aiming to enhance the capacity of ASEAN in the processing and utilization of data from the Indian Remote Sensing (IRS) satellite for applications in environmental management, including monitoring of forest fire, assessment of rice yield and coastal resource management in 2004, (3) the European Space Agency (some the European Remote Sensing (ERS) satellite data were provided by the centre for Remote Imaging, Sensing and Processing (CRISP) of Singapore to all ASEAN member countries for use in the studies and exercises for the monitoring of oils spills in several ASEAN water, and (4) As a joint undertaking between the ASEAN Sub-Committee on Space Technology Applications (SCOSA), the Asian Institute of Technology (AIT) and the Japan Aerospace Exploration Agency (JAXA) hosted by the Asian Institute of Technology; the AIT hosted the Workshop on Spatial Data Infrastructure (SDI) on 22-24 February 2007. See, *ASEAN Annual Report 2003-2004*, p. 43; and, http://www.astnet.org/index.php (14 January 2008).

its recent success in space technology and its relative applications it must apply focused reflection, adaptation, and creation of the necessary and appropriate mechanisms that would have to be reflected in a carefully structured ASEAN space policy.

2.4 CONCLUSION

Despite the promotion and strengthening of regional cooperation and solidarity of the ASEAN Community by the year 2015, it is not actually a major milestone in an ongoing process bringing ASEAN space stakeholders closer together but it quite obviously demonstrates the atmosphere of strong coordination and cooperation recently prevalent throughout the ASEAN region. Therefore, to promote a sustainable space development programme and follow a regime of regional cooperation by bringing the space programmes of the ASEAN organization and all member states under a single space policy, the ASEAN organization should jump over the entrance level to space activities by strongly supporting the establishment of a regional space mechanism (an ASEAN Space Organization) which would benefit all ASEAN citizens and strongly encourage the development and competitiveness of industries in the South-East Asian region. Regional space cooperation is, in fact, a necessary scheme in favor of the ASEAN organization because it can gain substantial benefits from the combined resources of partners in the region. The pooling of resources makes it especially easy to cope with the huge investment and know-how which are necessary to operate and build satellites or even to create autonomous access to space through the development of launchers.[116] Furthermore, the cooperation could also promote the training of technicians and scientists of this region in the space research and the development of the attendant space applications which could significantly help the region's social and economic progress. Additionally, all ASEAN member countries would be able to take advantage of first-class cutting-edge science and technology for their development needs. Consequently, in order to purposefully pursue the feasible establishment of an ASEAN Space Organization it is of paramount importance that we should also investigate and incorporate the diligent harnessing of the space activities of all ASEAN member countries.

116 Volker Liebig and Kai-Uwe Schrogl, *Space Applications and Policies for the New Century*, Peter Lang GmbH: Germany, 2000, p. 146.

Table No. 2.1: ASEAN Regional Cooperation Organization (2008)

ASEAN's Aspects	*Contemporary Circumstances*	*Future Goal*
Policy & Legal Aspects	Adopting and signing the ASEAN Charter. Strengthening and intensifying intra-ASEAN cooperation in accordance with the basic and general rules of ASEAN such as non-interference, equality, and peaceful dispute settlement.	The ASEAN Community in 2015
Social Aspects	Enhancing ASEAN peoples' quality of life by 1. building a community of caring societies; 2. managing the social impact of economic integration; 3. enhancing environmental sustainability; and 4. strengthening the foundations of regional social cohesion.	The ASEAN Community in 2015
Political & Security Aspects	Establishing a peaceful and stable region where each nation is at peace with itself and where the causes for conflict have been eliminated, through abiding respect for justice and the rule of law and enhancing regional resilience in the relations.	The ASEAN Community in 2015
Economic Aspects	Encouraging and supporting closer economic integration within the ASEAN region.	The ASEAN Economic Community (as a single market and production) in 2015
Science & Technology Aspects	Sustaining and strengthening an active level of ASEAN scientific & technological cooperation within ten program areas: 1. food science and technology; 2. meteorology and geophysics; 3. biotechnology; 4. material science and technology; 5. information technology; 6. non-conventional energy research; 7. marine science and technology; 8. science and policy development; 9. human resources development; and 10. space technology application.	The ASEAN Community in 2015

3 The Space Activities of ASEAN Countries

> 'The exploration and use of outer space, including the Moon and other celestial bodies, shall be carried out for the benefit and in the interests of all countries, irrespective of their degree of economic or scientific development, and shall be the province of all mankind.[1]
>
> All States, particularly those with relevant space capabilities and with programmes for the exploration and use of outer space, should contribute to promoting and fostering international cooperation on an equitable and mutually acceptable basis.'[2]

It is clear at present that space activities have beneficial effects on the world community and deserve of more attention. Despite the current economic differences among ASEAN member countries, it is essential that all ASEAN members learn about and take advantage of the benefits of space technology applications as part of the positive development of their nations. Therefore, in order to comprehend the situation of ASEAN space activities, before promoting and establishing a sustainable space cooperation in the South-East Asian region, especially as the "ASEAN Space Organization", this research shall indispensably explore the past, present and future potential of the ten ASEAN member countries in their space activities.

3.1 BRUNEI

Introduction

Brunei's full name is "Negara Brunei Darussalam".[3] Brunei is situated in Southeast Asia (bordering the South China Sea and Malaysia) and has an area of 5,765 sq. km. and a population of 372,361.[4] Bandar Seri Begawan is the

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1 Article I (para. 1) of the Outer Space Treaty 1967.
2 The Declaration on International Cooperation 1996, para. 3.
3 Just one week after gaining full independence in 1984, Brunei joined as a member of the Association of Southeast Asian nation (ASEAN).
4 Estimate as of July 2005. A majority of the population is Malay (67%). However, the Chinese, who consist about 15% of the population, dominate the economy. Indigenous people make up 6% of the population with the remaining 12% being a mix of other ethnic groups. Malay is the official language, but English and Chinese are also spoken. Islam is the predominant

capital and major port of Brunei. Politically the government is an absolute monarchical system and the chief of state and head of government currently is sultan and prime minister.[5] The legal system of Brunei is based on common law but, for Muslims, the law Islamic Shari supersedes common law in a number of areas.[6] Economically, Brunei has one of the highest per capita incomes in Asia because it benefits from extensive petroleum and natural gas fields.[7] This small, well-to-do economy encompasses a mixture of foreign and domestic entrepreneurship, government regulation, welfare measures, and village tradition. Crude oil and natural gas production account for nearly half of the gross domestic product (GDP). Brunei has chosen to use the profits to develop infrastructure facilities and a comprehensive welfare system in that the government provides for all medical services and free education through university level and subsidizes rice and housing.[8]

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and official religion; there are minorities of Buddhists, Christians, and those holding traditional beliefs. *See*, www.cia.gov/cia/publications/factbook/geos/bx.html.

5 In the early 15th century, with the decline of the Majapahit kingdom and widespread conversion to Islam, Brunei became an independent sultanate. It was a powerful state from the 16th to the 19th centuries, ruling over the northern part of Borneo and adjacent island chains. However, it fell into decay and lost the region of Sarawak in 1841, become a British protectorate in 1888 and a British dependent in 1905. During World War II, Japanese overran this area. Since 1905 and until 1984 Brunei's state of defense and foreign affairs were administered by a British resident, although the sultan fully retained formal authority. Following the independence of Brunei (January 1, 1984 independence from the British and February 23, 1984 independence from British protection) the sultan became an absolute monarch. The sultan is both head of state and prime minister and the current sultan and prime minister, Sir Haji Hassanal Bolkiah Mu'izzaddin Waddaulah, has ruled Brunei since 1967. *See,* www.cia.gov/cia/publications/factbook/geos/bx.html; www.infoplease.com/ipa/A0107361.html; and, *Regional Outlook Southeast Asia 2004-2005*, Institute of Southeast Asian Studies: Singapore, 2004, p. 7-9.

6 Brunei's legal system is based on English common law, with an independent judiciary, a body of written common law judgments and statutes, and legislation enacted by the sultan. Most cases are tried by the local magistrate's courts. More serious cases go before the High Court, which sits for about two weeks every few months. Before the transfer of Hong Kong back to China, Brunei had an arrangement with the Government of Hong Kong whereby Hong Kong judges were appointed as judges for Brunei's High Court and Court of Appeal. Final appeal can be made to the Judicial Committee of the Privy Council in London in civil but not criminal cases. *See*, www.law.emory.edu/IFL/legal/Brunei.htm; www.umsl.edu/services/govdocs/backgroundnotes/33.html; and, ASEAN Law Association, *ASEAN Legal System*, Butterworths Asia: Singapore, 1995, p. 3-14.

7 Crude oil and liquefied natural gas are Brunei's main exports and the country's economic mainstays. Petroleum products are also produced, and since Brunei's independence the government has attempted to promote economic diversification. *See*, www.infoplease.com/ce6/world/A0809211.html.

8 See www.cia.gov/cia/publications/factbook/geos/bx.html; www.infoplease.com; and, *Regional Outlook Southeast Asia 2004-2005*, Institute of Southeast Asian Studies: Singapore, 2004, p. 62-64.

Overview of Space Activities

Brunei firmly recognizes the peaceful exploration and use of outer space, even though Brunei is one of the ASEAN member countries that is not a member of the United Nations Committee on the Peaceful Uses of Outer Space (UNCOPUOS) and also not a part of any UN space treaties (but on January 18, 1984, after independence from the British, Brunei acceded to the Outer Space Treaty 1967).[9] Furthermore, in order to develop and enhance national social and economic benefits, Brunei has taken full advantage of space applications such as communications: Brunei, as a small but wealthy nation in the Southeast Asia region, has an excellent telephone service system throughout the country and has also kept up with the latest improvements in order to assure up-to-date telecommunication services. Currently Brunei has two Intelsat satellite earth stations (one in the Indian Ocean and one in the Pacific Ocean).[10] Brunei has also taken advantage of space applications in the area of meteorology. In order to meet the needs of all its citizens for meteorological information, Brunei, through the Brunei Meteorological Service (BMS), Department of Civil Aviation (DCA), and the Ministry of Communications, provides an information base to the general public, on which all basic and specialized meteorological services depend. Meteorological data comes from the MTSAT 1-1R satellite[11] which reports daily weather services. In addition, recognizing the importance of international space cooperation, at present, Brunei cooperates with other countries and organizations in space activities which includes work with, among others, India,[12] ASEAN and Intelsat.

9 United Nations Treaties and Principles on Outer Space: *Status of International Agreements Relating to Activities in Outer Space as at 1 January 2007*: ST/SPACE/11/Add./Rev.2.; and, U.S. Department of State, *Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies* (Resolution 2222 (XXI)), adopted on 19 December 1966, opened for signature on 27 January 1967, entered into force on 10 October 1967, www.state.gov/t/ac/trt/5181.htm (02/04/2007).

10 *See* http://www.abacci.com/atlas/infrastructure.asp?countryID=157 (20/09/2005); and, www.geography.about.com/library/cia/blc3bruneic.htm (20/09/2005).

11 *See* http://www.civil-aviation.gov.bn/bms/index.htm (20/09/2005); and, www.skyrocket.de/space/doc_sdat/mtsat-1.htm (21/09/2005).

12 Under an agreement signed in August 1997, the Indian Space Research Organization (ISRO) set up an Indian TTC (Telemetry, Tracking and Command) Centre in Brunei in 1999 as part of the Indian space programme for its Geo-synchronous Launch Vehicle (GSLV). See, *India-Brunei Bilateral – Country Brief*, www.brunet.bn/gov/emb/india/brrel.html.

3.2 CAMBODIA

Introduction

The Kingdom of Cambodia[13] is located in Southeast Asia (bordering the Gulf of Thailand, between Thailand, Vietnam, and Laos), with a total area of 181,040 square kilometers and a population of 13,607,069.[14] The capital city is Phnom Penh. Politically, the state is a parliamentary democracy under a constitutional monarchy in which executive power is held by the prime minister and the chief of state is the king who rules but does not govern.[15] The legal system is primarily based on a civil law mixture of French-influenced codes stemming back to the United Nations Transitional Authority in Cambodia (UNTAC) period, royal decrees, and acts of legislature, with influences of customary law and remnants of communist legal theory.[16] In spite of continuing to suffer from the effects of decades of civil war and internal strife, the Cambodian economy (especially the per capita income) is rapidly increasing, although it is lower

13 *See* http://en.wikipedia.org/wiki/Cambodia:
'Since independence was achieved in 1953, the official name of Cambodia has changed several times, following the troubled history of the country. In English/French, the following names have been used since 1953.
- Kingdom of Cambodia/Royaume du Cambodge *under the rule of the monarchy from 1953 through 1970;*
- Khmer Republic/République khmére *(a calque of French Republic) under the rule of the fascist military rule of Lon Nol from 1970 to 1975;*
- *Democratic Kampuchea/Kampuchea démocratique under the rule of the communist Khmer Rouge from 1975 to1979;*
- People's Republic of Kampuchea/Républicque populaire du Kampuchea *(a calque of People's Republic of China) under the rule of the Vietnamese sponsored government from 1979 to 1989;*
- State of Cambodia/ État du Cambodge *(a neutral name, before deciding whether to return to monarchy or not) under the rule of the United Nations transitional authority from 1989 to 1993;*
- Kingdom of Cambodia/Royaume du Cambodge *(return to the pre-1970's name) used after the restoration of the monarchy in 1993.*'

14 *Ibid*., Estimate as of July 2005. "Cambodia is ethnically homogeneous, as more than 90% of its population is of Khmer origin and speaks the Khmer language, the country's official language. The remainders include Vietnamese 5%, Chinese 1%, and other 4%."

15 In October 2004, HM King Norodom Sihanouk retired as chief of state and his son Norodom Sihamoni became king, who has been the new head of state since 29 October 2004. The current head of government is Prime Minister Hun Sen (since 14 January 1985) who is extreme-left, pro-Vietnam and the leader of the Cambodian People's Party (CPP). In the 2003 National Assembly elections, the CPP won 73 seats with 47% of the vote, the opposition-liberal Sam Rainsy Party won 24 seats (22%), FUNCINPEC won 26 seats (21%), and other 10%. FUNCINPEC and the CPP joined together in order to form a government. See *Regional Outlook Southeast Asia 2004-2005*, Institute of Southeast Asian Studies: Singapore, 2004, p. 10-12; http://www.cia.gov/cia/publications/factbook/geos/cb.html; and, http://en.wikipedia.org/wiki/Cambodia.

16 *See* http://www.cia.gov/cia/publications/factbook/geos/cb.html.

than other countries in the region. Tourism currently remains Cambodia's fastest growing industry and second-greatest source of hard currency after the textile industry.[17]

Overview of Space Activities

Although Cambodia is not a member of the United Nations Committee on the Peaceful Uses of Outer Space (UNCOPUOS) and only signed the Liability Convention 1972,[18] Cambodia realizes that the peaceful exploration and exploitation of outer space should be carried on for the benefit of all humankind irrespective of the degree of countries' economic and scientific development. Cambodia currently utilizes peaceful space applications[19] for developing and strengthening the social and economic fabric of the country such as remote sensing, telecommunication[20] and meteorology. This is especially noteworthy as Cambodia is one of the least developed countries (LDCs) in Asia[21] and its space science and technology is not as advanced as other Southeast Asian counties. In order to promote and develop space education and activities in Cambodia, the Ministry of Land Management (Cambodia), Asian Institute of Technology (AIT), and the Japan Aerospace Exploration Agency (JAXA) jointly

17 Cambodia joined the World Trade Organization (WTO) in September 2003. However, the expected benefits of WTO membership will not materialize soon as the country needs to improve infrastructure, telecommunications and extensive legislative changes in order to facilitate better access to the country's markets. See, *Regional Outlook Southeast Asia 2004-2005*, Institute of Southeast Asian Studies: Singapore, 2004, p. 64-66; http://en.wikipedia.org/wiki/Cambodia; and, http://www.cia.gov/cia/publications/factbook/geos/cb.html.

18 United Nations Treaties and Principles on Outer Space: *Status of International Agreements Relating to Activities in Outer Space as at 1 January 200*8: ST/SPACE/11/ /Rev.2/Add.1.

19 'The space technology applications in Cambodia have been recently introduced but increasingly participated by various projects, especially among foreign funded projects, even though in Cambodia the lack of budget and human resources are the keys for the issues for development of space technology application.' See, Chharom Chin, *The Space Education and Awareness in Cambodia*, Geography Department, Ministry of Land Management, Urban Planning and Construction, Asia-Pacific Regional Space Agency Forum (APRSAF-11), 3-5 Nov 2004, Canberra, Australia, http://www.aprsaf.org/text/past_aprsaf/p_ap11.html.

20 See http://www.country-data.com/cgi-bin/query/r-2190.html (16/09/2005): Cambodia, Telecommunications: 'In January 1987, the Soviet-aided Intersputnik space communications station began operation in Phnom Penh and established two-way telecommunication link between the Cambodian capital and the cities of Moscow, Hanoi, Vientiane, and Paris. The completion of the earth satellite station (built on the grounds of Phnom Penh' old Roman Catholic cathedral), restored the telephone and telex links among Phnom Penh, Hanoi, and other socialist countries for the first time since 1975. Although telecommunications services were limited to the government, these advances in communications helped break down the country's isolation, both internally and internationally.'

21 *Final Report of United Nations Economic and Social Commission for Asia and the Pacific and World Meteorological Organization*, Regional Workshop on Management: Strengthening Capacity Building of the National Meteorological Services of Least Developed Countries (LDCs), Bangkok, Thailand, 16-18 October 2002, p. 4.

organized the "Seminar on Application of Moderate Resolution Satellite Data" in Cambodia in 2004. The Seminar included the following subjects: among others, remote sensing, electromagnetic radiation, spectrometer, Landsat data and visual interpretation of images..[22] This type of international space cooperation gives Cambodian experts an opportunity to get acquainted with their counterparts in other countries or organizations, to exchange experiences and views, seek mutual benefits, and to work jointly on peaceful space activities.

3.3 INDONESIA

Introduction

The Republic of Indonesia is located in Southeast Asia (Archipelago between Indochina and Australia, between the Indian and Pacific Oceans), with a total area of 1,919,443 square kilometers and a population of 241.973,879.[23] Indonesia's capital city, Jakarta, is placed on the Island of Java. The country has a presidential and democratic governing system.[24] The president, although responsible to the MPR,[25] is the executive head of state and the government and has overall power over the armed forces, appoints ministers and governors, and promulgates law. The legal system of Indonesia is presently

22 Chharom Chin, *The Space Education and Awareness in Cambodia*, Geography Department, Ministry of Land Management, Urban Planning and Construction, Asia-Pacific Regional Space Agency Forum (APRSAF-11), 3-5 Nov 2004, Canberra, Australia, http://www.aprsaf.org/text/past_aprsaf/p_ap11.html.

23 Estimate as of July 2005. Indonesia's population can be roughly divided into two groups. In the west of the country, the people are mostly Malay, while the people of the east are Papuan, with roots in the islands of Melanesia. Many Indonesians identify with a more specific ethnic group that is often linked to language and regional origins; examples of these are Javanese (45%), Sundanese (14%), Madurese (7.5%), coastal Malays (7.5%), and other groups (26%). *See,* http://www.cia.gov/cia/publications/factbook/geos/id.html; and, Http://en.wikipedia.org/wiki/Indonesia.

24 In 2004, the largest one-day election in the world and Indonesia's first direct presidential election was held and was won by Susilo Bambang Yudhoyono. Since October 20, 2004, President Susilo Bambang Yudhoyono has been both the chief of state and head of government. See, www.cia.gov/cia/publications/factbook/geos/id.html; http://en.wikipedia.org/wiki/Indonesia; and, *Regional Outlook Southeast Asia 2004-2005*, Institute of Southeast Asian Studies: Singapore, 2004, p. 12-15.

25 The highest legislative body is the *Majelis Permusyawaratan Rakyat* (MPR, headed by Hidayat Nur Wahid) or 'People's Consultative Assembly', consisting of the *Dewan Perwakilan Rakyat* (DRP, headed by Agung Laksono) or Peoples Representative Council, elected for a five-year term, and the *Dewan Perwakilan Daerah* (DPD, headed by Ginandjar Kartasasmita) or Regional Representative Council. The MPR has a role in inaugurating and impeaching the president and in amending the constitution. However, the MPR doses not formulate national policy. *See*, http://www.cia.gov/cia/publications/factbook/geos/id.html; and, http://en.wikipedia.org/wiki/Indonesia.

based on Roman-Dutch law, codified Dutch law until independence, substantially modified by indigenous concepts (Adat)[26] and by new criminal procedures and election codes.[27] Economically, Indonesia has, since the financial crisis in the late 1990s, restored financial stability and pursued sober fiscal policies, but many economic development problems still remain, including high unemployment, a fragile banking sector, endemic corruption, inadequate infrastructure, a poor investment climate, and unequal resource distribution within the region. Due to declining production and lack of new exploration investment, Indonesia has recently become a net oil importer, although this country has extensive natural resources outside of Java, including crude oil, natural gas, tin, copper and gold.[28]

Overview of Space Activities

It is strongly believed that the achievements in space activities, present and future, will ultimately affect all countries in the world in a positive way and that the space benefits will be shared fairly and enjoyed by all humankind.[29] Indonesia is ASEAN's largest country, both in terms of territory and population. It is also archipelagic and depends heavily on space technology, as the following will show. Indonesia was the first ASEAN member country to become member of the United Nations Committee on the Peaceful Uses of Outer Space (UNCOPUOS), joining in 1973. In line with its commitment to the use of space for peaceful purposes and the necessity of cooperation among countries in space activities, Indonesia has ratified four UN space treaties: the Outer Space Treaty 1967, the Registration Convention 1975, the Rescue Agreement 1968, and the Liability Convention 1972.[30] Furthermore, to promote research and development in the field of space applications and to support the space activities, the Indonesian government considered it necessary to create a national

26 Adat is a set of local and traditional laws of the indigenous peoples of Malaysia and Indonesia. In older Malay language, adat refers to the customary law, the unwritten traditional code governing not only all aspects of personal conduct from birth to death but also regulating social, political, and economical laws. Two kinds (*Adat Perpateh and Adat Temenggong*) of *Malay adat* law developed prior to the 15th century. See, the New Encyclopedia Britannica (http://www.britannica.com/ed/article-9003690/adat April 3, 2008).

27 ASEAN Law Association, *ASEAN Legal System*, Butterworths Asia: Singapore, 1995, p. 17-73; Charles Himawan, *Asian Legal Systems: Law Society and Pluralism in East Asia* (Indonesia), ed. by Poh-Ling Tan, Butterworths: Australia, 1997, p. 196-262; www.cia.gov/cia/publications/factbook/geos/id.html; and,. Tabalujan S. Benny, *The Indonesian Legal System: An Overview* (www.llrx.com/features/indonesia.htm)

28 See www.cia.gov/cia/publications/factbook/geos/id.html; *Regional Outlook Southeast Asia 2004-2005*, Institute of Southeast Asian Studies: Singapore, 2004, p. 67-69; http://www.cia.gov/cia/publications/factbook/geos/id.html;and,http://en.wikipedia.org/wiki/Indonesia.

29 United Nations, *International Space Programmes and Policies,* UNISPACE (Vienna, Austria, August 1982), edited by N. Jasentuliyana and Ralph Chipman, Elsevier Science Publishers B.V.: the Netherlands, 1984, p. 283.

30 *Ibid*., note 18

space agency. Currently, Indonesia has two main agencies relating to national space activities, the National Council of Aeronautics and Space of RI (DEPANRI), as a national policy body for interagency coordination of an aerospace program directing policies on aerospace affairs[31] and the National Institute of Aeronautics and Space (LAPAN).[32] LAPAN is the secretariat of DEPANRI and contributes to national space research and development. The functions of LAPAN are to analyse and assess national policies in the field of aerospace applications; coordinate functional activities in aerospace; initiate, monitor and foster government programs in the aerospace development and its applications; and co-

31 I.B.R. Supancana and Susetyo Mulyodrono, *Indonesian Space Policies and Institutions*, www.oosa.unvienna.org/sat/act2003/repkorea/presentations/government/nat/bagus.doc: 'The National Council of Aeronautics and Space of RI (DEPANRI) was established by Presidential Decree No. 24 of 1963 as amended by Presidential Decree No. 132 of 1998. DEPANRI is the highest Coordinating Body with the main function to formulate the policy regarding the utilization of national air space and outer space for aviation, telecommunication, and other national interests. It also provides considerations, opinion and advices to the President regarding regulations and utilization of air space and outer space. Since the establishment of DEPANRI, it only managed to convene 2 (two) special session chaired and attended by the President and all members. In 1994 the 1st session was held with the objectives to discuss certain issues in the field of aviation which were directly related to the national interest and stipulating the national program in the field of aviation and space. The decisions of the first session covered, among others:

- To develop and formulate a national aerospace concept and a national system in space as guidelines for designing an aerospace policy and a national aerospace development plan, including elaborations of rules and norms in the form of a legal product;
- To develop and promote aerospace manufacturing and service industry;
- To conduct scientific research and development;
- To promote the quality of human resource in the utilization, development and mastering of aerospace science and technology; and,
- To develop relevant laws and regulations to encourage national aerospace efforts and securing its achievements, also to support the effort to accommodate national interest in an international forum, especially international recognition of the rights to exercise national sovereignty in airspace and to serve national interest in outer space in a comprehensive way.

In 1998, the 2nd special session of DEPANRI was held with the objectives to discuss and determine policy, priority and targets for aerospace development in order to make progress and achieve independency in the field of aerospace and to contribute to national development.'

32 I.B.R. Supancana and Susetyo Mulyodrono, *Indonesian Space Policies and Institutions*, www.oosa.unvienna.org/sat/act2003/repkorea/presentations/government/nat/bagus.doc; and, Christiana Chelsia CHAN, *The Implementation of the UN Space Treaties: Indonesia*, paper submitted to International Institute of Air and Space Law, Leiden University, the Netherlands, March 11, 2004, p. 10: 'The National Institute of Aeronautics and Space (LAPAN) was established on 27 November 1963 by Presidential Decree No.236 of 1963, as amended by Presidential Decree No. 103 of 2001. LAPAN is a non-departmental government aerospace research development agency directly responsible to the President of RI under the coordination of State Ministry of Research and Technology.'

operate with related national and international agencies in aerospace research and such matters.[33]

Space Scientific and Technological Applications in Indonesia

In the implementation of space policy and strategy, Indonesia has planned to utilize modern science and technology selectively, based on their merits, relevance and suitability to on-going and future development programs. Two main categories of space activities in Indonesia are being conducted: applications of the space science and technology made available by advanced countries, and research and development in space science and technology.[34] Not surprisingly the first category promotes the priorities generally applicable to national development. Currently, the main areas of space science and technology applications are space communication, remote sensing (Earth observation and environment monitoring), geographic information systems (GIS) and global navigation and positioning satellite systems (GPS and GNSS).[35]

1. Communications

Indonesia is the first developing country to have its own operational domestic satellite communication system. As part of a national program in the communication sector, Indonesia's satellite communication system is particularly suited to Indonesian's territory which consists of thousands of islands spread over three and a half thousand miles. A terrestrial communications facility would be inadequate due to its geographic limitations. Indonesia first entered the new era of telecommunications via satellite by utilizing INTELSAT in 1969. However, in order to manage its own satellite communications system,[36] the first Palapa communication satellite was launched into the earth's orbit in 1976. The Indonesian communication satellite systems have now evolved through

33 *Ibid.*

34 United Nations, *International Space Programmes and Policies,* UNISPACE (Vienna, Austria, August 1982), edited by N. Jasentuliyana and Ralph Chipman, Elsevier Science Publishers B.V.: the Netherlands, 1984, p. 284.

35 *International Cooperation in the Peaceful Uses of Outer Space: Activities of Member States in 2003*, Indonesia, www.oosa.unvienna.org/natact/2003/indonesia.html.

36 United Nations, *International Space Programmes and Policies,* UNISPACE (Vienna, Austria, August 1982), edited by N. Jasentuliyana and Ralph Chipman, Elsevier Science Publishers B.V.: the Netherlands, 1984, p. 289-290:
'The main activities in the program will cover:
1. Replacement and increase of space segment capability;
2. Further development of the ground segment capacity, including the construction of a number of main traffic stations, light traffic stations and small Earth stations; and,
3. Conduct of research and development activities to support efficient use of the system and to provide a strong foundation for the work of developing a space broadcasting system and other application systems.'

four generations.[37] The advantage of Indonesia's satellite communications system is that the system has the capability to cover all Indonesian territory and system development can be carried out simultaneously. This first benefit is particularly useful if one considers the diverse and difficult terrain terrestrial systems must traverse in Indonesia. The satellite system also has the flexibility to meet any unexpected needs in telecommunication immediately and is capable of providing, among others, national television, educational television, meteorological services, and telephone services.[38]

2. Remote Sensing

Indonesia operates a ground receiving station for the acquisition and processing of data from various remote sensing satellites, such as Landsat, SPOT, ERS-1 and JERS-1.[39] The main objectives of remote sensing activities in Indonesia are to implement the application of remote sensing technology in support of national development programs and to upgrade and enhance in-country capabilities in remote sensing technology to ensure optimum and continuous system operation, management and further development.[40] The National Institute of Aeronautics and Space (LAPAN) of Indonesia has played and continues to play a pivotal role in promoting the use of satellite remote sensing

37 Four generations of Indonesian communication satellite systems include the first generation (the Palapa A series: Palapa-A1, in 83 degrees E launched 8 July 1976; and, Palapa-A2, in 77 degrees E launched 10 March 1977), the second generation (the Palapa B series: Palapa-B1, in 118 degrees E launched 18 June 1983 replacing the Palapa-A1; Palapa-B2, in 113 degrees E launched 3 February 1984 failed to reach proper orbit; Palapa B2P, in 113 degrees E launched 21 March 1987 replacement of the Palapa-B2; Palapa-B2R, in 108 degrees E launched 13 April 1990; and, Palapa-B4, in 118 degrees launched 14 May 1992), the third generation (the Palapa C series: Palapa-C1, in 150.5 degrees E launched 31 January 1996; and, Palapa-C2, in 113 degrees launched 15 May 1996 replacing Palapa-B2P), and the fourth generation (Cakrawarta-1, in 107.7 degrees E lunched November 1997; Telkom-1, in 108 degrees E launched 12 August 1999; and, Garuda-1, in 123 degrees E launched 12 February 2000). The operators of the Palapa satellite systems are as follows: the Palapa seri A was PERUMTEL (PT TELKOM tdk, which was a state-owned company); the Palapa seri B and C jointly operated between PT Telkom tbk and PT Satelindo; Cakrawarta-1 satellite operated by PT Media Citra Indovision (MCI); and Garuda-1 satellite operated by PT Pasific Satelit Nusatara (PSN) with shareholders, Lockheed Martin. However, activities related to space communication services are now undertaken mainly by the private sector. See, Christiana Chelsia CHAN, *The Implementation of the UN Space Treaties: Indonesia*, paper submitted to International Institute of Air and Space Law, Leiden University, the Netherlands, March 11, 2004, p. 5; http://www.fas.org/spp/guide/indonesia/comm/index.html;and,www.oosa.unvienna.org/natact/2003/indonesia.html.

38 Christiana Chelsia CHAN, *The Implementation of the UN Space Treaties: Indonesia*, paper submitted to International Institute of Air and Space Law, Leiden University, the Netherlands, March 11, 2004, p. 4-5.

39 *See* http://www.unescap.org/icstd/SPACE/resap/members/indonesia.asp.

40 United Nations, *International Space Programmes and Policies,* UNISPACE (Vienna, Austria, August 1982), edited by N. Jasentuliyana and Ralph Chipman, Elsevier Science Publishers B.V.: the Netherlands, 1984, p. 285.

technology in the country.[41] At the same time, LAPAN scientists have carried out a large number of research and demonstration projects addressing a wide variety of resource and environmental problems using satellite remote sensing and geographic information systems (GIS) technologies. Moreover, LAPAN regularly provides satellite remote sensing data, as well as analysis and interpretation services, to many national user agencies[42] due to the various practical applications of remote sensing data including inventory of irrigated rice field, forest mapping and monitoring, mangrove forest inventory, coral reef mapping, mapping of sea surface monitoring, forest fire detection and monitoring, drought monitoring, inter-tropical convergence zone monitoring and cloud cover mapping, outgoing long-wave radiation mapping and monitoring, flood monitoring and flood susceptibility assessment and identification of a potential fishing zone.[43]

3. Global Navigation and Positioning Satellite Systems (GPS and GNSS)

By 2002, Indonesia had installed six ground stations for the purpose of application of GPS, which is of much benefit to the country in, among other things, maintaining a national geodetic base, contributing to surveys and mapping by providing geo-spatial reference and monitoring movement of active tectonic plates, degradation of the Earth's surface, climate change, sea surface change and topographical conditions.[44]

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41 *Ibid.*, p. 285-286:
'National programs in the field of remote sensing comprise the following:
- Applications of remote sensing data for land use planning, agriculture, environmental monitoring, various types of mapping, etc., including development of meteorology;
- Development of manpower, hardware and software, to facilitate data acquisition from earth resources satellites, its processing and analysis, concurrent with the needs of national development;
- Development of an information system and center for remote sensing data management;
- Research and development in remote sensing to achieve effective application techniques adapted to specific conditions in Indonesia;
- Study and design of alternate remote sensing systems from space most suitable to tropical countries and the particular needs of Indonesia; and
- International and regional cooperation aiming at improving capabilities and transfer of technology, through education, training, exchange of information, exchange of scientists and joint experiments.'

42 International Cooperation in the Peaceful Uses of Outer Space: Activities of Member States in 2003, Indonesia, www.oosa.unvienna.org/natact/2003/indonesia.html.

43 I.B.R. Supancana and Susetyo Mulyodrono, *Indonesian Space Policies and Institutions*, www.oosa.unvienna.org/sat/act2003/repkorea/presentations/government/nat/bagus.doc, p. 10.

44 *Ibid.*, note 42.

Space Science and Technology Research and Development in Indonesia

With respect to research and development of space science and technology, Indonesia began to develop satellite technology through LAPAN. In 2001, LAPAN developed a micro-satellite-engineering model, namely LAPSAT-1 EM, which is capable of storing and forwarding communications. In the following year, LAPAN continued to develop the micro-satellite engineering model through LAPSAT-2 EM, which is used for remote sensing satellite operations. In order to promote Indonesian engineers as master satellite builders capable of designing, implementing, testing, launching and operating satellites, LAPAN works in cooperation with the Technical University of Berlin to develop the first Indonesian micro-satellite, LAPAN-TUBSAT.[45] Recently LAPAN engineers have been involved in building a fifty kilogram micro-satellite at the Technical University of Berlin. In addition, LAPAN has a further program planned for 2008 to develop a remote sensing micro-satellite to support national food security with the collaboration of the German Aerospace Center (DLR).[46]

Indonesian Policy on Development Cooperation in Space Activities

In view of the importance of promoting and encouraging international cooperation in space activities to accommodate national interests, Indonesia realizes that international space cooperation with other countries, especially those countries which have capabilities in space science and technology, will accelerate the realization of space science and technology in Indonesia.[47] To this end, Indonesia has instigated cooperation with various countries to speed up the process of transfer of technology and exchange of experience and research. Such cooperation is generally in the form of workshops, training and joint activities[48] such as the cooperation between Indonesia and Germany,[49] India,[50] Japan,[51] Russia,[52] and ASEAN.[53] Based on the principles of equitable

45 *Ibid.*, note 42; LAPAN-TUBSAT satellite will carry a remote sensing and store and forward communication payload and will be launched in 2005.

46 *Ibid.*, note 42: International Cooperation in the Peaceful Uses of Outer Space: Activities of Member States in 2003, Indonesia; and, LAPAN and ISRO taken up on the four activities in their discussion; and http://www.lapan.go.id/page.php?vpage=info.php.

47 *Ibid.*, note 42.

48 United Nations, *International Space Programmes and Policies,* UNISPACE (Vienna, Austria, August 1982), edited by N. Jasentuliyana and Ralph Chipman, Elsevier Science Publishers B.V.: the Netherlands, 1984, p. 291.

49 Indonesia and Germany held joint workshops for the exchange of information with regard to experiences in developing a satellite communication system. In July 2003, LAPAN and the Technical University of Berlin signed a memorandum of understanding to develop the first Indonesian microsatellite, LAPAN-TUBSAT. *Ibid., supra* note 42.

50 Cooperation between India and Indonesia in the area of space started in 1997 when the Indian Space Research Organisation (ISRO) signed a memorandum of understanding (MOU) with LAPAN for the establishment of a telemetry, tracking and command (TTC) station

and mutual benefit and peaceful purposes, Indonesia still continues to expand its cooperation with other countries.

3.4 LAOS

Introduction

The Lao People's Democratic Republic is a landlocked country in Southeast Asia, bordered by Myanmar and the People's Republic of China to the north-west, Vietnam to the east, Cambodia to the south, and Thailand to the west, with a total area of 236,800 square kilometers and a population of 6, 217,141.[54]

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for supporting ISRO's missions. The station, set up by ISRO at Biak in Indonesia, has provided valuable support to Indian Remote Sensing (IRS) satellite missions. It also supported the launch of India's GSLV which took place in April 2001. The support from LAPAN includes provision of land, logistics and manpower for the operation of the TTC station. In April 2002, ISRO signed an MOU with LAPAN for cooperation in the peaceful uses of outer space. Moreover, on March 4, 2004 the meeting between LAPAN and ISRO discussed potential areas for extending the ongoing cooperation between the two countries. Detailed discussions were taken up on four activities: launch of LAPAN-TUBSAT, access to Indian Remote Sensing Data, participation in GAGAN, and remote sensing applications. With the signing of the MOU, today both ISRO and LAPAN plan to expand the scope of cooperation between the two space agencies covering different areas of space sciences, technology and applications. *See*, "Indian Space Research Organisation, ISRO signs MOU with Indonesian Space Agency," http://www.isro.org/pressrelease/Apr03_2002.htm; and, "LAPAN and ISRO Taken Up on the Four Activities in their Discussion." http://www.lapan.go.id/page.php?vpage=info.php.

51 LAPAN and Kyoto University of Japan are working together on space science and climate research in order to enhance capability in acquiring data on atmosphere in relation to environmental conditions on Earth. LAPAN has been operating meteorological instruments in Koktabang, west Sumatra (0.20degrees S and 100.32 degrees E), known as the equatorial atmosphere radar. This radar has been in commission since 2001. *Ibid.,* note 42.

52 I.B.R. Supancana and Susetyo Mulyodrono, *Indonesian Space Policies and Institutions*, http://www.oosa.unvienna.org/sat/act2003/repkorea/presentations/government/nat/bagus.doc, p.10. 'As a part of its policy to promote international cooperation, Indonesia opens the possibility to use its territory for conducting space activities. As an example, a Memorandum of Intention has been signed in Moscow between President Magawati and President Putin to use Biak airport in Papua as an intermediate air launch bases. Furthermore, opportunity is opened for private entities of both countries to participate in this venture. At the moment, some regulatory preparations are being discussed and prepared between them for the realization of the project.'

53 United Nations, *International Space Programmes and Policies,* UNISPACE (Vienna, Austria, August 1982), edited by N. Jasentuliyana and Ralph Chipman, Elsevier Science Publishers B.V.: the Netherlands, 1984, p. 285-291.

54 Estimate as of July 2005. The country's population consists of many ethnic groups such as Lao Loum (68%; the principal lowland inhabitants and the politically and culturally dominant group); Lao Theung (22%; upland in the central and southern mountains); Lao Soung (9%; highland) including the Hmong and the Yao; and Vietnamese and Chinese

Vientiane is the capital city. Politically, Laos is a socialist republic. The only legal political party is the Lao People's Revolutionary Party (LPRP). The chief of state is a president elected by parliament for a five-year term. The head of government is a prime minister appointed by the president with parliamentary approval.[55] Laos's legal system is based on traditional customs, French legal norms and procedures, and socialist practice.[56] Since 1986 the government of Laos has been decentralizing control and encouraging private enterprise. Much of the country, however, still lacks adequate infrastructure and consequently there is little attraction for foreign firms wishing to serve the local market. As a result, the Lao economy is currently stagnating and depends on aid from the International Monetary Fund and other international sources and to a limited extent from new foreign investment in food processing and mining.[57]

Overview of Space Activities

In accordance with the basic doctrine of the United Nations treaties, international agreements, and other principles relating to space activities, Laos confirms and recognizes that the exploration and use of outer space should be carried out for the benefit and in the interests of all countries, irrespective of their degree of economic or scientific development. Laos has ratified three UN treaties on outer space (the Outer Space Treaty 1967, the Rescue Agreement 1968, and the Liability Convention 1972).[58] Although Laos is at present one of the least developed countries (LDCs) in Asia[59] and is not a member of United Nations Committee on the Peaceful Uses of Outer Space (UNCOPUOS), it eagerly recognizes the immense space benefit and its tremendous impact on all aspects of life because space technology is now used in a wide variety of fields. In order to develop and enhance the social and economic benefits

(together 1%). *See*, http://www.cia.gov/cia/publications/factbook/geos/la.html and http://en.wikipedia.org/wiki/Laos.

55 Currently Geneneral KHAMTAI Siphandon is the President of Laos and Prime Minister BOUNGNANG Volachit is the head of government. However, government policies are determined by the party through the all-powerful nine-member Politburo and the 49-member Central Committee. See, *Regional Outlook Southeast Asia 2004-2005*, Institute of Southeast Asian Studies: Singapore, 2004, p.18-21; http://www.cia.gov/cia/publications/factbook/geos/la.html; and, http://en.wikipedia.org/wiki/Laos.

56 *See* http://www.cia.gov/cia/publications/factbook/geos/la.htm

57 *Regional Outlook Southeast Asia 2004-2005*, Institute of Southeast Asian Studies: Singapore, 2004, p.70-73; http://www.cia.gov/cia/publications/factbook/geos/la.html; and, http://en.wikipedia.org/wiki/Laos.

58 *Ibid*., note 18

59 *Final Report of United Nations Economic and Social Commission for Asia and the Pacific and World Meteorological Organization*, Regional Workshop on Management: Strengthening Capacity Building of the National Meteorological Services of Least Developed Countries (LDCs), Bangkok, Thailand, 16-18 October 2002, p. 4.

in the country, Laos engages some current space scientific and technological applications widely used such as communications,[60] remote sensing,[61] and meteorology. Today, Laos does not have a space agency but its implementation of space technology and applications are overseen by several governmental agencies including the National Geographic Department (NGD), the Science Technology and Environment Agency (STEA), the Ministry of Communication Transportation Post and Construction, the Ministry of Agriculture and Forestry, and the Ministry of Industry and Handicraft.[62] Furthermore, believing that international space cooperation will contribute to the development of mutual understanding and to the strengthening of friendly relations between nations and peoples, Laos has recently joined space cooperation with other countries and organizations such as Vietnam, Japan, Norway, Thailand, ASEAN, and UNESCAP.[63]

60 *See* http://www.country-data.com/cgi-bin/query/r-7838.html (16/09/2005) Laos-Telecommunications: 'In mid-1994 the Lao telecommunications system was rudimentary, with a telephone system that primarily served government offices and broadcast facilities in a few large towns only. Furthermore, the first domestic television service was established in 1983, and the second, in 1988, broadcasting from Savanaknt. Southern Laos receives transmissions from Thailand, and all of Laos receives satellite-relayed transmissions from a ground satellite station linked to Intersputnik from the former Soviet Union. There were about 31,000 television sets in 1990. International communications improved greatly with the installation in 1990 of a new satellite ground station. In 1991 agreements were concluded with China and France to relay their broadcasts to Laos by satellite.'

61 United Nations Economic and Social Commission for Asia and the Pacific-Space Technology Applications, Remote Sensing, GIS and Satellite-based Positioning (RSGIS): *Report of the Regional Working Group on Remote Sensing, Geographic Information Systems and Satellite-Based Positioning on its Ninth Meeting*, Kula Lumpur, Malaysia, 10-13 December 2003, http://www.unescap.org/icstd/space/resap/rsgis/rsgisrep03.asp (22/09/2005): 'In LAO People's Democratic Republic, Remote Sensing and GIS activities are in the basic stages for project implementation in various institutions. Efforts have also been made to develop a GIS network. In 2002, a task force composed of institutions using remote sensing and GIS was established; It is chaired by the Department of Geography and Vice-chaired by the Science and Technology and Environment Agency and the Ministry of Agriculture and Forestry. A proposal for a data coordination mechanism has been submitted to the Office of the Prime Minister. Support for capacity-building in remote sensing and GIS, including software and hardware, will need to be given priority consideration in order to support decision-making and planning.'

62 Sitha Phouyavong, *Space Technology and Application in Lao PDR*, the 11th Session of the Asia-Pacific Regional Space Forum, 3-5 November 2004, Canberra, Australia, http://www.aprsaf.org/text/past_eo/p_eo11.html.

63 Khamphone Amphayphone, *Information of Use of Earth Observation in Laos*, the 10th Session of the Asia-Pacific Regional Space Forum (APRSAF), 14-16 January 2004, Chiang-Mai, Thailand, http://www. aprsaf.org/text/past_eo/p_eo10.html.

3.5 MALAYSIA

Introduction

Malaysia is located in Southeast Asia and consists of two geographical regions divided by the South China Sea: West Malaysia, a peninsula bordering in the north with Thailand and in the south with the island of Singapore and East Malaysia or the northern part of the island of Borneo, bordering Indonesia, Brunei and the South China Sea. This country has a total area of 330,434 square kilometers and a population of 23,953,136.[64] The capital city is Kuala Lumpur located on the Malay Peninsula. The government is a federal parliamentary democracy with a constitutional monarchy. The chief of state is the Paramount Ruler or *Yang di-Pertuan Agong*, commonly referred as the King selected for five-year terms from among the nine sultans of the Malay states. The head of government is a prime minister who holds executive power and is designated from among the members of the House of Representatives.[65] The legal system of this country is based on English common law.[66] Malaysia is well endowed with natural resources, petroleum, liquefied natural gas, tin, and minerals. It is an upper-middle income country, which transformed itself from 1971 through to the late 1990s from a producer of raw material into an emerging multi-sector economy via the controversial New Economic Policy (NEP). In spite of external pressures, the economy grew 4.9% in 2003 and 7.1% in 2004. However, the economy remains dependent on continued growth in

64 Estimate as of July 2005. Malaysia's population is comprised of many ethnic groups such as Malay (50.4%), Chinese (23.7%), Bumiputera (11%), Indian (7.1%), and others (7.8%). All Malays are Muslim and also this group has political power in Malaysia more than others. *See*, http://www.cia.gov/cia/publications/factbook/geos/my.html; and, http://en.wikipedia.org/wiki/Malaysia.

65 The system of government in Malaysia is closely modeled on that of Westminster, a legacy of British colonial rule. However, more power is, in practice, vested in the executive branch of government than in the legislative. A general election must be held at least once every five years. Recently, the Raja of Perlis (Paramount Ruler Tuanku SYED SIRAJUDDIN ibni Almarhum Tuanku Syed Putra jamalullail) was elected as the Chief of State and the head of government is Prime Minister ABDULLAH bin Ahmad Badawi. *See*, *Regional Outlook Southeast Asia 2004-2005*, Institute of Southeast Asian Studies: Singapore, 2004, p.21-24; http://www.cia.gov/cia/publications/factbook/geos/my.html; and, http://en.wikipedia.org/wiki/Malaysia.

66 ASEAN Law Association, *ASEAN Legal System*, Butterworths Asia: Singapore, 1995, p. 77-137; Poh-Ling Tan, *Asian Legal Systems: Law Society and Pluralism in East Asia* (Malaysia), ed by Poh-Ling Tan, Butterworths: Australia, 1997, p. 263-313; Wu Min Aun, *An Introduction to the Malaysian Legal System* (revised third edition), Heinemann Educational Books (Asia) Ltd: Singapore, 1982; and, http://www.cia.gov/cia/publications/factbook/geos/my.html.

the US, China, and Japan, top export destinations and key sources of foreign investment.[67]

Overview of Space Activities

Malaysia, as a new participant in the space arena, has always been supportive of efforts by the United Nations in pursuing peaceful use and cooperation in outer space and it recognizes the immensity of space benefits. For the purpose of regulating the activities in outer space, Malaysia is guided by the relevant international law principles relating to outer space activities such as the United Nations treaties on outer space, principles,[68] and other international agreements relating to activities carried out in outer space. Concurrently, Malaysia is a signatory to the two treaties, the Outer Space Treaty 1967 and the Rescue Agreement 1968[69] which is in the process of ratification. Malaysia is also studying the feasibility of acceding to the other treaties on outer space, the Liability Convention 1972, the Registration Convention 1975, and the Moon Treaty 1979.[70] The country has been a member of the United Nations Committee on the Peaceful Uses of Outer Space (UNCOPUOS) since 1994. Furthermore, the aims of Malaysian government in the field of outer space are to take full advantage in order to promote the development of science, technology and industry; development of the utilization of space technology; the development of the international and regional cooperative endeavors through collaborative forums; and the achievement of national diplomatic and political objectives.[71] Malaysia established the National Space Agency (NSA) under the aegis of

67 *See Regional Outlook Southeast Asia 2004-2005*, Institute of Southeast Asian Studies: Singapore, 2004, p. 73-76; http://www.cia.gov/cia/publications/factbook/geos/my.html; and, http://en.wikipedia.org/wiki/Malaysia.

68 *See* http://www.baksa.gov.my/:
'The Principles adopted by the United Nations General Assembly relating to outer space which are adopted by Malaysia are as follows:
1. Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space 1963;
2. Principles Governing the Use by States of Artificial Earth Satellites for International Direct Television Broadcasting 1982;
3. Principles Relating Remote Sensing of Earth from Outer Space 1986;
4. Principles Relevant to the Use of Nuclear Power Sources in Outer Space 1992;
5. Declaration on International Cooperation in the Exploration and Use of Outer Space for the Benefit and in the Interest of All States, Taking into Particular Account the Needs of Developing Countries. See, Principles & International Agreement.'

69 *Ibid*., note 18

70 *See* http://www.baksa.gov.my/.

71 Statement of the Representative of Malaysia (the Honourable Ronald Kiandee M.P.) on Item 82: *International Cooperation in the Peaceful Uses of Outer Space at the Fourth Committee of the 58th Session of the United Nations General Assembly in New York*, 23 October 2003; *See*, http://www.un.int/malaysia/GA/4Comm/4C23Oct03.htm; and, National Space Agency (NSA), http://www.mosti.gov.my/.

Ministry of Science, Technology and Innovation (MOSTI) in 2002.[72] The objectives of the agency are to ensure the continuation of peaceful uses of outer space, to promote international space cooperation, to advance space knowledge, to support and add value to the national policies, and, to provide information system support for diversified applications.[73] Currently the NSA is formulating a natural space policy required for the development of space activities at a national level, a strategy for the national space policy through the national space program, a regime of regulation on outer space, and determining the allocation of resources to implement the space program.[74]

Space Scientific and Technological Applications in Malaysia

Malaysia is committed to the development and advancement of space science and technology applications. It recognizes the tremendous potential impact on all aspects of economy, science and technology, culture, and national defense, and the potentially significant social and economic returns. Consequently Malaysia takes advantage of many space applications including remote sensing, meteorology, and communications.

1. *Remote Sensing*:
In the 1970s, Malaysia introduced the use of remote sensing data for forestry applications. Currently remote sensing data is widely used for planning, management and monitoring of natural resources and the environment. Malaysia has established the Malaysian Centre for Remote Sensing (MACRES),[75] advisor to the Malaysian government and coordinator in the area of remote sensing and related technologies in the country.[76] Under the auspices of the MACRES, a national resource and environmental management program engages remote sensing and related technologies in areas such as geographic information systems (GIS) and satellite-based positioning in the country in order to establish an operational remote sensing-based integrated natural resource and environmental database at a national level to support planning and decision-

72 *See* http://www.mosti.gov.my: National Space Agency (NSA).
73 *Ibid.*
74 *Ibid.*
75 *See* http://www.macres.gov.my/The Malaysian Centre for Remote Sensing (MACRES).
76 *See* http://www. macres.gov.my/:
'Main functions of The Malaysian Centre for Remote Sensing (MACRES) are as:
· Principle research and development organization in the areas of remote sensing and related technologies in the country.
· Advisor to the government on the matters pertaining to remote sensing and related technologies in Malaysia.
· Focal point for implementing the National Remote Sensing Programme, by acting as the permanent secretariat to the National Remote Sensing Committee.
· Coordinator for implementing remote sensing activities in the country.'

making.[77] While MACRES is the leading agency for remote sensing applications, research on the subject is also carried out by Malaysian universities and other agencies.[78]

2. *Meteorology*:
The present applications of meteorological satellite data and image processing in Malaysia are intended to support operational weather forecasting, weather warning and other related applications, including cloud type identification, cloud top estimation, weather system detection, monitoring cloud system evolution, detection of forest fires, smoke plumes and hazes and a vegetation index to assess crop yield. Malaysia has recently established the Department of Meteorology in order to operate six meteorological satellite ground stations, which receive and process data from the NOAA geostationary meteorological satellites (GMS).[79]

3. *Communications*:
Telecommunications and broadcasting are currently the major space applications in use in Malaysia. Due to the rapid growth in the communication, entertainment and information industries and the increasing demand for satellite capacity in the region, Malaysia decided in 1991 to establish a domestic geostationary communications system. In 1996 Malaysia became one of the space faring nations when it launched two telecommunications satellites, MEASAT 1 and 2.[80]

Space Science and Technology in Malaysia

In collaboration with the United Kingdom, Malaysia has built its first micro-satellite, TiungSAT-1 launched into orbit from Baikonur Cosmodrome in Kazakhstan on 26 September 2000. The satellite has operated on amateur radio

77 *International Cooperation in the Peaceful Use of Outer Space: Malaysia*. U.N. Publication A/AC.105/729, p. 19.

78 *Ibid*. The remote sensing applications are also carried out by both universities, such as Universit Teknologi Malaysia (UTM), Universiti Putra Malaysia (UPM) and Universiti Kebangsaan Malaysia (UKM),and user agencies such as the Malaysia Agriculture Research and Development Institute (MARDI) and the Forest Research Institute of Malaysia (FRIM).

79 *Ibid.*, note 77, p. 20.

80 Federation of American Scientists/ SPP: Space Policy and Project, *World Space Guide, Malaysia: MEASAT*, http://www.fasorg/spp/guide/malaysia/comm/index.html, see also *ibid.*, note 76, p.20-21; Statement by Peof. Datuk Dr. Mazlan Othman, Head of the Malaysian Delegation, Third United Nations Conference on the Exploration and Peaceful Use of Outer Space, http://www.oosa.unvienna.org/unisp-3/speeches/20mal.htm; and, Statement by the Honourable Ronald Kiandee M.P., representative of Malaysia on Item 82: International Cooperation in the Peaceful Uses of Outer Space at the Fourth Committee of the 58th Session of the United Nations General Assembly in New York, October 23, 2003, http://www.un.int/malaysia/GA/4Comm/4c23Oct03.htm.

frequencies and carried onboard store-and-forward communications and remote sensing capability. Malaysia is still committed to the research and development of small satellites and to innovative exploitation of their advantages,[81] although the scarcity of launch opportunities and expensive launches will curb the development and advance of small satellite technology, and the usefulness of such satellites. Concurrently, dedicated satellite technology development facilities can be found at government agencies and some universities in Malaysia.[82] Moreover, under Malaysia's national space program, Malaysia plans to send the first Malaysian astronaut to train on the International Space Station in 2007. This is a cooperative project between Malaysia and Russia.[83]

The Malaysian Policy on Development Cooperation in Space Activities

Malaysia adheres to the basic principles of the Declaration on International Cooperation in the Exploration and Use of Outer Space for the Benefit and in the Interest of All States, Taking into Particular Account the Needs of Developing Countries, 1996. It strives for the peaceful use and exploration in outer space on an equitable, reasonable, and acceptable basis. To counteract the scientific and technological gap which continues to increase between the space faring states and developing countries, Malaysia follows an open policy with respect to all levels of space cooperation, engaging with any other country or organization in such areas as satellite technology, training and development of remote sensing, and satellite communication services.[84]

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81 Ben Razak, "Implementation of the Space Treaties in Malaysia", paper submitted to International Institute of Air and Space Law, Leiden University, May 2004, p.6; and,,*Ibid*., *supra* note 77, p. 21-22.

82 *Ibid*., note 77, p.21-22; Universities and organizations have facilities for satellite fabrication such as including the National Aviation Design Centre, the Standards and Industrial Research Institute of Malaysia (SIRIM), the Malaysian Institute of Microelectronic Systems (MIMOS), the Technology Park of Malaysia (TPN), Universit Teknologi Malaysia (UTM), and Universiti Kebangsaan Malaysia (UKM).

83 *See* http://newsfromrussia.com/science/2004/07/26/55227.html, "First Malaysian Astronaut to Undergo Training in Russia?"

84 *Ibid*., *supra* note 77, p. 23: 'In the field of satellite technology, Malaysian's international space cooperation has been forged with Brazil, India, Republic of Korea, the Russian Federation, South Africa, the United Kingdom of Great Britain and Northern Ireland and United States of America. Future programmes are expected to involve Australia, France and some African countries, Germany, Italy, Japan and Singapore. Furthermore, strong links have already been established with members of ASEAN in training in and development of remote sensing and for strengthening existing networking between ground receiving stations for satellite data reception and distribution in the region. Close cooperation also exists among ASEAN nations on the monitoring and prevention of haze. Bilateral projects in remote sensing have been implemented with the European Space Agency/European Union, Canada, China, Japan and the United Stated of America. International cooperation and joint ventures have been instituted by the country's satellite communications service providers, as mentioned above.'

3.6 MYANMAR

Introduction

The Union of Myanmar, previously named Burma, is the largest continental country in Southeast Asia, bordering the Andaman Sea and the Bay of Bengal, between Thailand and Bangladesh. This country covers a total area of 678,675 square kilometers and a population of 55 million.[85] Nay Pyi Taw is the capital city of this country. Political Myanmar has been under military junta since 1962. The chief of state is the Chairman of the State Peace and Development Council (SPDC) and the head of government is the prime minister.[86] Myanmar still uses a legal system based on common law.[87] Due to international sanctions and stalled economic reforms, Myanmar is a resource-rich country that suffers from government controls, inefficient economic policies and abject rural poverty. Though Myanmar's government has good economic relations with its neighbors, a better investment climate and an improved political situation are needed to promote foreign investment, exports and tourism. The junta took a step in the early 1990s to liberalize the economy after decades of failure under the "Burmese Way to Socialism", but those efforts have since stalled and some of the liberalization measures have been rescinded.[88]

Overview of Space Activities

Believing that outer space is a resource for all humankind and should be used for peaceful purposes in spirit of international cooperation, Myanmar ratified the Outer Space Treaty 1967 and signed the Rescue Agreement 1968.[89]

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85 Estimate as of 2004. Myanmar's population consists of many ethnic groups: Burman (68%), Shan (9%), Karen (7%), Rakhine (4%), Chinese (3%), Indian (2%), Mon (2%), and other (2%). *See*, http://www.cia.gov/cia/publications/factbook/geos/bm.html; and, http://en.wikipedia.org/wiki/Myanmar.

86 Under military junta rule, the current chief of Myanmar's state is General Than Shwe who holds the title of "Chairman of the State Peace and Development Council". His appointed prime minister is General Soe Win and almost all cabinet offices are held by military officers. The military group continues to block a transfer of power to the National League for Democracy (NLD), despite the NLD winning a landslide election in 1990 – the country's first multi-party elections for thirty years. *See,* http://www.cia.gov/cia/publications/factbook/geos/bm.html, http://en.wikipedia.org/wiki/Myanmar; and, *Regional Outlook Southeast Asia 2004-2005*, Institute of Southeast Asian Studies: Singapore, 2004, p. 27-30.

87 Although retaining a British-era legal system, there is no guarantee of a fair public trial. Moreover the judiciary is not independent of the executive. *See* http://www.cia.gov/cia/publications/factbook/geos/bm.html; and, www.myanmars.net.

88 *See* http://www.myanmars.net; http://www.legal500.com; *Regional Outlook Southeast Asia 2004-2005*, Institute of Southeast Asian Studies: Singapore, 2004, p. 77-80; http://www.cia.gov/cia/publications/factbook/geos/bm.html; and, http://en.wikipedia.org/wiki/Myanmar.

89 *Ibid*., note 18.

Although Myanmar is not a member of the United Nations Committee on the Peaceful Uses of Outer Space (UNCOPUOS) and is one of the least developed countries (LDCs) in Asia,[90] it utilizes space technological applications in order to strengthen and enhance its social and economical development. Through its government agencies, Myanmar focuses on space applications in the areas of remote sensing and GIS,[91] satellite communications[92] and meteorology.[93] Space scientific and technological development is achieved not only through government agencies but also by private enterprises and some universities involved in space-related education and training activities.[94] With respect to international space cooperation, Myanmar has good cooperation with both international organizations and countries such as UNDP, FAO, UNESCAP, Japan, Thailand, and India.[95]

90 *Final Report of United Nations Economic and Social Commission for Asia and the Pacific and World Meteorological Organization*, Regional Workshop on Management: Strengthening Capacity Building of the National Meteorological Services of Least Developed Countries (LDCs), Bangkok, Thailand, 16-18 October 2002, p. 4.

91 See United Nations Economic and Social Commission for Asia and the Pacific-Space Technology Applications, *Remote Sensing, GIS and Satellite-based Positioning (RSGIS): Report of the Regional Working Group on Remote Sensing, Geographic Information Systems and Satellite-Based Positioning on its Ninth Meeting*, Kula Lumpur, Malaysia, 10-13 December 2003, www.unescap.org/icstd/space/resap/rsgis/rsgisrep03.asp (22/09/2005) which states: 'In Myanmar, Remote Sensing and GIS activities are used by various line agencies for several purposes, including land use/land cover mapping; however there is a need to have strong systematic land cover data management and networking in the country. Future priorities should be given to capacity-building, human resources development and standardization of land-use/land cover classifications to work towards updating land-use/land-cover maps, socio-economic data and related databases.'

92 Myanmar Posts and Telecommunications, under the Ministry of Communications, Posts and Telegraph, upgraded international communications facilities in the country by opening two Grade A Earth stations in 1994. Myanmar uses the Intelsat, Asiasat and Thaicom satellite systems to meet its satellite communication requirements, including television broadcasting and telephone, telex and fax service. Satellite communications are also being used for distance education. Lectures from the Distance Education University are broadcast throughout the country, which includes remote areas, through satellite relay stations. See United Nations Economic and Social Commission for Asia and the Pacific, *RESAP Network Members: Myanmar*, http://www.unescap.org/icstd/SPACE/resap/members/myanmar.asp (27/09/2005).

93 *Ibid*: 'The Department of Meteorology and Hydrology operates a ground receiving station for reception of visible and near-infra-red data from NOAA and GMS satellites. These are utilized for weather forecasting, especially for detection of storm clouds. There is also a radar station, which is used to detect storm near the Arakan coast.'

94 U Nyi HIa Nge, *Space-Related Education and Training in Myanmar*, the 11 session of the Asia-Pacific Regional Space Forum, 3-5 November 2004, Canberra, Australia, http://www.aprsaf.org/text/wg_sea.html.

95 U Myint Swe, *Application of GIS and Remote Sensing for Conservation and Management of Forests in Myanmar*, the 11 session of the Asia-Pacific Regional Space Forum, 3-5 November 2004, Canberra, Australia, http://www. aprsaf.org/text/past_eo/p_eo11.html.

3.7 PHILIPPINES

Introduction

The Republic of the Philippines is located in Southeast Asia. It is an archipelago between the Philippine Sea and the South China Sea and the Celebes Sea, with a total area of 300,000 square kilometers and a population of 87, 857,473.[96] Manila is the capital city, but the largest city is Quezon City. The Philippines is a presidential democracy. Performing as both head of state and government, as well as being the commander-in-chief of the armed forces, the president is elected by popular vote for a term of six years.[97] The legal system of the Philippines is based on Spanish and Anglo-American law.[98] The Philippine economy, a mixture of agriculture, light industry, and supporting services, has deteriorated as a result of the Asian financial crisis of 1998 and poor weather conditions. From 0.6% decline in 1998, GDP growth accelerated to 4.3% in 2002, 4.7% in 2003, and about 6% in 2004 due to improving infrastructure, overhauling the tax system to bolster government revenues, furthering de-regulation and privatization of the economy, and increasing trade integration within the region. Furthermore, the government has promised to continue its economic reforms to help the Philippines match the pace of development in the newly industrialized countries of East Asia.[99]

Overview of Space Activities

The Philippines has been a member of the United Nations Committee on the Peaceful Uses of Outer Space (UNCOPUOS) since 1977. It has signed three UN space treaties, namely the Outer Space Treaty 1967, the Rescue Agreement 1968, and the Liability Convention 1972. It has only ratified the Moon Treaty

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96 Estimated as of July 2005. The population of the Philippines is composed of many ethnic groups: Tagalog (28.1%), Cebuano (13.1%), Ilocano (9%), Bisaya/Binisaya (7.6%), Hiligaynon Ilonggo (7.5%), Bikol (6%), Waray (3.4%), other (25.3%) (2000 census). However, the people of the Philippines are collectively known as Filipinos. Throughout the colonial era the term "Filipino" referred to the Spanish and Spanish-mestizo minority. The definition, nevertheless, was later expanded to include the entire population of the Philippines regardless of ethnic origin. *See*, http://www.cia.gov/cia/publications/factbook/geos/rp.html; and, http://en.wikipedia.org/wiki/Philippines.

97 *See Regional Outlook Southeast Asia 2004-2005*, Institute of Southeast Asian Studies: Singapore, 2004, p. 30-34; http://www.cia.gov/cia/publications/factbook/geos/rp.html; and, http://en.wikipedia.org/wiki/Philippines.

98 ASEAN Law Association, *ASEAN Legal System*, Butterworths Asia: Singapore, 1995, p. 141-208; http://en.wikipedia.org/wiki/Philippines; http://www.cia.gov/cia/publications/factbook/geos/rp.html; and, http://www.nyulawglobal.org/globalex/Philippines.htm#_4._Legal_System.

99 See *Regional Outlook Southeast Asia 2004-2005*, Institute of Southeast Asian Studies: Singapore, 2004, p. 80-83; http://www.cia.gov/cia/publications/factbook/geos/rp.html; and, http://en.wikipedia.org/wiki/Philippines.

1979.[100] Although the Philippines has ratified only one of five outer space treaties, it recognizes the benefits resulting from space activities. The aims of the Philippines' space activities are to maximize the benefits derived from space applications in the fields of remote sensing, telecommunications, astronomical and atmospheric research, and military application; to coordinate and integrate the various space activities of several government agencies and corporations to optimize resources; to facilitate the transfer, adaptation, and diffusion of advanced space technologies from developed countries to the Philippines; to anticipate future development and improvements in various components of space technology; to make space applications more relevant and useful for national economic development; and to define Philippine strategies in the common use of outer space among the users of communications between nations.[101] In order to achieving these objectives, the Philippines is implementing short and long range projects, both in research and development through several government and semi-government agencies. Today, the Philippines does not yet have a space agency but it does have an operational coordinative body, namely the Science and Technology Coordinating Council Committee on Space Technology Applications (STCC-COSTA),[102] which since the early 1990s has overseen all activities in space technology applications.

Space Scientific and Technological Applications in the Philippines

The uses of space applications in meteorology, positioning and navigation, communications, remote sensing and scientific research have grown so dramatically that they permeate all aspects and levels of global society. It is now recognized that space technology plays an indispensable role in the national, economic, and social development of the Philippines. In particular, there are three major applications of space activities in this country: remote sensing, astronomical and atmospheric services, and communications.

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100 *Ibid*., note 18.

101 United Nations, *International Space Programmes and Policies,* UNISPACE (Vienna, Austria, August 1982), edited by N. Jasentuliyana and Ralph Chipman, Elsevier Science Publishers B.V.: the Netherlands, 1984, p. 346.

102 Under the aegis of the Department of Science and Technology of the Philippines, STCC-COSTA is an embodiment of such a collaborative effort among and between like-minded agencies involved in the use and application of space technologies. Since its inception in the early 1990s, STCC-COSTA has been able to implement a number of research and development projects, mostly in remote sensing and GIS, and has hosted and coordinated several international workshops and conferences. Further, the Committee appreciates the cooperation of partners in academia, industry and other government agencies in these initiatives. More importantly, it thanks them for sharing their vision and commitment of making space technology applications work for the nation's progress and development. *See,* http://www.oosa.unvienna.org/natact/2000/philippines.html.

1. Satellite Remote Sensing

For more than two decades, remote sensing and geographic information systems (GIS) technologies have been used in a wide spectrum of applications in the Philippines. The National Mapping and Resource Information Authority (NAMRIA)[103] is an integrated service unit. It provides digital image processing and related remote sensing data to the offices under NAMRIA, other government agencies, and the private sector. In order to carry out its functions, the agency administers three major programs, water, coastal and land surveys,[104] mapping and remote sensing,[105] and information management and statistical services.[106]

2. Astronomical and Atmospheric Services

In the field of astronomical and atmospheric services, the Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA)[107]

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103 Remote sensing in the Philippines started in the mid 1970's with the use of Landsat MSS data for land use/land cover mapping, forest resource inventory, shallow reef mapping, mangrove area inventory and tracking of the direction of sediment loads from rivers. The National Mapping and Resource Information Authority (NAMRIA) serves as the central mapping and resource information agency of the Philippines. It was created in 1988 from the amalgamation of the National Cartographic Authority (NCA), the Bureau of Coast & Geodetic Surveys (BCGS), the Natural Resources Management Center (NRMC), and the Land Classification Teams based at the Bureau of Forest Development (BFD). NAMRIA is attached to the Department of Environment and National Resources (DENR). It is the principal satellite remote sensing agency of the Philippines for natural resources and environmental applications. Moreover, it provides geographic and resource information through its surveying, land classification, remote sensing, mapping, and information management and dissemination services to both government and private sectors. *See*, http://www.namria.gov.ph/.

104 Water, Coastal and Land Surveys: This involves the establishment of geodetic control networks that are used as basic references for all mapping and surveying activities; the conduct of hydrographic and oceanographic surveys of inland and marine waters of the country; and land classification surveys of the public lands in support of the Department of Environment and National Resources (DENR) programs. *See*, http://www.namria.gov.ph/.

105 Mapping and Remote Sensing: This includes the production of topographic base maps at various scales, as well as different types of thematic maps that are needed as inputs in any area development activities through the use of remote sensing technologies. *See* http://www.namria.gov.ph/.

106 Information Management and Statistical Services: This involves the development of geographic information systems, creation and build-up of databases and packaging of environment and natural resources (ENR) information. *See* http://www.namria.gov.ph/.

107 Since the early of 1970s, the Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA) has served as the Philippine's meteorological service. PAGASA envisions itself to be a center of:
Excellence in its distinctive competence in meteorology, operational hydrology, climatology, astronomy and other allied sciences; World-class capability in monitoring analyses, forecasting and warning of tropical weather system. Concurrently, PAGASA shall have the following functions:

has a duty to provide protection of life and property against natural hazards and utilizes scientific knowledge as an effective instrument to insure the safety, well-being and economic security of all the people, and for the promotion of national progress. PAGASA's activities are focused on weather modification, flood damage assessment, identifying earthquake faults, rainfall analysis, tropical cyclone forecasting, radiation measurement, and other activities related to disaster assessment and prediction.[108]

3. Satellite Communications

In order to accelerate the establishment of the nationwide telecommunications network as a catalyst for social, economic and political development, the Philippines started to use telecommunications services through the International Telecommunication Satellite Consortium (INTELSAT) in 1966.[109] The growing telecommunications, broadcast, and Internet industries in the Philippines totally depend on the infrastructure of communication satellites. In order to respond to and support the burgeoning demand in the telecommunications and commercial broadcast industries, the Philippines had launched the *Agila* (Agila I and II) fleet of satellites into the Earth's orbit in 1998. The Agila's are owned and operated by Mabuhay Philippines Satellite Corporation (MPSC), a private company licensed to operate such services under the supervision of the Philippine government.[110]

The Philippines Policy on Development Cooperation in Space Activities

The space scientific and technological gap continues to increase between the developed world and developing countries. Thus, the need for cooperation

1. Maintain a nationwide network pertaining to observation and forecasting of weather and other climatological conditions affecting national safety, welfare and economy;
2. Undertake activities relative to observation, collection, assessment and processing of atmospheric and allied data for the benefit of agriculture, commerce and industry;
3. Engage in studies of geophysical and astronomical phenomena essential to the safety and welfare of people;
4. Undertake researches on the structure, development and motion of typhoons and formulate measure their moderation; and
5. Maintain effective linkages with scientific organizations here and abroad, and promote exchange of scientific information and cooperation among personnel engaged in atmospheric, geophysical and astronomical studies.'

See http://www.pagasa.dost.gov.ph/.

108 United Nations, *International Space Programmes and Policies,* UNISPACE (Vienna, Austria, August 1982), edited by N. Jasentuliyana and Ralph Chipman, Elsevier Science Publishers B.V.: the Netherlands, 1984, p.345; and, http://www.pagasa.dost.gov.ph/.

109 *Ibid.* United Nations, *International Space Programmes and Policies,* UNISPACE (Vienna, Austria, August 1982), p. 343.

110 *See* Joseph E. Nebrida, *Filipino Satellite Confusion*, http://www.sat-net.com/listserver/sat-nd/msg00323.html; and, "Philippines and Communication Satellite Systems," http://www.globalsecurity.org/space/world/philipines/comm.htm.

is more essential and the pay-off is greater in order to facilitate the transfer, adaptation, and diffusion of advanced space technologies from developed countries to the Philippines. The Philippine government declares its commitment to international space cooperation under the fundamental principles of "the Declaration on International Cooperation in the Exploration and Use of Outer Space for the Benefit and in the Interest of All States, Taking into Particular Account the Needs of Developing Countries in 1996". For the important work mandated by STCC-COSTA, the Philippines has engaged bilateral, regional, and multilateral space cooperation in different forms such as research and development projects, training courses and conferences, and international regional working group memberships.[111]

111 *See* http://www.oosa.unvienna.org/natact/2000/philippines.html.
'The projects completed and ongoing under the auspices of the Science and Technology Coordinating Council Committee on Space Technology Applications (STCC-COSTA) of the Philippines.
Research and Development Projects:
i) Philippines/Australian remote sensing project (1990-1992;
ii) Commission on Environmental Cooperation/ESA/ASEAN natural resource and environment management project (1989-1990);
iii) Philippines/NASA/Air SAR project, phases I and II (1996-Present);
iv) Land use/land cover change project (1990-1997);
v) Monitoring Lahar using ADEOS data (1996-1997);
vi) Chlorophyll study of the Lingayen Gulf using ADEOS (1996-1997);
vii) ASEAN/Australian project on topographic mapping using remote sensing technologies (1998-present).
Training courses and conferences:
i) Fourth Regional remote Sensing Seminar on Tropical Ecosystems Management (1995);
ii) United Nations/ESA/Philippine Workshop on Microwave Remote Sensing Applications (1995);
iii) Nineteenth Asian Conference on Remote Sensing (1998);
iv) Radar workshops conducted by the NASA jet Propulsion Laboratory in connection with the AirSAR project (1998). And;
International and Regional Working Group Memberships:
i) Representation at the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE III);
ii) Representation in the ESCAP regional working groups on:
a. Remote sensing, GIS and global positioning;
b. Satellite Communication applications;
c. Meteorological satellite applications and natural hazards monitoring;
d. Space science and technology applications
iii) Representation in the Intergovernmental Consultative Committee on the Regional Space Applications Programme for Sustainable Development;
iv) ASEAN Expert Group on Remote Sensing.'

3.8 SINGAPORE

Introduction

The Republic of Singapore is an island city-state in Southeast Asia, situated between Malaysia and Indonesia. Singapore has a total area of 692.7 square kilometers and a population of 4,425,720.[112] The government of Singapore is a parliamentary democracy. The chief of state is the president and the head of government is a prime minister.[113] The legal system of Singapore is based on English common law.[114] Economically, Singapore enjoys a highly developed and successful free market economy. The economy depends heavily on exports, particularly in electronics and manufacturing. Even though it lacks natural resources, Singapore has one of the highest per capita gross domestic products in the world and is considered one of the "East Asia Tigers".[115]

Overview of Space Activities

Singapore, like other ASEAN member countries, strongly recognizes the peaceful exploration and use of outer space for the benefit and interest of all humankind. Consequently, Singapore ratified three United Nations treaties on outer space (the Outer Space Treaty 1967, the Rescue Agreement 1968, and the Liability Convention 1972). It has signed but not ratified one further treaty,

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112 Estimated as of July 2005. Singapore is the second most densely populated independent country in the world. Singapore's population consists of Chinese (76.8%), Malay (13.9%), Indian (7.9%), and other groups (1.4%) (2000 census). Though the population of Singapore is small at around four million people, the government of Singapore has been careful to maintain ethnic harmony after racial riots erupted in the 1960s. *See*, http://en.wikipedia.org/wiki/Singapore; and, http://www.cia.gov/cia/publications/factbook/geos/sn.html.

113 Singapore is a republic with a Westminster system of parliamentary government. Politics of Singapore have, however, been dominated by the People's Action Party (PAP) since its independence in 1965. The chief of state is currently the President Sellapan Rama (S.R.) NATHAN, who is elected by popular vote for a six-year term and has veto powers in a few key decisions such as the use of the national reserves and the appointment of key judiciary positions. The head of state is Prime Minister LEE Hsien Loong. *See*, http://en.wikipedia.org/wiki/ Singapore; *Regional Outlook Southeast Asia 2004-2005*, Institute of Southeast Asian Studies: Singapore, 2004, p. 34-37; and, http://www.cia.gov/cia/publications/factbook/geos/sn.html.

114 Helena H.M. Chan, "An Introduction to the Singapore Legal System", Malayan Law Journal PTE. LTD. *See also* Singapore, 1986; ASEAN Law Association, *ASEAN Legal System*, Butterworths Asia: Singapore, 1995, p. 211-379; Walter Woon, *Asian Legal Systems: Law Society and Pluralism in East Asia* (Singapore), ed by Poh-Ling Tan, Butterworths: Australia, 1997, p. 314-355; http://notesapp.internet.gov.sg/; and, http://www.cia.gov/cia/publications/factbook/geos/sn.html.

115 *See* http://www.cia.gov/cia/publications/factbook/geos/sn.html; http://en.wikipedia.org/wiki/ Singapore; and, *Regional Outlook Southeast Asia 2004-2005*, Institute of Southeast Asian Studies: Singapore, 2004, p. 84-87.

the Registration Convention 1975.[116] Although Singapore is at present not a member of the United Nations Committee on the Peaceful Uses of Outer Space (UNCOPUOS), it keenly believes the present and future accomplishments of space activities will, in the long run, influence all nations in a positive way. Following those beliefs, Singapore has engaged selective space technology applications in order to advance economic development and to respond fully and effectively to various social needs. The major areas of space technology applications in Singapore at this time are communications, meteorology,[117] and remote sensing.

1. *Communications*:

Although Singapore is the smallest country in the South-East Asian region, it has one of the world's most advanced telecommunications infrastructures with not only good domestic facilities but also good international services. The country had more than 1.2 million telephones in 1988 or 48.5 telephones for every 100 Singaporeans, providing virtually 100 percent coverage in homes and offices. As of 1998, there were almost 55 million phone lines in Singapore, close to 47 million of which also served other telecommunication devices like computers and facsimile machines. For satellite communication, Singapore has two satellite ground stations (at Bukit Timah and Sentisa Island) and a submarine cable as well as a fiber-optic cable connection to ASEAN neighboring countries and the world. In addition, Singapore Telecommunications is examining the possibility of operating its own spacecraft for television broadcasting and telephone services.[118]

2. *Remote Sensing*:

Singapore has a well-known remote sensing institution, the Center for Remote Imaging, Sensing and Processing (CRISP).[119] CRISP has developed an advanced

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116 *Ibid.*, note 18.

117 Meteorological Services Division in Singapore is a division under the National Environment Agency, providing weather information and forecasts in support of national needs. Currently there are two main satellites (NOAA and MTSAT) that provide data and images for meteorological services in Singapore. *See,* National Environment Agency, "Meteorological Services", http://app.nea.gov.sg/cms/htdocs/category_sub.asp?cid=13 (29/09/2005).

118 Singapore, by the late 1980s, had one of the world's most advanced telecommunications infrastructures, developed under the guidance of Telecoms, a statutory board. Its mission was to provide high quality communications for domestic and international requirements, and to serve the business community as well as the public. *See,* Singapore, Telecommunications, http:// www.country-data.com/cgi-bin/query/r-11859.html (16/09/2005); FAS-Space *"Policy Project: World Space Guide, Singapore and Communication Satellite Systems,"* http:// www.fas.org/spp/guide/singapore/comm/index.html (16/09/2005); and, "Communication in Singapore", http://en.wikipedia.org/wiki/Communication_in_Singapore (202/04/2008).

119 National University of Singapore, Centre for Remote Imaging, Sensing and Processing (CRISP), http://crisp.nus.edu.sg/crisp_top.html (29/09/2005): 'The Centre for Remote Imaging, Sensing and Processing (CRISP) is a research centre of the National University of Singapore established with funding from the Agency for Science, Technology & Research

capability in remote sensing and also provides an effective imagery index for not only Singapore but also other Southeast Asian and South Asian nations.

Along with space science and technology development, Singapore also has an X-Sat micro-satellite project undertaken by the Centre for Research in Satellite Technologies (CREST).[120] The main objective of this project is to develop the capability within Singapore to design, build, test, and operate a mini-satellite bus with multi-mission support capability.[121] X-Sat micro-satellite is Singapore's first domestic satellite and will provide imaging capability over Singapore as well as the surrounding regions and satellite-based advanced data acquisition and messaging over the Indian and Pacific Ocean.[122] Regarding international space cooperation, Singapore is devoted to space cooperation at many levels (such as multilateral, regional, and bilateral) not only for the sake of peaceful purposes of space activities but also for the more advanced space capabilities. For example, in cooperation with

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of Singapore. The CRISP's mission is to develop an advanced capability in remote sensing to meet the scientific, operational and business requirements of Singapore and the region. CRISP operates a satellite ground station to acquire data from remote sensing satellites, and processes the archived data to standard or value-added products for distribution and research. At present, CRISP is receiving and processing data from the following satellites: SPOT 1,2,4 (since September 1995) and SPOT 5 (since October 2002); ERS 1,2 (since March 1996); RADARSAT 1 (May 1997-May 2000); SeaWiFS, NOAA and Feng Yun 1C (since September 1999); TERRA (MODIS) (since March 2001); IKONOS (since August 2001); EROS_A1 (since October 2002); and, AQUA (MODIS) (since July 2002). CRISP is ready to provide special products custom processed to users' requirements, or training/consultation services in the field of remote sensing. Moreover, CRISP undertakes research in the optical and microwave remote sensing technology and applications, the current research interest areas are: ocean and coastal studies, tropical vegetation studies, and remote sensing data processing techniques.'

120 The Centre for Research in Satellite Technology (CREST) was established in December 2001 as a joint venture of Singapore's Nanyang Technology University and DSO National Laboratories, the latter a research and development organization focusing on national security technologies. The objective of CREST is to demonstrate technology in support of high-resolution imaging capabilities and to analyze and implement onboard parallel processing algorithms, thereby demonstrating improved mission achievements for generally downlink-limited small satellite imaging missions as well as to provide more frequent access to remote mobile terminals via a communications payload ADAM, also flown onboard two other microsatellites. The Centre is currently working on the country's first satellite initiated in 2000, called X-sat, which will carry Earth observation and data relay payloads. *See*, Space News, "Singapore Space Plans Linked to Collaboration with ISRO," January 31, 2005; and, "X-Sat of NTU, Singapore," http://directory.eoportal.org/pres_XSatofNTU Singapore.html (29/09/2005).

121 Timo Bretschneider, *Singapore's Satellite Mission X-Sat*, Proceedings of the International Academy of Astronautics Symposium on Small Satellites for Earth Observation, p. 105-108, 2003,http://www.ntu.edu.sg/home/astimo/Publications/Publications.htm(30/09/2005).

122 Timo Bretschneider, Tan Soon Hie, Goh Cher Hiang, Kandiah Arichandran, Koh Wee Eng, Eberhard Gill, *X-Sat Mission Progress*, Proceedings of the International Academy of Astronautics Symposium on Small Satellites for Earth Observation, p. 153-157, 2005, http://www.ntu.edu.sg/home/astimo/Publications/Publications.htm (30/09/2005).

India, Singapore's Centre for Research in Satellite Technologies (CREST) presently proposes to forge closer relations with the Indian Space Research Organization (ISRO) to learn how to design and test its own satellites.[123]

3.9 THAILAND

Introduction

The Kingdom of Thailand is situated in Southeast Asia, bordering Laos and Cambodia to the east, the Gulf of Thailand and Malaysia to the south, and the Andaman Sea and Myanmar to the west. Thailand has a total area of 514,000 square kilometers and a population of 65,444,371.[124] Bangkok is the capital city and the largest city. The government of Thailand is a parliamentary democracy with a constitutional monarch. The chief of state is the king and the head of government is the prime minister, who is appointed by the king from among the members of the lower house of parliament.[125] The legal system of Thailand is primarily based on the civil law system, with influences of common law.[126] Economically, Thailand has a well-developed infrastructure, a free-enterprise economy, and welcomes foreign investment. The government's highly popular policy, including major support of village economic development, has improved fiscal discipline and the health of financial institutions. Thailand has fully recovered from the 1997-98 Asian Financial Crisis and was one of East Asia's best performers in 2002-04.[127] However, in 2006, there was a severe conflict of political power and there was some political turmoil following accusation of corruption by the former Prime Minister Thaksin Chinnawatra. In recent year, the political circumstances get progressively well to normal democratic situation.

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123 Space News, "Singapore Space Plans Linked to Collaboration with ISRO", January 31, 2005.

124 Estimated as of July 2005. Thailand's population is dominated by ethnic Thai (75%). There is a large community of Thai Chinese (14%). Other ethnic groups (11%) include Malays in the south, Mon, Khmer and various indigenous hill tribes. *See*, http://www.cia.gov/cia/publications/factbook/geos/th.html; and, http://en.wikipedia.org/wiki/Thailand.

125 As a symbol of national identity and unity, the King BHUMIPHOl Adunyadej has little direct power under the constitution but appoints the prime minister. However, the present monarch enjoys a great deal of popular respect and moral authority, which has on occasion been used to resolve political crises. The present head of Thailand's government is Prime Minister SAMAK Sundaravaj. See www.cia.gov/cia/publications/factbook/geos/th.html; Http://en.wikipedia.org/wiki/ Thailand; and, *Regional Outlook Southeast Asia 2004-2005*, Institute of Southeast Asian Studies: Singapore, 2004, p. 37-40.

126 ASEAN Law Association, *ASEAN Legal System*, Butterworths Asia: Singapore, 1995, p. 383; and, World factbook, *Thailand: Legal system*, http://www.cia.gov/cia/publications/factbook/geos/th.html

127 *See* http://www.cia.gov/cia/publications/factbook/geos/th.html; http://en.wikipedia.org/wiki/ Thailand; and, *Regional Outlook Southeast Asia 2004-2005*, Institute of Southeast Asian Studies: Singapore, 2004, p. 87-91.

Overview of Space Activities

Thailand absolutely recognizes the importance of preserving outer space for the peaceful use and exploration for the benefit of all humankind and is fully preparing itself in all aspects for space activities. Furthermore, although Thailand has ratified only two UN Space Treaties (the Outer Space Treaty, 1967 and the Rescue Agreement, 1968),[128] Thailand acknowledges the significant role of the United Nations Committee on the Peaceful Uses of Outer Space (UNCOPUOS) in the development of space and all attendant applications. Since 2004, Thailand has been a member of the United Nations Committee on the Peaceful Use of Outer Space (UNCOPUOS).[129] Thailand has also contributed to and participated in activities under other United Nations affiliations such as the ESCAP-Regional Space Application Programme for Sustainable Development. Moreover, in order to promote peaceful space activities, to enhance and strengthen research and development in the areas of space science and technology, to support and promote the applications of space technology, and to develop space cooperation among other nations and organizations, Thailand has established two main agencies, the Space Affairs Bureau and the Geo-Informatics and Space Technology Development Agency (GISTDA). The Space Affairs Bureau[130] is a national central body for formulating a national action plan on space development. The GISTDA[131] is an organization involved in

128 *Ibid*., note 18.

129 Thailand has regularly participated in UNCOPUOS activities including participating in the Committee and Subcommittee Sessions, UNISPACE II and III, and supporting other activities such as hosting seminars and workshops in related areas. Thailand has also contributed to and participated in activities under other United Nations Affiliations such as the ESCAP. *See Thailand Concept Paper*, submitted to the 47th Session of the United Nations Committee on the Peaceful Uses of Outer Space, 2-11 June 2004, Vienna, Austria, p. 19.

130 *See* http://www.space.mict.go.th:
'In 1990 the Space Affairs Bureau was established under the supervision of the Ministry of Transport and Communications. Since 2001, the Space Affairs Bureau has been moved to operate under new supervision of the Ministry of Information and Communication Technology. The main functions of the Space Affairs Bureau are:
- A center to collect data about space activities and space application to be beneficial to any other governmental agencies;
- Advisor to the government on the policy of space activities of Thailand;
- The Establishment of the National Space Plan of Action;
- The Insistent research and development of space science and technology to accommodate national interest; and,
- Coordinator for implementing and promoting space activities in the country and also cooperation with other countries and international organizations.'

131 *See* http://www.gistda.or.th/:
'Geo-Informatics and Space Technology Development Agency (GISTDA) established in 2000 is Thailand's public organization in space technology and geo-informatics. The Vision of GISTDA is to be a center of excellence on space technology and geo-informatics in order to develop cooperative national and international networks and to support sustainable

space technology and geo-informatics. GISTDA's mission is to provide remote sensing data and geo-informatics data to benefit the country as a whole, and to enhance the research and development in space technology and geo-informatics.[132] With a long history of involvement in peaceful space activities, Thailand has received great benefits from space activities and has shared its experiences with other countries.

Space Scientific and Technological Applications in Thailand

Over a period of several decades, Thailand has directly and indirectly benefited from widely used scientific and technological space applications in the field of economy, science and technology. It has also been beneficial to Thailand's culture and society, particularly satellite applications, such as communications, remote sensing and earth observation, and meteorology.

1. *Communications*:
Thailand has four communication satellites in geostationary orbit over Asia: Thaicom 1, launched in 1993; Thaicom 2, launched in 1994; Thaicom 3, launched 1997; and IPSTAR-1, launched in 2005.[133] These communication satellites have enriched the lives of the people, providing services such as telecommunications, television broadcasting, Internet via satellite, and Tele-education.[134] For example, the Distance Learning Foundation (DLF) with support from the Ministry of Education conducts live satellite remote education broadcasts via satellite and optic fiber to selected schools throughout Thailand and its neighboring countries.[135]

development and improvement of natural resource and environment as well as quality of life. Furthermore, the objectives of GISTDA are:
- To develop space technology and geo-informatics applications to be beneficial to the general public;
- To develop the satellite data base and the derived natural resources information center;
- To provide data services relating to space technology and geo-informatics;
- To provide technical services and develop human resources in satellite remote sensing and geo-informatics;
- To conduct researches and development as well as to implement other activities related to space technology, including the development of small satellites for natural resources survey;
- To be the core organization to establish common standards for remote sensing and geo-informatics systems.'

132 *Ibid.*

133 http://www.fas.org/spp/guide/thailand/comm/index.html; and, http://www.ipstar.com/.

134 *Thailand Concept Paper*, Submitted to the 47th Session of the United Nations Committee on the Peaceful Uses of Outer Space, 2-11 June 2004, Vienna, Austria, p. 3.

135 *Ibid*., p. 9.

2. *Remote Sensing*:
Since 1971, Thailand has been involved in the remote sensing system. The country established a ground receiving station for a remote sensing satellite in late 1981. The station has provided remote sensing satellite data to a large number of users for monitoring and management of natural resources and environment within a radius of 2,500 kilometers covering countries in the Southeast Asian region. The station has also been archiving satellite images for more than twenty years from remote sensing satellite programs, such as LANDSAT, SPOT, MOS-1, JERS-1, ERS-1, IRS, RADARSAT, and IKONOS.[136] At the same time, the information obtained from remote sensing (earth observation) satellites is applied in various areas such as agriculture,[137] forestry,[138] geology,[139] water resource,[140] land use,[141] oceanography and fisheries,[142]

136 *Ibid*., p. 3.
137 *Ibid.* p. 4: 'Agriculture: The greatest contribution of the remote sensing satellites to Thailand is probably in agriculture. For more than 2 decades, satellite imageries have been employed for agricultural applications such as vegetation classification, estimation of plantation area, yield prediction, economic crop zoning and agricultural development planning for a variety of plantations.'
138 *Ibid.* p. 5: 'Forestry: Remote sensing data has been applied to the assessment of existing forest land, the identification of shifting cultivation, watershed areas and areas of cut forest. In order to conserve the biodiversity of the country, it will be necessary to use satellite data for monitoring the forests in Thailand in order to protect existing protected areas all over the country.'
139 *Ibid.* p. 5: 'Geology: The Department of Mineral Resource is the main agency applying satellite data for geological and geomorphological studies. Geological and geomorphological maps were produced from satellite images and further applied to related areas such as mineral exploration, earthquake study, etc.'
140 *Ibid.* p. 5: 'Water Resource: As a water body is clearly visible on satellite images, it is therefore useful for water resource management as well as water source development. Geo-informatics technology is an efficient tool for water resources monitoring. Various forms of integrated watershed management and conservation have been applied successfully in Thailand by using this technology.'
141 *Ibid.* p. 5: 'Land-Use: The land-use classification using satellite data comprises the identification of industrialized areas, agricultural areas, water resources for agriculture, etc. Furthermore, Satellite data has been continuously used for land use/land cover and changes in land-use. The information obtained is used for resource planning as an input to the improvement of Thailand's economy. In Thailand, this application is widely applied by other agencies, mainly the Land Development Department.'
142 *Ibid.* p. 6: 'Oceanography and Fisheries: These application fields are under the responsibility of the Naval Hydrographic Department and the Department of Fisheries. Both optical and satellite radar images have been applied in their respective mandates.'

archeology,[143] environment,[144] illicit crop,[145] and disaster monitoring and assessment.[146]

3. Meteorology:
The Thai Meteorological Department has routinely used meteorological satellite images in their daily operations. Satellite images assist in monitoring the appearance and development of severe weather patterns such as tropical storms. The department relies on the timely reception of images from the meteorological satellites. GMS-5 SVVR and NOAA images, both visible and infrared, are also used in weather monitoring and forecasting. The department also uses METEO-5 images via the Internet. The images are used in conjunction with radar information, synoptic weather reports and other means of observations.[147]

Space Science and Technology in Thailand

Thailand began to develop the Thai micro-satellite program in 1996. This program was created through cooperation between the Centre for Satellite Engineering Research at the University of Surrey (UK) and the Thai Micro-Satellite Company (TMSC) which company is a joint venture between Mahanakorn University of Technology (MUT) of Thailand and United Communication Company (UCOM) of Bangkok (Thailand). The objective of this program was to train a core team of twelve engineering lecturers in the design, construction and launch of Thailand's first micro-satellite into low earth orbit.[148] The

143 *Ibid.* p. 6: 'Archeology: Archeological sites are evident and can be distinguished from satellite data. The data are therefore utilized for archeological study and mapping by relevant agencies.'
144 *Ibid.* p. 6: 'Environment: Satellite data are also useful for environmental policy and planning. The Department of Pollution Control uses satellite images for pollution control study such as oil pollution, smoke plume, and smoke from forest fire.'
145 *Ibid.* p. 6: 'Illicit Crop: The advancement of space technology provides high resolution satellite image for illicit crop monitoring and control. Drugs are one of the big problems that immensely destroy mankind in terms of physical, mental and economical aspects.'
146 *Ibid.* p. 6: 'Disaster Monitoring and Assessment: At present, satellite images are widely used for monitoring and assessment of natural disasters especially flood, drought, landslide, Tsunami, earthquake and forest fire. It is also useful for damage prevention and mitigation planning. Satellite imageries were employed for mapping and monitoring the flood inundated areas, flood damages assessment, flood hazard zoning and post-flood survey of river configuration and protection works. Moreover, GIS, an effective spatial analysis tool, was utilized to identify the boundary and the intensity of the drought region. In GIS, spatial data derived from different sources such as satellite imageries could provide direct and indirect drought status such as in the case of the development of drought status such as in the case of the development of drought-risk region information system of northeastern Thailand. Such system can give decisive information concerning the national strategy in order to solve water scarcity problem in the area.'
147 *Ibid.* p. 7.
148 *Ibid.* p. 11.

design and construction of the satellite began in April 1996 and was completed in March 1997. In 1998, the first Thai micro-satellite, namely "THAI-PAHT",[149] was launched into Earth's orbit. Currently, staff and students at MUT are working on the design and construction of the second satellite named THAI-PAHT-2. The goals of the second satellite are to further test the technology transfer and to develop new technology. Furthermore, Thailand, through the Space Affairs Bureau of the Ministry of Information and Communication Technology, has entered into cooperation with China and other countries in order to establish the Small Multi-Mission Satellite Program (SMMS).[150] In addition, in 2003, Thailand approved a master plan for the development of the Thai Earth Observation Satellite (THEOS). The objectives of this plan are to promote national security, specifically in the fields of socio-economy and defense and also to develop natural disasters monitoring and narcotic crop detection. The implementation of this plan took place between 2003-2007.[151]

The Thai Policy on Development Cooperation in Space Activities

Cooperation with other countries or organizations has been a vital element of the development of space activities and a key method to close the space scientific and technological gap between the space faring nations and the developing countries. Thailand has consequently entered into the many levels (bilateral, regional, and multilateral) of cooperation with various countries and international organizations in space-related activities. Thailand has entered into cooperative agreements with the United States of America,[152] France,[153]

149 *Ibid*.

150 *Ibid*.

151 *Ibid*.

152 *See* http://www.gistda.or.th ; see also *Thailand Concept Paper*, Submitted to the 47th Session of the United Nations Committee on the Peaceful Uses of Outer Space, 2-11 June 2004, Vienna, Austria, p. 13-16: 'Thailand and USA have been cooperating since the Landsat-1 satellite. At present Thailand, through the Geo-Informatics and Space Technology Development Agency (GISTDA), is engaged in cooperation with NASA on the Base-ASIA Project, and with USGS on National Spatial Data Infrastructure and Geospatial Data Standards as well as Automated National Cadastral System.'

153 *Ibid*., *Thailand Concept Paper*, p. 14:
'The cooperation between Thailand and France in the field of space technologies and applications, focusing on the areas of remote sensing and related technologies has recently been strengthened and enhanced by the Agreement signed on January 27, 2000. The purpose of this agreement is to provide cooperation framework in the field of space technology and related applications, further encouraging and expanded collaboration in many scientific fields, as well as to develop the economies of the two countries.
- Second Thai-France Joint Committee Meeting on Space Technologies and Applications
- Advanced Training Workshop on Value-added Remote Sensing Products Development for Geo-information System
- Regional Symposium on Space Applications Dedicated to the Mekong Lower Basin Development
- Third Thai-French Joint Committee Meeting on Space Technologies and Applications.'

India,[154] Japan,[155] Republic of Korea,[156] China,[157] Russia,[158] Malaysia,[159] ASEAN,[160] and UNESCAP.[161]

154 *Ibid.*, *Thailand Concept Paper,* p. 15: 'Thailand and India have signed on February 1, 2002, the Agreement on Cooperation in the Exploration and Use of Outer Space for Peaceful Purposes for the period of five years. The fields of cooperation include developments in space science, the use of space technology, the monitoring of the earth's environment from outer space, remote sensing of the earth, and other joint scientific research and development.'

155 *Ibid., Thailand Concept Paper,* p. 14: 'The cooperation in remote sensing between Thailand and Japan was initiated since the establishment of MOS-1 Ground Receiving Station. The cooperation has been thriving and remains to thrive to the present day. The latest three year MOU between GISTDA and JAXA in the field of earth observation technology and satellite application was signed on March 21, 2001. The purpose and scope of this MOU is to provide a cooperation framework and to encourage further collaboration in the gathering of earth observation data and its applications between Thailand and Japan through joint research and development, and exchange of information and personnel.'

156 *Ibid., Thailand Concept Paper,* p. 16: 'The cooperation between Thailand and the Republic of Korea was signed in November, 2003 in Busan, Korea in the area of remote sensing and GIS application.'

157 *Ibid., Thailand Concept Paper,* p. 14: 'Thailand cooperates with China and other countries in the Small Multi-Mission Satellite Project (SMMS). The cooperation in earth observation satellite applications has also been initiated between respective organizations of both countries.'

158 *Ibid., Thailand Concept Paper,* p. 16: 'The cooperation between Thailand and Russia is undertaken under the MOU between the Ministry of Science and Technology of Thailand and the Russian Aviation and Space Technologies on cooperation in the field of space technology and their application. The cooperative agreement between GISTDA of Thailand and NPO-Mashinostroyenia, a state enterprise of Russia was signed on 1 March 2002. The cooperation contains exchange of experience in RS data processing, consulting and training, developing on software and hardware for radar data processing, satellite remote sensing system and cooperation in relevant IT.'

159 *Ibid., Thailand Concept Paper,* p. 16: 'Thailand and Malaysia have long been cooperating in the field of remote sensing and applications. New cooperation focus on ground receiving station and data reception, and application of remote sensing and GIS for natural resources management.'

160 *Ibid., Thailand Concept Paper*, p. 14: 'SCOSA (Sub-Committee on Space and Application) is a sub-committee under the ASEAN Committee on Science and Technology-COST. The purpose of this sub-committee is to provide a framework for cooperation on space technology and its application, including collaboration in any application for sustainable development in the ASEAN region. Under this forum, Thailand coordinated the publishing of the book "ASEAN from Space" which represents outstanding collaborations among ASEAN countries. Thailand has also actively participated in other activities under this forum.'

161 *Ibid., Thailand Concept Paper*, p. 14*:* 'Thailand has been involved in space activities in cooperation with ESCAP since the First Ministerial Conference on Space Application held in China. In 1994 the Regional Space Application Programme for Sustainable Development (RESAP) was established in order to foster regional cooperation on space technology and its applications. Thailand has continued to participate in RESAP activities. At present, representatives of relevant agencies are the National Focal Point and National Contract Points for RESAP and respective Working Groups including: Working Groups on Satellite Communication Applications; Space Science and Technology Applications; Meteorological Satellite Applications and Natural Hazards Monitoring; and RS/GIS and Satellite-based Positioning System.'

3.10 VIETNAM

Introduction

The Socialist Republic of Vietnam is also located in Southeast Asia, bordering the Gulf of Thailand, the Gulf of Tonkin, and the South China Sea, alongside China, Laos, and Cambodia. Vietnam has a total area of 330,000 square kilometers and a population of 83,535,576.[162] The capital city of Vietnam is Hanoi, but the largest city is Ho Chi Minh City. The government of Vietnam is a socialist republic. The chief of state is the president and the head of government is prime minister.[163] The legal system of Vietnam is based both on communist legal theory and French civil law.[164] In 1986, the Sixth Party Congress of the Communist Party of Vietnam formally abandoned Marxist economic planning and began introducing market elements as part of a broad economic reform package called "Doi Moi" ("Renovation"). Substantial progress was achieved from 1986 to 1997 in moving forward from an extremely low level of development and significantly reducing poverty. Since 2001, Vietnamese authorities have likewise reaffirmed their commitment to economic liberalization and international integration. They have moved to implement the structural reforms needed to modernize the economy and to produce more competitive, export-driven industries. The country is currently attempting to become a member of the World Trade Organization.[165]

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162 Estimated as of July, 2005. Vietnam's population is dominated by ethnic Vietnamese (Kinh, (86.2%). A homogenous social group, the Vietnamese exert influence on national life through their control of political and economic affairs and their role as purveyors of the dominant culture. Other ethnic groups are composed of Tay (1.9%), Thai (1.7%), Muong (1.5%), Khome (1.4%), Hoa (1.1%), Hmong (1%), and others (4.4%). *See,* http://www.cia.gov/cia/publications/factbook/geos/vm.html; and, http://en.wikipedia.org/wiki/Vietnam.

163 The Communist Party is a highly centralized system in Vietnam. The senior politburo members (Tran Duc Luong, Phan Van Khai, Nguyen Van An, Nguyen Tan Dung, Le Hong Anh and Pham Van Tra) currently hold high positions in the government. The President Tran Duc Luong is the chief of state and he is elected by the National Assembly from among its members for a five-year term. The head of the government is Prime Minister Phan Van Khai who is appointed by the president from among its members of the National Assembly. Vietnam's government is in theory independent from the party, but in practice it receives most of its directives from the party. Although there has been some effort to discourage membership in overlapping party and state positions, this practice continues. *See, Regional Outlook Southeast Asia 2004-2005*, Institute of Southeast Asian Studies: Singapore, 2004, p. 41-43; http://www.cia.gov/cia/publications/factbook/geos/vm.html; and, http://en.wikipedia.org/wiki/Vietnam.

164 *See* http://www.cia.gov/cia/publications/factbook/geos/vm.html; and, Mark Sidel, *Asian Legal Systems: Law Society and Pluralism in East Asia (Vietnam)*, Ed by Poh-Ling Tan, Butterworths: Australia, 1997, p. 356-389.

165 *See Regional Outlook Southeast Asia 2004-2005*, Institute of Southeast Asian Studies: Singapore, 2004, p. 94-97; http://en.wikipedia.org/wiki/Vietnam; and, http://www.cia.gov/cia/publications/factbook/geos/vm.html.

Overview of Space Activities

Guided by international laws, principles, and other international agreements relating to activities carried out in outer space, Vietnam firmly recognizes the importance of space activities for peaceful purposes and the space benefits for the good of the whole of humankind. However, Vietnam has only ratified the Outer Space Treaty 1967 and signed the Rescue Agreement 1968.[166] Since 1980, Vietnam has also become a member of the United Nations Committee on the Peaceful Uses of Outer Space (UNCOPOUS).[167] The goals of Vietnamese space activities are to enhance space research, to develop space science and technology, and to promote space applications in the country.[168] Accordingly, the National Committee for Space Research and Application of Vietnam (NCSRA or UY BAN NGHIEN CUU VU TRU VIET NAM) was founded in early 1980.[169] The tasks of this committee are to define the direction and program of applying the results of space research to develop the national economy, study the utilization of outer space for peaceful purposes, and coordinate the work of scientific institutions and mobilize scientific and technological workers throughout the country for the implementation of this program.[170] At present, all space activities of Vietnam, such as the development of telecommunications satellites namely the Vinasat project, and the application of remote sensing, GIS, and GPS data, have yielded remarkable social and economic benefits such as space applications of environmental disaster assessment (flooding, soil erosion, forest and soil degradation, and forest fire).[171]

Space Scientific and Technological Applications in Vietnam

The application of space research in Vietnam will greatly benefit the national economy, science and technology, society, and national defense. Today in Vietnam, space communication, meteorology, and remote sensing are the main sectors of space scientific and technological applications.

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166 *Ibid*., note 18.

167 United Nations, *International Space Programmes and Policies,* UNISPACE (Vienna, Austria, August 1982), edited by N. Jasentuliyana and Ralph Chipman, Elsevier Science Publishers B.V.: the Netherlands, 1984, p. 420-421; and, http://www.oosa.unvienna.org.

168 *Ibid.,* United Nations, *International Space Programmes and Policies,* UNISPACE (Vienna, Austria, August 1982).

169 *Ibid.*

170 *Ibid.*

171 Tran Minh Y, *Remote Sensing and GIS application for flood monitoring and assessment in Mekong delta and central part of Vietnam*; and, *Remote Sensing and GIS integration in the model for river basin environmental management in the northern Vietnam,* "Water for the World: Space Solutions for Water Management": UN/Austria/ESA Symposium on Space Applications for Sustainable Development to Support the Plan of Implementation of the World Summit on Sustainable Development, Graz, Austria, 13-16 September 2005, www.oosa.unvienna.org/SAP/act2005/graz/presentations.html

1. Remote Sensing

Vietnam has been utilizing remote sensing in many areas such as surveying natural resources and environmental conditions in the country, developing national agriculture, and protection against natural disasters.[172] For example, remote sensing technology and GIS for disaster management is used by various institutions for flood monitoring and assessment, forest fire monitoring and assessment, soil erosion area assessment, landslide monitoring, and seismic hazard and earthquake studies. Furthermore, it is expected that Vietnam will establish a remote sensing and GIS strategy development plan soon.[173] Regional and international cooperation is considered very important in order for Vietnam to keep pace with the progress of other countries in the Asian and Pacific region.[174] Currently remote sensing data from Landsat, SPOT, Radarsat, NOAA, MODIS, and ASTER are frequently used. The Vietnamese Academy of Science and Technology (VAST) has two NOAA AVHRR receivers and one MODIS receiver. For SPOT and ENVISAT data, a receiving station will be set up at the Ministry of Natural Resources and Environment with the cooperation of France.[175]

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172 Nguyen Thuong Hung, "Situation and Tendency of Application of Remote Sensing Techniques in Vietnam," www.gisdevelopment.net/aars/acrs/1990/Keynote/ks003.shtml (15/09/2005); and United Nations Economic and Social Commission for Asia and the Pacific-Space Technology Applications, *Remote Sensing, GIS and Satellite-based Positioning (RSGIS): Report of the Regional Working Group on Remote Sensing, Geographic Information Systems and Satellite-based Positioning on its Ninth Meeting*, Kula Lumpur, Malaysia, 10-13 December 2003, http://www.unescap.org/icstd/space/resap/rsgis/rsgisrep03.asp (22/09/2005): 'Remote Sensing technology had been introduced to Vietnam in the 1980s and has progressed significantly since. Application fields at various line agencies are mostly in land use and land cover mapping, environmental monitoring, management and assessment, topographic map revision, disaster prevention and geology, among others. A project is being set up by the Ministry of Natural Resource and Environment to apply remote sensing for land use/ land cover mapping of the whole country by 2005. Several research projects at the National Centre of Science and Technology (NCST) of Vietnam address natural resources management, environment impact assessment and disaster prevention.The Ministry of Agriculture and Rural Development is applying, remote sensing, GIS and GPS to carry out national forest resources assessment and monitoring from 1990-2005. Remote sensing, GIS and GPS are also used for watershed management, forest fire monitoring, forest management and planning, including reforestation. GPS technology is widely applied in many environment studies, and software for its correction has been developed. GPS also plays an important role in the establishment of the new projection VN2000 for topographic maps.'

173 *Ibid.*

174 *Ibid.*

175 United Nations, *International Space Programmes and Policies,* UNISPACE (Vienna, Austria, August 1982) edited by N. Jasentuliyana and Ralph Chipman, Elsevier Science Publishers B.V.: the Netherlands, 1984, p. 422-423; and, *Report of the Regional Working Group on Remote Sensing, Geographic Information Systems and Satellite-based Positioning on its Tenth Meeting*, Bangalore, India, 18-20 October 2004, http://www.unescap.org/icstd/SPACE/resap/rsgis/rsgisrep04.asp (16/09/2005), p. 7.

2. Communication

In the area of communication, Vietnam's main efforts are concentrated on exploiting the possibilities of telecommunication satellites to improve all communication programs. In 1980's Vietnam entered into the space communications era with the aid of the Soviet Union, when Vietnam possessed two satellite-ground stations and the system linked Moscow and Vietnam by the INTERSPUTNIK Communication Satellites.[176] At present, Vietnam plans to launch the first Vietnamese communication satellite (Vinasat) at the end of 2005.[177] It will be designed for communication, radio and television broadcasting, education and rescue activity.[178]

3. Meteorology

With the complexity of the humid tropical monsoon climate region, Vietnam has been using information from a meteorological satellite for improving weather forecasting since 1972.[179] Since 1979, when it joined the International Programme of Research and Peaceful Use of Outer Space, known as INTERCOSMOS, Vietnam has been cooperating with other members of INTERCOSMOS such as Cuba to study tropical storms.[180] In this area, Vietnam

176 Firstly, the Lotus One satellite communication station was location in Ha Nam Ninh Province, 100 kilometers south of Hanoi in 1980 and secondly the Lotus Two was inaugurated near Ho Chi Minh City in 1985. The two stations were used to integrate Vietnam into the Soviet Intersputnik Communication Satellite Organization. The system linked Moscow, Hanoi, and Ho Chi Minh City. *Vietnam – Telecommunications*, http://www.country-data.com/cgi-bin/query/r-14697.html,(16/09/2005).

177 The Republic of Vietnam still has no satellite communication system. Thus Vietnam plans to build its first communication satellite by hiring a Russian firm. Preparations have been completed at Zheleznogorsk Research and Industrial Association for Applied Mechanics to build the first Vinasat-type communication satellite for Vietnam. The building of the first satellite communication system for Vietnam with the help of this Siberian enterprise includes the manufacturing of a satellite with 28 channels, designed to transmit various information. It will be possible to go onto the Internet, to broadcast different telecasts, to establish telephone contacts, to carry out other tasks covering the entire range of communication services. See, "Russian Firm to Build First Vietnam's Communication Satellite," United Nations Development Programme, http://www.undp.org.vn/mlist/ksdvn/032002/post39.htm (16/09/2005).

178 Under the supervision of the Ministry of Posts, Telecommunication, and Technology of Vietnam, the first Vietnamese communication satellite will be put in a geo-stationary orbit at the height of 36,000 kilometers and it will be placed at the longitude 132 degrees east. See, "Vietnam Intends to Launch its Own Satellite in Late 2005," http://www.//newsfromrussia.com/science/2003/10/27/50786.html, (16/09/2005).

179 In 1972, the first APT equipment given by the USSR was set up in Hanoi, and since then information from meteorological satellites has been captured for weather forecasting. The data from meteorological satellites is of particular importance for weather forecasting in littoral areas of Vietnam. After 1975 similar APT equipment given by the German Democratic Republic was set up in Da Nang. See, United Nations, *International Space Programmes and Policies,* UNISPACE (Vienna, Austria, August 1982), edited by N. Jasentuliyana and Ralph Chipman, Elsevier Science Publishers B.V.: the Netherlands, 1984, p. 420-421.

180 *Ibid. International Space Programmes and Policies.*

also cooperates with other Southeast Asia countries, particularly within the framework of ASEAN.

Space Science and Technology in Vietnam

Vietnam was the first ASEAN country to participate in an international manned space flight, which it did in 1980.[181] Vietnam, and its various scientific institutions, had the opportunity to contribute to the preparation and the implementation of an elaborate scientific program, with experiments involving four major scientific problems: study of the atmosphere, bio-medical studies, surveys of natural resources and studies of technological manufacture in space.[182] Subsequently, Vietnam has studied the possibility of launching a commercial satellite in its efforts to be free from subscribing to foreign satellite channels. Nowadays, Vietnam (through the National Centre for Natural Sciences and Technologies) and Russia (through the Russian Science Academy) have completed a project named "Concept of Building and Developing Satellite Communications in Vietnam, namely Vinasat." The project is now under way with the involvement of numerous Vietnamese and Russian institutes and allows Vietnam to study, produce and launch telecom satellites serving radio and television broadcasts as well as telephone and Internet links.[183]

The Vietnamese Policy on Development Cooperation in Space Activities

The peaceful space cooperative policy of Vietnam has been a vital element for developing space science and technology and promoting space applications in the country. Guided by the "Declaration on International Cooperation in the Exploration and Use of Outer Space for the Benefit and in the Interest of All States, Taking into Particular Account the Needs of Developing Countries", Vietnam recently entered into cooperation at many levels (bilateral, regional, and multilateral) with other countries and organizations. In Particular, since 1980's, Vietnam and Russia (the former Soviet Union) have been closely cooperating in space activities such as an international manned space flight program, and the Vinasat project.[184]

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181 *Ibid. International Space Programmes and Policies*: 'From 23 to 30 July 1980, Vietnam participated in an international manned flight on board of the Soviet spacecraft Soyuz -37. The international crew included the commander of the spaceship, the Soviet cosmonaut VICTOR Gorbatko, and the first and only Vietnamese cosmonaut PHAM Tuan, who fulfilled the role of cosmonaut-researcher.'

182 *Ibid. International Space Programmes and Policies.*

183 Vietnam News Agency-December 18, 2001, "Russia Boost Space Cooperation," http://perso.wanadoo.fr/patrick.guenin/cantho/vnnews/ruspace.htm (18/09/2005).

184 *Ibid.*

3.11 The Potential of ASEAN Countries for Sustainable Space Development under International Space Law

When considering all ASEAN member countries' remarkable space activities (see Table No. 3.1), there is a clear prospect of significant and sustainable development in the area of international space law. However, the enormous complexity and cost of space activities have slowed the progress that has been made in disseminating space science and technology to a greater number of countries. ASEAN's sustainable space development relies upon three main factors: the general principles of rights and obligations to exploration and use of outer space, the access to space technologies, and the strengthening of international cooperation in space activities.

Firstly, as a direct result of ratification, accession and signature of various UN treaties on outer space (see Table No. 3.1), each ASEAN nation has agreed to fundamental rights and obligations with respect to international space law for regulating space activities. In particular, based on the right to use and on non-appropriation principles, the Outer Space Treaty 1967 states the following:

> 'Outer space, as the province of all mankind, shall be free for exploration and use by all states without discrimination of any kind, on a basis of equality and in accordance with international law.[185] National appropriation by claim of sovereignty, by means of use or occupation, or by any other means, is forbidden.'[186]

In order to confirm the guarantee of their rights and responsibilities of access to share in the benefits of space activities, some ASEAN member countries (see Table No. 3.1) are members of the UN Committee on the Peaceful Uses of Outer Space (UNCOPOUS). In addition, although all ASEAN countries are, in fact, non-space faring nations, they have recently participated in space activities in order to accelerate their economic and social development. However, in spite of a lack in their own space technology, some ASEAN countries (such as Indonesia, Malaysia, the Philippines, Singapore, Thailand and Vietnam) have also created national institutions responsible for carrying out their own space activities and research to achieve their desired goals, for example promoting national security, accelerating scientific and technological progress, stimulating commercial payoff, promoting economic and social development, and obtaining tangible benefits for their societies.

Secondly, although the Outer Space Treaty 1967 establishes the general principles of exploration and use of outer space, as well as a series of other rights

185 Article I (para. II) of the Outer Space Treaty 1967.
186 Article II of the Outer Space Treaty 1967.

and responsibilities,[187] there is currently no stated principle on the equitable access by states to space technologies. Nevertheless this can be implied from Article I (paragraph 1) of the Treaty, which provides that the benefits and the interests of such exploration and use of outer space shall be carried out for the benefit and interests of all countries. Furthermore, under the provision, countries shall benefit "irrespective of their degree of economic or scientific development."[188] *De jure*, the terms "for the benefit" and "in the interests" of all countries in the exploration and use of outer space are not meant to serve only the benefit and interests of countries which have the technological capability to explore and utilize outer space, but all nations (including nations without space technological capabilities) in the spirit of international cooperation in attempting to expand access to space technology and applications for the benefit of all countries, including developing countries.[189]

However, Article I (paragraph 1) states a general principle which is vaguely formulated.[190] Consequently, it may not be readily enforceable in practice. Moreover, the space powers' policy makes a distinction between participation in and benefits from technological development. According to this policy, the space powers usually provide technological assistance to developing countries based on reimbursement, for example furnishing launch and other services; however, they do not transfer know-how. Despite the need of ASEAN nations to utilize and develop space technologies to accelerate social and economic development, they are held back by a lack of scientific know-how. If ASEAN member countries want to break the cycle of technological dependency and also want the know-how from the non-ASEAN space faring countries, they need to combine their efforts to research and develop space technologies that could be used in outer space for peaceful purposes.

Finally, a basic legal document[191] exists supporting today's international cooperation in space activities, such as promoting the development of space science and technology and their application; fostering the development of relevant and appropriate space capabilities in interested states; and, facilitating the exchange of expertise and technology among countries.[192] Thus, ASEAN member countries, as non-space faring and mostly developing countries, should consider and concede to the great importance of international cooperation in

187 Jasentuliyana, N., *International Space Law and the United Nations*, Kluwer Law International, 1999, p. 174.
188 *Ibid.*
189 *Ibid.*, p. 175.
190 *Ibid.*, p. 176.
191 Declaration on International Cooperation in the Exploration and Use of Outer Space for the Benefit and in the Interest of All States, Taking into Particular Account the Needs of Developing Countries, adopted on 13 December1996 (Resolution 51/122).
192 *Ibid.*

the exploration and exploitation of outer space for peaceful purpose. International space cooperation is very important in order for ASEAN countries to participate in peaceful space activities. This cooperation and the supporting documents can guarantee that all ASEAN countries have access to technology for the exploration and use of outer space, irrespective of the country's degree of economic, social or scientific and technological development. Although ASEAN nations have cooperated in space activities not only among themselves but also with other countries and organizations outside the region (see Table No. 3.1), these pursuits do not adequately meet their needs for developing a sustainable space industry. Continued failure in all ASEAN member countries includes lack of space knowledge and computer hardware and software, lack of experienced personnel, weaknesses in the decision-making process in the ASEAN region, and lack of wholehearted space cooperation among ASEAN member countries. In order to support sustainable space development, all of these failures must be addressed.

3.12 CONCLUSION

ASEAN space activities should be performed in a spirit of international peaceful cooperation. Therefore studies should be made of the implications of joint large-scale space systems in the region, taking advantage of pooled resources for sharing costs and benefits, providing access to the necessary facilities, providing access to technology and experience, and increasing domestic support for space programs. In order to increase cost effectiveness, regional space cooperation in particular would reduce the costs for each ASEAN member country involved. A combined effort by all the ASEAN member countries would be much greater than the effort of one country alone. Cooperation would also minimize the gap between more and less developed ASEAN members, and foster mutual understanding among them. In addition to taking steps to further strengthen the mechanisms of space activities in the Southeast Asian region, each country in the region should prepare an updated inventory of its resources and technological capabilities in the fields of space activities. National institutions responsible for space activities or research should be established or strengthened to serve in a cooperative network. In order to study the feasibility of creating ASEAN regional institutions to develop space activities, ASEAN could study other successful regional space organizations with both specialized and general functions, such as the European Space Agency, EUMETSAT and ARABSAT. These space agencies are good examples of how several countries can work together and jointly benefit from utilizing outer space for peaceful purposes.

Table No. 3.1: ASEAN Countries and Space Activities (2007)

ASEAN Member Countries	*UN Treaties on Outer Space*	*Member of UNCOPUOS*	*Space Technology Applications*	*Space Science & Technology Development*	*International Space Cooperation*
Brunei	No	No	Yes	N/A.	Yes
Cambodia	LIAB (s)	No	Yes	N/A.	Yes
Indonesia	OST (r), ARRA (r), LIAB (r), REG (r)	Yes	Yes	Yes	Yes
Laos	OST (r), ARRA (r), LIAB (r)	No	Yes	N/A.	Yes
Malaysia	OST (s), ARRA (s)	Yes	Yes	Yes	Yes
Myanmar	OST (r), ARRA (s)	No	Yes	N/A.	Yes
Philippines	OST (s), ARRA (s), LIAB (s), MOON (r)	Yes	Yes	Yes	Yes
Singapore	OST (r), ARRA (r), LIAB (r), REG (s)	No	Yes	Yes	Yes
Thailand	OST (r), ARRA (r)	Yes	Yes	Yes	Yes
Vietnam	OST (r), ARRA (s)	Yes	Yes	Yes	Yes

(s) – Signature; (r) – Ratification; and, (a) – Accession

4 Modern Regional Space Cooperation A Comparative Study for Launching an ASEAN Space Organization

> 'If international cooperation is to be a major feature of future space activities, an important question is: how best to organize cooperative efforts in space?'
>
> By John Logsdon[1]

> International cooperation should be conducted in the modes that are considered most effective and appropriate by the countries concerned, including, inter alia, governmental and non-governmental; commercial and non-commercial; global, multilateral, regional or bilateral; and international cooperation among countries in all levels of development.[2]

Since the onset of the space age, the concept of international space cooperation had long been known as the most effective way to benefit from space exploration and utilization. However, this raises the question which kind of international cooperation will and should have an impact on space activities in the future of ASEAN countries. Focusing on a comparative study of the cooperative strategies of the European Space Agency (ESA), EUMETSAT, ARABSAT, and the Asia-Pacific Space Cooperation Organization (APSCO), this chapter will describe some important themes of recent effective regional space cooperation. These provide guidance for ASEAN's cooperative space strategy and suggest methods to meet the challenges of international space cooperation in the South-East Asian region.

4.1 European Space Agency

The European Space Agency (ESA) is currently one of the most successful examples of regional space cooperation linking technological developments to applications in modern society.[3] The ESA, established as an organization

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1 International Space University, KEY TO SPACE: An Interdisciplinary Approach to Space Studies, Ed by A. Houston and M. Rycroft, International Space University Publication, USA: The McGraw-Hill Companies, Inc., 1999, p. 2-22.

2 The Declaration on International Cooperation 1996, para.4.

3 Speaking on the European Space Agency's mission, Jean-Jacques Dordain, the ESA's Director General since 2003, briefly said that:

under public international law by the Convention for the Establishment of a European Space Agency 1975,[4] is dedicated exclusively to the promotion of peaceful coordination and execution of European space activities. Member states of the ESA presently include Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg,[5] the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and the United Kingdom; Canada and Hungary participate in selected ESA programs.[6] Furthermore, ESA was formed out of, and took over, the rights and obligations of the European Space Research Organization (ESRO)[7] and the European Organization for the Development and Construction of Space Vehicle Launchers (ELDO).[8][9] As result of the

'Today Space activities are pursued for the benefit of citizens, and citizens are asking for a better quality of life on earth. They want greater security and economic wealth, but they also want to pursue their dreams, to increase their knowledge, and they want younger people to be attracted to the pursuit of science and technology. I think that space do all of this: it can produce a higher quality of life, better security, more economic wealth, and also fulfill our citizens' dreams and thirst for knowledge, and attract the young generation. This is the reason space exploration is an integral part of overall space activities. It has always been so, and it will be even more important in the future.'
See http://en.wikipedia.org/wiki/European_Space _Agency#endnote_Jaxainterview (01/04/2006).

4 The Convention for the Establishment of a European Space Agency (ESA) was opened for signature on 30 May 1975 and formally entered into force on 30 October 1980 (the "ESA Convention").

5 Luxembourg became the ESA's 17th member with effect from 30 June 2005. Cooperation between the ESA and Luxembourg began with the signing of a dedicated agreement on 12 September 2000 enabling Luxembourg to participate in the Agency's ARTES telecommunications programme.

6 Canada and Hungary are participating under cooperation agreements.

7 The European Space Research Organization (ESRO) was created in 1962 by means of the ESRO Convention, which entered into force 1964 when Belgium, Germany, France, Italy, the Netherlands, Spain, Sweden, Switzerland, and the United Kingdom ratified the text of the Convention signed in June 1962. The ESRO was conceived altogether differently from the ESA: the organization was created to implement and run a truly cooperative space programme. Clause V of the Convention stipulated that the organization could (a) design and construct sounding-rocket payloads, satellite and space probes (b) procure launch vehicles and arrange for their launching, (c) provide means for the reception, collation, reduction and analysis of data, and (d) support research and development as required for its programme. See, European Centre for Space Law, "The Implementation of the ESA Convention: Lessons from the Past", *Proceedings of the ESA/EUI International Colloquium*, Florence, 25 and 26 October 1993, Martinus Nijhoff Publishers: Dordrecht, 1994, p. 14.

8 The European Launcher Development Organization (ELDO) was established in 1964 and consisted of seven European countries. It developed the Kourou's Equatorial Space Range. It was also planned that ELDO would build a Europa 1 multistage launch vehicle, a cooperative project combining a British first stage, a French second stage, and a German third stage and an Italian satellite. ELDO was unsuccessful primarily due to organizational problems.

9 United Nations, *Space Activities of the United Nations and International Organizations*, United Nations Publication: New York, 1992, p. 135.

inadequacy of the ESRO Convention together with a crisis in ELDO,[10] on 20 December 1972 participants at the European Space Conference decided to create a new organization, the European Space Agency, which would aim at giving Europe a flexible and efficient organization, taking due regard of past experiences[11] in order to attempt to harmonize and to coordinate national programmes with the joint effort of European member states. This meant that national civil space programmes might gradually be phased out, leaving an ESA monopoly on space activities.[12] This, however, did not happen, as the following will show. The ESA was established by ten European countries in 1975.[13] The ESA Convention was opened for signature on 30 May 1975, in Paris and was implemented *de facto* from 31 May up to its entry into force officially on October 1980 (at the same time the ESRO and ELDO conventions expired[14]).[15]

Although the European Space Agency took over the heritage left by the ESRO, it was not intended to be merely a successor to the ESRO and ELDO because it aimed for much more. For example, the plan was to integrate European national space programmes into one regional European space programme, and to pursue and strengthen European cooperation. The main purpose of the ESA is to provide and promote, for exclusively peaceful purposes, cooperation among European states in space activities and applications, with a view to their being used for scientific purposes and for operational space application systems:

> '1. By elaborating a long-term European space policy and concerting the member states' policies with respect to other national and international organizations and institutions;

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10 In the beginning of the 1960's some European countries decided to join efforts in order to ensure that Europe would not be dependant in the area of space activities on the USA and the USSR. They created two distinct organizations: ESRO and ELDO. See, Walter M. Thiebaut, "Aspect of Commercialization of Space Activities in Europe", *Proceedings of the 37th Colloquium on the Law of Outer Space*, 1994, p. 346.

11 *Ibid.*, p. 349.

12 European Centre, *supra* note 7, p. 15.

13 There were ten original members of the ESA: Belgium, Denmark, France, Germany, Italy, the Netherlands, Spain, the United Kingdom, Sweden, and Switzerland. Ireland joined later in the year; see, M.G. Bourely, *The Legal Status of the European Space Agency, Proceedings of the 23rd Colloquium on the Law of Outer Space, 1980*, p. 129-132; and, History of the European Space Agency, http://www.eas.int/SPECIALS/about_ESA/SEM7VFEVL2F_0.html (17 January 2008)

14 Article XXI (2) of the ESA Convention: 'The Convention for the establishment of European Space Research and Organization and the Convention for the establishment of a European Organization for the Development and Construction of Space Vehicle Launchers shall terminate on the date of the entry into force of this Convention. '

15 Lafferranderie, G., "The European Space Agency – Present and Future", *Proceedings of the 38th Colloquium on the Law of Outer Space*, 1995, p. 190.

2. By elaborating and implementing a common European space programme;
3. By coordinating the common European space programme and the national programmes, and by integrating the latter progressively and as completely as possible into the common European space programme, in particular with regard to the development and construction of application satellites;
4. By elaborating and implementing the industrial policy appropriate to its programme and recommending a coherent industrial policy to the Member States.'[16]

Consequently, the ESA's objective continued through the elaboration and performance of a long-term space policy, the recommendations of space objectives to the member states, and by carrying out space-related activities.[17] Moreover, the ESA is involved in various activities. Firstly, it has a scientific programme with basic activities such as technological research, documentation, education and the study of future projects and in addition it aims to harmonize national and international programmes by way of information. All the member countries participate in these activities. Secondly, it has implemented other satellite and launcher programmes in which the member states may choose to participate or not, according to their respective interests. Thirdly, it allows access to operational application satellites to user agencies who may wish to launch their own satellites. Finally, it endeavors to coordinate and integrate all space projects envisaged in Europe.[18]

As an international organization, the European Space Agency has a legal personality and capacity.[19] Hence, it is able to cooperate with other international and national organizations and with non-member states[20] and to conclude agreements with these entities. The ESA does not fall under the umbrella of the European Union but there are ties between organizations, with various agreements in place with joint activities such as Galileo programme.[21]

16 Article II of the ESA Convention.
17 Kevin J. Madders, "European Space Agency" in *Encyclopedia of Public International Law (EPIL)* Vol. II, p. 204; and, Stephan Hobe, Katharina Kunzmann, Julia Neumann and Tomas Reter, "A New Chapter for Europe in Space", *Zeitschrift fur Luft- und Weltraumrecht*, vol. 54:3, 2005, p. 338.
18 European Space Research Organization (ESRO), *Europe In Space: A Survey prepared by the European Space Research Organization (ESRO)*, Paris, 1974, p. 16.
19 Article XV and Annex I of the ESA Convention.
20 Article XIV of the ESA Convention.
21 Hobe, *supra* note 17, p. 339; GALILEO is based on a constellation of 30 satellites and ground stations providing information concerning the positioning of users in many sectors such as transport, social services, the justice system and customs services, public works, search and rescue systems, or leisure. The GALILEO programme is launched by the European Union and the European Space Agency; see, Council of the European Union, Council Resolution of 5 April 2001on Galileo (2001/c 157/01); Council Regulation (EC) No 876/2002 of 21 May 2002 setting up the Galileo Joint Undertaking; and, ec.europa.eu/space/programmes/galileo_en.html.

During the past thirty years, the ESA has had remarkable success increasing the scale of the human, technical and financial resources required for activities in the field of space,[22] and in promoting cooperation[23] among European states in space research and technology and their space applications, exclusively for peaceful purposes. The ESA is a useful model for the other regions of the world.[24]

4.2 EUMETSAT

The European Organization for the Exploration of Meteorological Satellites (EUMETSAT) is an intergovernmental organization founded by European states and their meteorological service organizations.[25] The EUMETSAT Convention entered into force on 19 June 1986. EUMETSAT is a full legal entity and has the capacity to contract, to acquire and arrange movable and immovable property and also to be party to legal proceedings.[26] The members of EUMETSAT are Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, Turkey and the United Kingdom. Each member state has one vote. Major decisions have to be taken unanimously or with a two-thirds majority also representing at least two-thirds of the financial contributions.[27] EUMETSAT's activities complement the overall European space strategy, which involves

22 See the preamble of the ESA Convention.

23 Article XIV of the ESA Convention states:
'ESA may, upon decision of the Council taken by unanimous vote of all member states, co-operate with other international organizations and institutions and with governments, organization and institutions of non-member states, conclude agreements with them to this effect.
Such cooperation may take the form of participation by non-member states or international organizations in one or more of the programmes under Article V.1 (a) (ii) and V.1 (b). Subject to the decisions to be taken under paragraph 1, the detailed arrangements for such cooperation shall be defined in each case by the Council by two-thirds majority of the states participating in the programme in question. These arrangements may provide that a non-member state shall have a vote in the Council when the latter examines matters pertaining exclusively to the programme in which that state participates.
Such cooperation may also take the form of according associate membership to non-member states which undertake to contribute at lest to the studies of future projects under Article V.1 (a) (i). The detailed arrangements for each such associate membership shall be defined by the council by a two-thirds majority of all member states.'

24 Volker Liebig and Kai-Uwe Schrogl, *Space Applications and Policies for the New Century*, Peter Lang GmbH: Germany, 2000, p. 148.

25 http://www.eumetsat.int/idcplg?IdcService=ss_GET_PAGE&nodeId=469&I=en (04-01-2006).

26 Article 1(3) of the *Convention for the Establishment of a European Organization for the Exploitation of Meteorological Satellites (EUMETSAT)* (the "EUMETSAT Convention").

27 http://www.eumetsat.int/Home/Main/Who_We_Are/MemberCoopStates/index.htm?l=en (04-01-2006): "Member and Cooperating States".

partners at a national level as well as the ESA and the European Union. Notably, the strategy plan of EUMETSAT includes the following:

- Ensure continuity of and consolidate, the operational meteorological and climate observing facilities with adequate satellite and ground infrastructure, and user services;
- Ensure that the European contribution to global operational satellite systems is optimized so that the global system meets the needs of Europe and contributes effectively to the requirements of World Meteorological Organizations;
- Provide additional services in meteorology, climate and environment for Europe;
- Contribute to the alleviation of the impact of weather related natural disasters;
- Provide data for use in improved management and preservation of the Earth's resources to complement environmental policy;
- Extend the user base for EUMETSAT missions through collaboration in research activities and support for training;
- Provide assistance to developing countries in both Europe and Africa in the exploration of EUMETSAT data;
- Strengthen EUMETSAT's role in international fora by acting as an authoritative European voice on climate and environmental monitoring;
- Facilitate the identification of future needs for satellite data services;
- Establish bilateral and multilateral agreements to access relevant data from non-EUMETSAT missions.'[28]

The purposes of EUMETSAT are to establish, maintain and exploit European systems of operational meteorological satellites, taking into account, as far as possible the recommendations of the World Meteorological Organization (WMO), and to contribute to the operational monitoring of the climate and the detection of global climatic changes.[29] The activities of EUMETSAT contribute to a global meteorological satellite-observing system coordinated with other international organizations. EUMETSAT currently administers distribution and charging for data generated by its geostationary and polar satellites. The EUMETSAT data policy balances the free exchange of data within the worldwide meteorological community with needs for attracting investment for EUMETSAT's satellite system. The EUMETSAT data policy is based on the fact that EUMETSAT has full ownership and all utilization rights of their satellites and data.

As an intergovernmental organization, EUMETSAT is one of the key improvements in the field of space applications in the European region. The organization also supports the interests of European countries in the World Weather Watch (WWW), in which it actively participates not only on behalf of member

28 http://www.eumetsat.int/idcplg?IdcService=SS_GET_PAGE&nodeId=468&l=en (04-01-2006): "EUMETSAT's 25-year strategic plan".

29 Article 2(1) of the EUMETSAT Convention.

states, but also for the world community, in accordance with the traditions upheld by the meteorological services of every country.[30]

4.3 ARABSAT

The Arab Satellite Communication Organization (ARABSAT) was founded in 1976.[31] ARABSAT is an intergovernmental entity competent to design, construct and establish an international communications satellite system of a regional character.[32] ARABSAT was established within the framework of the Arab League. The organization, as a legal entity, has the right, within the scope of its objectives, to conclude and contract agreements, to manage and possess impermanent and permanent property, and to take legal and juridical procedures.[33] In terms of membership of the organization, there are currently twenty-one members,[34] all of which are Arab states and members of the Arab League.[35] These countries have created an Arab space network using a regional satellite for the purpose of communications, information, culture, education and other developments that may utilize this network in order to realize the objectives of the Arab League Charter.[36] In accordance with international standards, ARABSAT was given a mandate to design, configure and

30 M.G. Bourely, "EUMETSAT: A New European Space Organization for Cooperation in the Field of Meteorology", *Proceeding of the 26th Colloquium on the Law of Outer Space,* 1983, p. 195-196.

31 Since 1967, Arab nations have been discussing plans to have their own communications satellite. The Arab Ministers of Information meeting in Tunisia initiated the first study on this subject. On the basis of this study, the Arab League approved a new approach to the subject In 1972, the Arab League and Arab Broadcasting States Union (ABSU) asked UNESCO to conduct a study on the possibilities and objectives existing in Arab nations for a satellite communications system based on regional cooperation. Thus through the combined efforts of ABSU and the first Arab conference on space communications, held in Amman in 1972, specifications for an Arab satellite communications system were worked out. Nine years later, on April 14, 1976, the Arab Satellite Communication Organization (ARABSAT) was established by the member states of the Arab League with a more extensive goal: to serve the needs of the telecommunication, information, culture and education sectors; see, Adel A. Ziadat, "Arabsat: Regional Development in Satellite Communication: Lessons from the Arabsat Venture", *Zeitschrift für Luft-und Weltraumrecht,* 37, Jahrgang 1988, p. 36; and, http://www.arabsat.com/about_us/index.html (04-01-2006).

32 Wulf van Kries, "The ARABSAT Agreement – Text and Comments", *Zeitschrift fur Luft-und Weltraumrecht,* 27, Jahrgang 1978, p. 194.

33 *Ibid.,* p. 181 and Article 2 of Agreement of the Arab Corporation for Space Communication 1976 (the "ARABSAT Agreement").

34 Algeria, Bahrain, Djibouti, Egypt, Iraq, Jordan, Kuwait, Lebanon, Libya, Mauritania, Morocco, Oman, Palestine, Qatar, Saudi Arabia, Somalia, Sudan, Syria, Tunisia, the United Arab Emirates, and Yemen.

35 Article 4 (1) of the ARABSAT Agreement

36 The preamble of the ARABSAT Agreement; and, Kries, *supra* note 32, p. 179.

operate a satellite system, as well as to define and deliver a portfolio of satellite-based, public and private telecommunications services to Arab states.[37]

The major aims of ARABSAT are to provide an Arab space sector by establishing and maintaining a telecommunications system for the Arab region;[38] to assist financially and technically in designing and constructing ground stations; to undertake research and development in space science and technology in order to encourage and enhance the telecommunications industries necessary to supply domestic installations to the space and ground segment; and, to undertake, via the Arab satellite network, television and radio transmissions as well as to set up the regulations for controlling the use of television and radio channels.[39]

The membership of ARABSAT is comprised of members of the Arab League; non-Arab League states are not allowed to participate. The founding documents of ARABSAT stipulate that each member state has the right to one vote in both the General Assembly and for the Board of Directors.[40] The ultimate goal of ARABSAT is "to invest in order to provide an Arab space segment."[41] It is intended that ARABSAT will fulfill the aspirations of Arab states to have their own regional satellite system as a means of socio-economic development of the region and paving the way for the transfer of technology. Even though the ARABSAT documents contain no specific mention of the general guiding principles set out in the Outer Space Treaty 1967, all the activities of ARABSAT promote international space cooperation for peaceful purposes and for the welfare and the interest of all participating nations.

4.4 Asia-Pacific Space Cooperation Organization

The Asia-Pacific Space Cooperation Organization (APSCO) is a non-profit intergovernmental organization with full international legal status.[42] APSCO is designed in order to promote the peaceful use and exploration of space resources and space applications in the Asia-Pacific region for the progress and common development of humankind, and to strengthen exchange and

37 See http://www.arabsat.com/about_us/index.html (04-01-2006).
38 Article 3 (1) of the ARABSAT Agreement.
39 Article 3 (2) of the ARABSAT Agreement.
40 Articles 10 and 12 of the ARABSAT Agreement; and, Adel, *supra* note 31, p.36.
41 Adel *ibid.*, p. 36; and, Kries, *supra* note 32, p.182.
42 Article 3 of the *Convention on Establishment of the Asia-Pacific Space Cooperation Organization* 2003 (the "APSCO Convention").

cooperation[43] between member states in space technology under the principle of mutual benefit and equality.[44] APSCO was established by the APSCO Convention, signed by representatives from the governments of Bangladesh, China, Indonesia, Iran, Mongolia, Pakistan, Peru and Thailand on 28 October 2005. APSCO's headquarters are in Beijing, China. Thus, Indonesia and Thailand have dual membership in ASEAN and APSCO.[45] APSCO membership is available to all Asia-Pacific states that are members of the United Nations. In addition, UN-member states outside the Asia-Pacific region can be granted associate membership in APSCO subject to consensus by the APSCO Council.[46] Furthermore, any member state of the UN or any international organization involved in space activities may be granted observer status by the unanimous approval of the Council.[47] Each state that is a full member of APSCO has full voting rights, but associate members and observers cannot vote at Council meetings.[48] All member states are nevertheless entitled to participate in the cooperation programs and activities pursued by the organization and they are also required to make financial contributions.[49]

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43 Article 6 of the APSCO Convention:
'The Organization shall carry out activities in the following fields of cooperation:
1. Space technology and programs of its applications;
2. Earth observation, disaster management, environmental protection, satellite communications and satellite navigation and positioning;
3. Space science research;
4. Education, training and exchange of scientists/ technologists;
5. Establishment of a central data for development of programs of the Organization and dissemination of technical and other information relating to the programs and activities of the Organization; and
6. Other cooperative programs agreed upon by the Member States.'

44 See Charter for proposed Asia-Pacific space group passed in Beijing, http://english.people.com.cn/200311/12/eng20031112_128144.shtml (06-02-2006).

45 In 1992, China initiated a movement for multilateral co-operation in space technology and applications in the Asia-Pacific region along with Thailand and Pakistan and has been promoting the establishment of the organization ever since. See, Cao Desheng (China daily), "Asia-Pacific Nations Sign Space Convention", Updated 2005-10-29, http://www.chinadaily.com.cn/english/doc/2005-10/29/content_488722.htm (6-February-2006). Furthermore, in April 1998, the governments of China, Iran, Korea, Mongolia, Pakistan and Thailand signed the Memorandum of Understanding on Cooperation in Small Multi-Mission Satellite and Related Activities in Thailand. These signatory countries helped to enhance the progress of space technology and space application in the Asia-Pacific region. Other countries in the Asia-Pacific region may also join the cooperative project. See, Government White Paper (IV. International Cooperation), http://www.china.org.cn/e-white/8/20-5.htm (3-Janruary-2005).

46 Article 9(7) of the APSCO Convention.

47 Article 9(6) of the APSCO Convention .

48 Article 9(7) of the APSCO Convention .

49 Articles 9(3) and (4) of the APSCO Convention .

The objectives of APSCO are:

'· To promote and strengthen the development of collaborative space programs among member states by establishing the basis for cooperation in peaceful applications of space science and technology;
· To take effective action to assist member states in such areas as space technological research and development, applications, training and implementing space development policies;
· To promote cooperation and joint development among members;
· To share achievements among the member states in space technology and its applications as well as in space science research;
· To enhance cooperation among relevant enterprises and institutions of the member states;
· To promote the industrialization of space technology and its applications; and
· To contribute to the peaceful uses of outer space in the international cooperative activities in space technology and its applications.'[50]

Today, it is too early to say whether APSCO, as the newest regional organization promoting space cooperation, is successful in its space activities and programmes. APSCO is, step-by-step, emulating the development of the European Space Agency model.[51] However, APSCO is effectively the result of implementing the principle of international cooperation in order to promote the peaceful uses of outer space within the Asia-Pacific region.

4.5 A Comparative Analysis

It is necessary to examine the mode of fostering cooperation that is most appropriate to the sustainable development of international space cooperation in the South-East Asian region, which can play a vital role in the effectiveness of the work. A comparative study of the major components of existing regional space agencies is a useful method to analyze effectiveness.

4.5.1 The Structure of Organizations

In order to facilitate the implementation of their objectives, the ESA,[52] EUMETSAT,[53] and APSCO[54] are made up of two main bodies. ARABSAT[55] is com-

50 Article 4 of the APSCO Convention .
51 He Qizhi, "Organizing Space Cooperation in the Asia-Pacific Region", *Space Policy*, Vol. 9, No. 3, August 1993, p. 209-212.
52 Article X of the ESA Convention.
53 Article 1(4) of the EUMETSAT Convention.
54 Article 10(1) of the APSCO Convention.
55 Article 9 of the ARABSAT Agreement.

posed of three main bodies. However, the bodies of these organizations are essentially relying on both the policy-making and the executive bodies.

a) Policy-making

In the ESA,[56] EUMETSAT,[57] and APSCO,[58] the highest office is the Council, called the General Assembly[59] in ARABSAT. These policy-making branches are primarily composed of representatives of member states.[60] Although each member state has basically one vote in the Council or General Assembly,[61] a member state may nevertheless lose this vote in cases in which a member state does not take part in a mandatory programme[62] or its financial debts to the organization are higher than its financial contributions due for the current year.[63] Primarily, the policy-making branches of each of these organizations define and approve policies in pursuit of the organization's founding purpose and adopt all the measures necessary for the implementation

56 Article XI of the ESA Convention .

57 Article 4 of the EUMETSAT Convention.

58 Article 11 of the APSCO Convention.

59 Article 9 of the ARABSAT Agreement.

60 Article XI.1 of the ESA Convention.; Article 4(1) of the EUMETSAT Convention: "The representative of each member state, one of whom should be a delegate of his country's Meteorological Service, is composed of not more than two"; Article 11 of the APSCO Convention: "The representative of each member state should be a minister or ministerial representative of the national space agency of each member state"; and Article 10 of the ARABSAT Agreement: "The representative of all ARABSAT members is the ministers in charge of Telecommunications."

61 Article XI. 6(a) of the ESA Convention; Article 14 of the APSCO Convention; Article 10 of ARABSAT Agreement; and, Article 5.4 of the EUMETSAT Convention.

62 Article XI.6 of the ESA Convention:
'(a) …However, a Member State shall not have the right to vote on the matters concerning exclusively an accepted programme in which it does not take part.'

63 Article XI.6 of the ESA Convention: '(b) A Member state shall have no vote in the Council if the amount of its arrears of contributions to the Agency in respect of all activities and programmes covered by Article V in which it participates exceeds the assessed amount of its contributions for the current financial year. Moreover, if the amount of a Member State's arrears of contributions to any one of the programmes under Article V.1 (a) (ii) or V.1 (b) in which it participates exceeds the assessed amount of its contributions to that programme for the current financial year, then that Member State shall have no vote in the Council on the questions relating exclusively to that programme. In any such case, the Member State may nevertheless be authorized to vote in the Council if a two-thirds majority of all Member States considers that the non-payment of contributions is due to circumstances beyond its control.
Article 5.4 of the EUMETSAT Convention: 'Each Member State shall have no vote in the Council if the amount of its arrears of contributions exceeds the assessed amount of its contributions for the current financial year. In such case the Member States concerned may nevertheless be authorized to vote if a two-thirds majority of all the Member States entitled to vote considers that the non-payment is due to circumstances beyond its control.'

of each institution's Convention and other establishing documents.[64]

64 The following are the functions of the ESA Council such as:
a) to define the policy in pursuit of the Agency's goals;
b) to approve of all activities and mandatory programmes and make determinations on the level of resources;
c) to adopt recommendations addressed to member states;
d) to consider membership applications;
e) to adopt annual work plans;
f) to adopt annual general budgets and programme budgets;
g) to adopt financial regulations and all other financial arrangements of the Agency;
h) to review expenditures on the mandatory and optional programmes and activities;
i) to adopt staff regulations;
j) to manage the transfer technology and products to outside the territories of member states under the activities of the Agency or with its help;
k) to make arrangements in the event of a member state's withdrawal and ceasing to be a member;
l) to adopt its own rules of procedure; and
m) to take all other measures necessary for the fulfillment of the Agency's goals.
See Article XI.5 of the ESA Convention.
For EUMETSAT, the responsibilities of the Council include:
a) to adopt all the measures necessary for the implementation of the EUMETSAT Convention;
b) to decide on the accession of states, the adoption of mandatory and optional programmes and general budget;
c) to appoint the Director-General;
d) to adopt annual budgets;
e) to decide on the exclusion of member states;
f) to decide on the dissolution of EUMETSAT;
g) to approve the conclusion of any agreement with member states, international governmental and nongovernmental organizations, and national organizations of member states;
h) to approve the conclusion of cooperation agreements with non-member states; and
n) to decide on the creation of subsidiary bodies and working groups.
See Article 5 of the EUMETSAT Convention.
For APSCO, the responsibilities of the Council are as follows:
a) to define and approve APSCO's policies, including rules, regulations, law in pursuit of its objectives;
b) to approve accession, deprival and termination of membership and make decisions on admission of observers and associate members;
c) to adopt and approve of its own rules of procedure;
d) to adopt and approve of annual reports and working plans of the organization;
e) to adopt and approve of cooperative programs and their financial budgets;
f) to adopt and approve of the proportion of the financial contribution of member states and the annual budgets of the organization;
g) to approve the five-year budget plan according to the present level of financial resources and by determining the financial resources to be made available to the organization for the subsequent five-year period;
h) to approve of the annual expenditures and financial statements for the organization;
i) to approve of all other management provisions for the organization;
j) to approve and publish the reports on the annual audited accounts of the organization;
k) to appoint the Secretary-General and approve other officials who are to be appointed by the Council;

Furthermore, in order to implement the purpose of the organization, except for ARABSAT, these policy-making branches, have the authority to establish committees, subordinate bodies, and institutions and branch offices.[65] For example, currently in the ESA's structure, there is the Science Programme

l) to decide on the establishment of institutions and branch offices and approve their structure, including that of the Secretariat and their staff quotas;
o) to appoint other functionaries for effective performance of the activities of the organization; and
p) to interpret this Convention if so requested by member states.
See Article 12 of the APSCO Convention.
The functions of the General Assembly of ARABSAT include:
a) laying down of the general policy of the Corporation and drawing up plans which help to achieve the aims and activities of the Corporations as stipulated in this Agreement and to pass resolutions and recommendations to the Board of Directors in this respect;
b) sanctioning the necessary projects to expand and develop the space sector and its requirements;
c) setting up the standards and general rules which must be maintained in the ground stations so as to make them suitable to communicate with the space sector as recommended by the Board of Directors;
d) setting up regulations with respect to financial settlements in the event of a new member joining or the withdrawal of a member or the re-allocation of shareholding proportions;
e) settlement of disputes which may arising between the Corporation and members in accordance with Article 19 of the Agreement;
f) ratifying the general budget and balance sheet of the Corporation;
g) organizing the relations of the Corporation with international organizations and setting up the necessary principles for this purpose in accordance with general international regulations, etc.
See Article 11 of the ARABSAT Agreement.

65 Article XI.8 of the ESA Convention:
'8. (a) The Council shall establish a Science Programme Committee, to which it shall refer any matter relating to the mandatory scientific programme under Article V.1 (a) (ii). It shall authorize that Committee to take decisions regarding that programme, subject always to the Council's functions of determining the level of resources and adopting the annual budget. The term of reference of the Science Programme Committee shall be determined by the Council by a two-thirds majority of all Member States and in accordance with this Article.
b) The Council may establish such other subordinate bodies as may be necessary for the purpose of the Agency. The establishment and terms of reference of such bodies, and the cases in which they have powers of decision, shall be determined by the Council by a two-thirds majority of all Member States.
c) When a subordinate body examines a question relating exclusively to one of the optional programmes referred to in Article V.1 (b), non-participating States shall have no vote unless all participating States decide otherwise.'
Article 4.4 of the EUMETSAT Convention:
'The Council may establish subsidiary bodies and working groups as it deems necessary for the achievement of the objectives and programmes of EUMETSAT.'
Article 12 of the APSCO Convention: 'The Council shall (l) Decide to establish institutions and branch offices and approve their structure, including that of the Secretariat and their staff quotas.'

Committee,[66] the European Space Operation Center (ESOC),[67] the European Space Research and Technology Center (ESTEC),[68] the European Space Research Institute (ESRIN),[69] and the European Astronauts Center (EAC).[70] In the case of ARABSAT, these powers are left to the executive powers of the Board of Directors.[71]

b) Executive Branch

The executive branch, under the leadership of its named Director General,[72] Secretary General,[73] or General Manager[74] is responsible for carrying out the day-to-day activities of the organization. The chief executive officer of each of the organizations is also a legal representative of the organization[75] and he or she has responsibility and full authority to manage the organization and to execute the organization's programmes, policy and purpose. Unlike the other organizations, the General Manager of ARABSAT is responsible to and under

66 The Science Programme Committee (SPC) has total authority over the scientific projects, including their preliminary study, approval, financing and monitoring of the development of common facilities and the operational phases of a mission. However, the level of its budget is set by the Council, which has the authority to determine the multi-year level of resources and to adopt the annual budget. In fact, the Council has been very cooperative with the scientists, even within difficult constraints, and has often gone along obligingly with what one might call a "creative budgeting" approach, at times when the SPC tried to find ways out of delicate financial impasses. See, Roger M. Bonnet and Vittorio Manno, *International Cooperation in Space: The Example of the European Space Agency,* Harvard University Press: USA, 1994, p. 26.

67 The European Space Operations Center (ESOC), established in September, 1967 and located in Darmstadt, Germany, is the primary satellite monitoring, data retrieval, and control facility for spacecraft. See United Nations, *Space Activities of the United Nations and International Organizations,* New York: United Nations Publication, 1992, p. 135; and, http://www.esa.int/SPECIALS/ESOC/index.html.

68 The European Space Research and Technology Center (ESTEC) in Noordwijk, the Netherlands, houses more than half of all ESA personnel in its role as the satellite environmental testing facility. This center is the primary research center and manages the satellite projects. See, United Nations, *ibid.*; and, http://www.esa.int/esaCP/SEMOMQ374OD_index_0.html.

69 The oldest of the ESA's main centers is the European Space Research Institute (ESRIN), established in Frascati, Italy, in 1966 by the ESA's predecessor, the European Space Research Organization (ESRO). This institution supports the ESA documentation service and manages the data obtained from remote sensing satellites. See, United Nations *supra* note 67; and, http://www.esa.int/SPECIALS/ESRIN_SITE/index.html.

70 The European Astronauts Center (EAC) in Cologne, Germany is the newest and smallest of the four ESA centers. This center is responsible for the selection and training of astronauts for space station missions; see, http://www.esa.int/esaHS/ESAJIE0VMOC_astronauts_0.html.

71 Articles 13.20 of the ARABSAT Agreement.

72 Article XII of the ESA Convention and Articles 5.2 (d) and 6 of the EUMETSAT Convention.

73 Articles 15 and 16 of the APSCO Convention.

74 Articles 13.13, 14.2, and 15 of the ARABSAT Agreement.

75 Article XII 1(b) of the ESA Convention; Bonnet and Manno, *supra* note 66, p. 24; Article 6(1) of the EUMETSAT Convention; Article 16.1 of the APSCO Convention; and, Article 15.2 of the ARABSAT Agreement.

the direction of the Board of Directors,[76] whereas the Executive Officers of the ESA,[77] EUMETSAT,[78] and APSCO[79] are generally responsible to and under the direction of their supreme organs (the Council).

The Board of Directors of ARABSAT, as a special semi-executive body, is directly responsible to the General Assembly. As a result, the General Manager of ARABSAT does not have full authority like the chief executive officer of the other

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76 Article 15 of the ARABSAT Agreement.

77 Article XII of the ESA Convention: '1. (b) The Director General shall take all measures necessary for the management of the Agency, the execution of its programmes, the implementation of its policy and fulfillment of its purpose, in accordance with the directives issued by the Council. He shall have authority over the establishments of the Agency. He shall, in regard to the financial administration of the Agency, act in accordance with the provisions of Annex II. He shall make an annual report to the Council, and this report shall be published…'

78 Article 6 of the EUMETSAT Convention:
'1. The Director General shall be responsible for the implementation of the decision taken by the Council and for the execution of the tasks assigned to EUMETSAT…
2. The Director General shall act on the instructions of the Council. He shall in particular:
a) ensure the proper functioning of EUMETSAT;
b) receive the contributions of the Member States;
c) enter into the commitments and incur the expenditure decided on by the Council, within the limit of the authorized credits;
d) implement decisions of the Council regarding the financing of EUMETSAT;
e) draft tender invitations and contracts;
f) prepare the meetings of the Council and provide the meetings of possible subordinate bodies and working groups with the necessary technical and administrative assistance;
g) monitor and control the execution of contracts;
h) prepare and implement the budgets of EUMETSAT in accordance with the Financial Rules and submit annually for approval by the Council the accounts relating to the implementation of the budgets and the balance sheet of assets and liabilities, drawn up in each case in accordance with the Financial Rules, and the report on the activities of EUMETSAT;
i) maintain the necessary accounts;
j) execute such other tasks as may be entrusted to him by the Council.'

79 Article 17 of the APSCO Convention:
'1. In accordance with the directives issued by the Council, the Secretary-General shall report to the Council for:
a) Executing and implementing all the policies of the Organization;
b) Achieving the objectives of the Organization;
c) Managing and functioning of the Organization;
d) Drawing up annual reports, working plans and financial budgets of the Organization;
e) Formulating and implementing the internal management provisions of the Secretariat;
f) Submitting proposals to the Council concerning programs and activities as well as measures designed to achieve the objectives of the programs and activities of the organization;
g) Recruiting and managing the staff of internal divisions from the member states according to the service regulations set by the Council;
h) Appointing on contract basis such scientists, technologists and other experts who are not regular staff members for carrying out the assigned jobs of the Organization;
i) Negotiating and signing international cooperative agreements with the approval of the Council.'

organizations. Moreover, the Board of Directors of ARABSAT is composed of representatives of nine member states, of which the five largest shareholders are permanent and four are elected by the General Assembly every two years.[80] Each member of the Board of Directors has one vote.[81] The function of the Board of Directors is to provide, utilize and maintain the space sector and to execute ARABSAT policies assigned by the General Assembly and undertaking any activities of the organization authorized to carry out in accordance with the agreements and the resolutions of the General Assembly.[82] To further the objectives and programmes of the organization, the Board of Directors may establish the necessary committees to undertake specific tasks.[83]

4.5.2 Programmes and Activities

ESA, EUMETSAT, ARABSAT and APSCO are actively engaged in developing space activities and programmes in order to improve research and technology, promote general and specialized applications, and bring more socio-economic benefits to member countries. Each of these organizations manages its operations by distinguishing between mandatory and optional activities and programmes.[84] This provides a degree of flexibility that encourages investment by members, and results in the organization's ability to develop an expanded range of activities that accommodate both community and national ambitions.

a) Mandatory Activities and Programmes

The ground rules of all these organizations are very clear: all member states must participate in mandatory activities and programmes on a continuous basis.[85] The nature of those mandatory activities and programmes reflects the character of the organization: both the ESA[86] and APSCO[87] are general

80 Articles 12 (1) (a) and (b) of the ARABSAT Agreement.
81 Article 12 (6) of the ARABSAT Agreement.
82 Article 13 of the ARABSAT Agreement.
83 Article 13.20 of ARABSAT Agreement.
84 Article V of the ESA Convention; Lafferranderie *supra* note 15, p. 192; Article 2(6) of the EUMETSAT Convention; Article 3 of ARABSAT Agreement; and, Articles 7 and 8 of the APSCO Convention.
85 Articles I.3 and V.1 of the ESA Convention; Article 7.2 of the APSCO Convention; Article 2(6) of the EUMETSAT Convention; and, Article 3 of the ARABSAT Agreement.
86 Article V.1 (a) of the ESA Convention:
'…With regard to the mandatory activities, the Agency shall:
i) ensure the execution of basic activities, such as education, documentation, studies of future projects and technological research work;
ii) ensure the elaboration and execution of a scientific programme including satellites and other space systems;
iii) collect relevant information and disseminate it to member states, draw attention to gaps and duplication, and provide advice assistance for the harmonization of international and national programmes;

space organizations; EUMETSAT[88] and ARABSAT[89] are specialized space organizations. Therefore, as the backbone of the organizations, mandatory space activities and programmes principally include the basics, for instance, the ESA's Science Programme,[90] the Meteosat Operation Programme (MOP)

iv) maintain regular contact with the user of space techniques and keep itself informed of their requirements.'

87 Article 7.1 of the APSCO Convention:
'1. The basic activities of the Organization shall include:
a) Establishing the Organization's plans for space activities and development;
b) Carrying out fundamental research concerning space technology and its applications;
c) Extending the applications of matured space technology;
d) Conducting education and training activities concerning space science and technology and their applications;
e) Managing and maintaining the branch offices and the relevant facilities as well as the network system of the organization; and,
f) Undertaking other necessary activities to achieve the objectives of the organization.'

88 Article 2.7 of the EUMETSAT Convention:
'Mandatory programmes are:
a) the METEOSAT Operational Programme (MOP) as defined in Annex 1 of Convention;
b) the basic programmes required to continue the provision of observations from geo-stationary and polar orbits;
c) other programmes as defined as such by the Council.'

89 Article 3 of ARABSAT Agreement:
'1. The Corporation aims to provide and set up an Arab Space Sector for general and specialized services in the field of telecommunications for all Member States of the Arab League in accordance with technical and economic criteria accepted in the Arab and international quarters.
2. Besides the realization of the said objects the Corporation may undertake the following activities:
a) Assisting Arab countries financially or technically in designing and constructing ground stations.
b) Undertaking research and special studies concerning space science and technology.
c) Encouraging the establishment of industries necessary to supply installations to the space sector and ground stations in the Arab states.
d) Undertaking television and radio transmissions and telecasting among departments and organizations concerned in the Arab states, via the Arab Satellite network and laying down regulations organizing the use of T.V. and radio channels in such a manner as to satisfy the local and collective needs of the Arab states.'

90 Within the ESA, the science programme in particular is a key source of technological innovation and as such is the heart of ESA's activity. As a result, each member state is required to participate in it. Moreover, it is the only programme of the ESA and the only one in Europe with the permanent participation of all the member states. See, Bonnet and Manno, *supra* note 66, p. 28.

of EUMETSAT,[91] the Satellite-Based Communications Services of ARABSAT,[92] and the Small Multi-Mission Satellite Program of APSCO.[93]

b) Optional Activities and Programmes

In addition to the mandatory, the optional activities and programmes are any other activities and programmes that serve the objectives or are carried out within the framework of these organizations. Each member state is primarily free to choose if it would like to participate in the optional activities and programmes.[94] The optional activities and programmes of the ESA,[95] APSCO,[96]

91 According to a cooperative agreement between ESA and EUMETSAT signed on 12 January 1987, EUMETSAT will assume responsibility for the Meteosat operation programme (MOP), while the construction, launch, control in orbit and data processing of the satellites will continue to be carried out by the ESA. However, from the initial system, EUMETSAT currently has the Meteosat second generation satellite system (MSG). The recent Meteosat second generation satellites will deliver observations and services at least until 2018. EUMETSAT and ESA have also initiated joint preparatory activities for the definition and planning of the follow-up Meteosat third generation (MTG) system. These activities are already well on way so that the MTG satellites and ground systems will be available by 2015 before the end of the nominal lifetime of MSG; see, http://www.eumetsat.int/ (19-03-2006): *EUMETSAT Basic Documents: EUMETSAT Programme.*

92 ARABSAT presently offers its customers multi-mission satellite services, such as television, telephone, the internet and the provision of Very Small Aperture Terminal (VSAT) and other interactive services that meet both current and emerging demands of ARABSAT customers. Although ARABSAT mainly enables the Arab nations to make use of a range of satellite-based communications services, currently, the capacity of ARABSAT's satellites provides coverage to more than 100 countries with millions of homes covering Africa, major parts of Europe and the Middle East. Since 1985, the ARABSAT space segment is composed of six satellites (four of which are fully owned) providing capacity to media and entertainment companies, corporate and government entities, and IP and broadband internet access organizations, and providing services to the immediate and future requirements of ARABSAT member states. However, in order to strengthen its position in the telecommunications market, ARABSAT is planning to launch two new generation satellites in 2006. The ARABSAT system design is based on requirements expressed in traffic meetings and during multilateral consultations as well as in surveys made by ARBSAT teams. The ground facilities including earth stations and terrestrial transmission systems which have been set up in member countries to communicate through the ARABSAT space segment. A control network consists of a primary control station located in Dirab near Riyadh and a secondary station is situated near Tunis. See, United Nations, *supra* note 67, p. 186; http://www.arabsat.com/about_us/index.html (04-01-2006): "about us: Corporate Profile" ; http://www.magharebia.com/cocoon/awi/xhtml1/en_GB/features/awi/features/2005/12/09fe (04-01-2006): "ARABSAT will launch two satellites in 2006" ; and, http://www.arabsat.com/Default/About/Default.aspx (05-03-2006): "about us: ARABSAT".

93 *Supra* note 45.

94 Article V.1 of the ESA Convention:
'1. …optional activities, in which all Member States participate apart from those that formally declare themselves not interested in participating therein.'
Article 8.1 of the APSCO Convention:
'1. In addition to its basic activities under Article 7, the Organization shall recommend and organize suitable space science technology and their applications programs for joint implementation by its Member States, which choose to participate in such programs.'

EUMETSAT,[97] and ARABSAT[98] differ based on the purpose of each organization. For example, the ESA's optional activities[99] cover a full range of space activities, including the latest areas of space application such as communications satellites, meteorology, navigation satellites, launchers[100] and an international

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Articles 2.6 and 2.8 of the EUMETSAT Convention:
'6. The programmes of EUMETSAT shall include … optional programmes with participation by those Member States that agree so to do.
8. Optional programmes are programmes within the objectives of EUMETSAT agreed as such by the Council.'
Article 3.3 of the ARABSAT Agreement:
'Any other activities that serve the objects of Corporation besides those already stated, provided that they are approved by the General Meeting of Corporation on the recommendation of one member state of the Corporation or more or of the board of Directors.'

95 The carrying out of an optional programme within the framework of ESA significantly requires an acceptance by the majority of all member states. Furthermore, each member state should be able to choose the level of its financial involvement and without limit to the percentage of their contributions according to its economic and industrial condition; see, Article V and Annex III of the ESA Convention.

96 The optional activities of the APSCO are authorized and controlled by the Council. The member countries can opt to participate in such programs. The programs shall be carried out following the principle of return on investment. Furthermore, the return from an optional activity shall be obtained in proportion to their investment by the member states participating in it; see, Article 8 of the APSCO Convention.

97 The EUMETSAT's optional programmes, as stipulated in the EUMETSAT Convention, are established through the adoption of a programme declaration by the member states interested, to which a detailed programme definition is attached containing all necessary programmatic, technical, financial, contractual, legal and other information. However, if any optional programme falls within the objectives of EUMETSAT and is in accordance with the general framework of the EUMETSAT Convention and the rules agreed to by the Council for its application, the programme declaration will be approved by the Council in an enabling resolution; see, Articles 3, 5.2 (d) iii, and 5.3 (a) of the EUMETSAT Convention.

98 For the optional activities and programmes of ARABSAT, the activities should be approved at a general meeting of Corporation on the recommendation of one or more member states or the recommendation of the board of directors; see, Article 3.3 of ARABSAT Agreement.

99 Article V.1 (b) of the ESA Convention:
'(b) With respect to the optional activities, the Agency shall ensure, in accordance with the provisions of Annex III, the execution of programmes which may, in particular, include
i) the design, development, construction, launching, placing in orbit, and control of satellites and other space system;
ii) the design, development, construction, and operation of launch facilities and space transport systems.'

100 The ESA has made great progress towards its goal of having a complete fleet of launch vehicles in service, competing in all sectors of the launch market. The ESA's fleet will soon consist of three major rocket designs, Ariane 5, Soyuz and Vega. Rocket launches are carried out by Arianespace, an ESA subsidiary (a minority share is held by The European Aeronautic Defence and Space Company (EADS) as well), at the ESA's spaceport in French Guiana. See http://en.wikipedia.org/wiki/European_Space_Agency (03/01/2006). The ESA launcher, known as Ariane, was declared operational in 1982. However, the ESA's Ariane 1, 2, 3 and 4 Launchers have been retired. Currently, the Ariane 5 rocket is the primary launcher of the ESA. Its maximum estimated payload is 6-10 metric tons to Geo-

space station.[101] The above mentioned account for a considerable part of ESA's activities.[102]

4.5.3 Financial Contributions

All of these organizations receive the vast majority of their funding from the contributions of their member states. Members are obliged to make financial contributions,[103] although each organization may also receive other financial support such as donations, gifts, and legacies. According to the financial arrangements of the ESA, APSCO, and EUMETSAT, member contributions are calculated on a scale based on the level of the member's economic development and average gross domestic product (GDP) or gross domestic income (GDI).[104] In the case of ARABSAT, which is a corporation, member states contribute capital in return for shares in addition to making direct financial contributions.[105]

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stationary Orbit (GSO) and up to 21 metric tons to Low Earth Orbit (LEO). The launch craft has been in service since 1997 and replaced the Ariane 4. The Ariane rocket exists in several specifications, the heaviest one of these is the Ariane 5 ECA that was successfully launched in February 2005 for the first time, after it failed during its first test flight in 2002; see, http://en.wikipedia.org/wiki/European_Space_Agency (03/01/2006).

101 Article V of the ESA Convention and Lafferranderie *supra* note 15, p. 192.

102 Hobe, *supra* note 17, p. 339.

103 Article XIII and Annex II of the ESA Convention; Article 9.4 of the APSCO Convention; Article 10.1 of the EUMETSAT Convention; and Articles 6.1 and 6.5 of the ARABSAT Agreement.

104 Article XIII.1 of the ESA Convention; Article 18.4 of the APSCO Convention; and Article 10.2 of the EUMETSAT Convention. However, EUMETSAT is currently converting from gross nations product (GNP) to gross national income (GNI) as the basis for its scales of contribution; see, http://www.eumetsat.int/idcplg?IdcService=ss_GET_PAGE&ssDocName=SP_1126596161539 (04-01-2006).

105 Article 5 of the ARABSAT Agreement. See also, www.arabsat.com/ which offers the following table of subscriptions to the capital of ARABSAT:
'ARABSAT Member States and their participation in the organization in paid capital, as of May 1, 2004:

The Kingdom of Saudi Arabia	36.66%
The Sate of Kuwait	14.59%
The Arab Jamahiriya of Libya	11.28%
The State of Qatar	9.81%
The United Arab Emirates	4.66%
The Hashemite Kingdom of Jordan	4.05%
The Republic of Lebanon	3.83%
The State of Bahrain	2.45%
The Arab Republic of Syria	2.08%
The Republic of Iraq	1.9%
The Democratic & Popular Republic of Algeria	1.72%
The republic of Yemen	1.65%
The Arab Republic of Egypt	1.59%
The Sultanate of Oman	1.23%
The Republic of Tunisia	0.74%

There are additional stipulations for financial contributions to each organization, for example, according to the Conventions of the ESA, APSCO, and EUMETSAT, all member states have to contribute to the mandatory activities and programme costs appropriate to a scale approved by the Council[106] whereas, for the optional activities and programmes, the member states must pay the financial contributions on the basis of the scale agreed for the particular activities and programmes.[107] More divergence is found between the organizations with respect to the financial contributions for the optional activities and programmes. The ESA Convention leaves the possibility open for member states to agree on a different scale[108] because each member nation is able to choose the level of its financial involvement and is not limited to a contribution based on its economic and industrial condition.[109] For EUMETSAT, if an optional programme is not fully subscribed within one year after the date at which it has taken effect in accordance with Article 3.2 of the Convention, then the existing participants are bound to accept a new scale of contributions.[110] The APSCO member states must abide by the principle of return on investment for optional activities and programmes.[111] In addition to reviewing the scale of financial contributions, each organization must initially up-date the scale every three years.[112]

Along with financial contributions, ARABSAT has 1,000 authorized shares, each valued at US$100,000, resulting in a total capital value of US$100 million.[113] Additionally, in accordance with the proportions set out in the appendix of

The Kingdom of Morocco	0.61%
The Republic of Sudan	0.27%
The Islamic Republic of Mauritania	0.27%
The State of Palestine	0.25%
The Democratic Republic of Somalia	0.24%
The Republic of Djibouti	0.12%'

106 Articles I.3, XIII.1, and Annex II of the ESA Convention; Article 10.2 of the EUMETSAT Convention; and, Articles 7 and 18 of the APSCO Convention.

107 Article XIII.2 and Annex III of the ESA Convention; Article 10.4 of the EUMETSAT Convention; and, Article 8.2 of the APSCO Convention.

108 Article XIII.2 and Annex III of the ESA Convention.

109 Each participating state does not generally pay financial contributions in excess of twenty-five percent of the total amount contributed for a particular programme, unless all the participating states decide otherwise when adopting programme. See, Article XIII.2 and Annex III of the ESA Convention.

110 Article 10.5 of the EUMETSAT Convention.

111 Article 8.2 of the APSCO Convention.

112 Article XIII of the ESA Convention, and Lafferranderie *supra* note 15, p. 190; Article 10 of the EUMETSAT Convention; and, Article 18.3 of the APSCO Convention.

113 Article 5 of the ARABSAT Agreement. See also, http://www.arabsat.com/, ARABSAT, Arab Satellite Communication Organization, January 4, 2006 which states that the shareholders of ARABSAT are the 21 member countries and they have paid capital in the amount of approximately US$ 163 million.

the ARABSAT agreement,[114] the minimum subscription in all cases is one share.[115] The proportional subscription can nevertheless be reviewed in the event of new members joining the corporation or the increase of the capital[116] or the withdrawal of members.[117]

4.5.4 Industrial Policy

With regards to industrial policy, only the general space organizations, the ESA[118] and APSCO,[119] specify such a policy in their foundational documents while the special space organizations, the EUMETSAT and ARABSAT, do not designate and concentrate on this policy. The industrial policy as one of the basic goals of organizations (both the ESA and APSCO), is to preserve, promote, and contribute to the development of space industrial and technological potential of the member states. The ESA and APSCO have in fact no capacity to build equipment for their own missions. Therefore, in order to support space programmes and to participate in the organizations' activities, the ESA[120] and APSCO carry out their industrial policy, applying it to the systems developed by them. However, the industrial policy of both organizations is principally intended to promote and develop the free competitiveness of regional industries, to encourage the development of the industrial structures of all member states, to extend the relevant technologies among member states, and to ensure the equitable participation in implementing the activities and programmes of the organizations.[121] Moreover, the ESA and APSCO Conventions explicitly describe the key principles of the industrial policy, such as free competitive bidding, fair return, and balanced development, all promoting and supporting space activities and programmes. The fair return principle[122] in particular

114 Article 6 (1) of the ARABSAT Agreement.

115 Article 6 (4) of the ARABSAT Agreement. On ratifying the agreement, member states have to pay 5% of the value of the shares to be acquired as a subscription fee, the remainder is paid according to a schedule. See also Articles 7.1 and 7.2 of the ARABSAT Agreement.

116 Article 5 of the ARABSAT Agreement.

117 Article 6 (5) of the ARABSAT Agreement.

118 Article VII and Annex V of the ESA Convention.

119 Article 5 of the APSCO Convention.

120 However, practically, under the industrial policy objectives of the ESA, the industrial policy rules of the ESA mostly apply to the optional programmes. The objective of these programmes is supplemented and overlapped by the vital and practical application of modern space technology and its usefulness based on a cost/benefit analysis. See, Hans W. Micklitz and Norbert Reich, *Legal Aspects of European Space Activities: ESA Convention, EEC Internal Market and Common Commercial Policy*, Badan-Badan: Germany, 1989, p. 29.

121 Article VII.1 of the ESA Convention; and, Article 5.5 of the APSCO Convention.

122 The principle of *fair return* (or *juste retour*) is a well-known industrial return principle. The implementation of this principle is measured through an industrial return coefficient, defined as the ratio of the portion of all contracts placed by an agency in the industry of a given member state to the average percentage of contributions of that member state to the budget

is a cornerstone of the policy and predominantly serves the industrial, technological, and very often, political interests of its member states and encourages the coordination between each organization and its members. The principle of "fair return" has a clearly positive effect on the determination of the various member states to support and participate fully in the organizations' activities and programmes.[123]

4.5.5 Dispute Settlement

Concerning the dispute settlement systems of these organizations, most organizations (the ESA, EUMETSAT, and APSCO) attempt to resolve any dispute among member states or between any member state and the organization through the supreme body of the organization (the Council), or if that is not successful, by arbitration.[124] ARABSAT, on the other hand, refers disputes to the General Assembly,[125] the decision of which is final and comes into force within ninety days.[126]

4.6 CONCLUSION

Despite the challenges of coordinating international cooperation for the promotion of space exploration, the benefits of joining the financial and technological resources of states can be substantial. The analysis of existing organizations provides useful models. An ASEAN Space Organization (ASO) should make a move in this direction, to promote regional cooperation, even though it is noted that international space cooperation cannot change the world nor level the discrepancies between haves and have-nots. However, in order to become major players in knowledge-driven space activities and find commercial success with real economic return, ASEAN and its member states should look at the successful experiences of the existing regional space agencies. The Arab space cooperation, in particular, provides a useful model as, in terms of regional cooperation, they are latecomers and, like ASEAN states, are not powerful leaders in the area.

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that the agency spends in industry. The return is industrial and not financial in nature. See, Bonnet and Manno, *supra* note 66, p. 49; and, Article VII and Annex V of the ESA Convention.

123 Bonnet and Manno, *supra* note 66, p. 53.

124 Article XVII of the ESA Convention; Article 19 of the APSCO Convention; and, Article 15 of the EUMETSAT Convention.

125 Article 19 of the ARABSAT Agreement.

126 *Ibid.*

5 The ASEAN Space Organization (ASO): A Feasible Model for Sustainable Space Development

> 'Recognizing the growing scope and significance of international cooperation among States and between States and international organizations in the exploration and use of outer space for peaceful purposes.[1]
>
> International cooperation in the exploration and use of outer space for peaceful purposes, including the Moon and other celestial bodies, shall be carried out for the benefit and in the interests of all States, irrespective of their degree of economic, social or scientific and technological development... Particular account should be taken of the needs of developing countries.'[2]

In the exploration and use of outer space for peaceful purposes, it is increasingly important and necessary to strengthen international cooperation in order to obtain widespread and efficient collaboration in the field of space within the South-East Asian region. Therefore, by moving from mere concepts to cooperation, ASEAN countries can implement and carry out concrete cooperative activities and programs in the field of space that are required to enable countries to maximize the benefits from space science and technology and to promote sustainable space development at a regional level.

5.1 A Suitable Model for an ASEAN Space Organization

From the comparative analysis of existing cooperative regional space organizations discussed in chapter 4, it is clear that, in order to maximize the space benefits for ASEAN society, ASEAN countries should set up a capacity-building space organization and this organization should be created by treaty. For this reason, I would like to propose the most effective and suitable mechanism model, namely an ASEAN Space Organization (ASO), geared toward ASEAN nations expanding their use of space science and technology, advancing space applications, and developing new systems in the South-East Asian region. The objectives of the ASO in particular would be the following:

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1 The preamble of Declaration on International Cooperation in the Exploration and Use of Outer Space for the Benefit and in the Interest of All States, Taking into Particular Account the Needs of Developing Countries, adopted on 13 December 1996.

2 The Declaration on International Cooperation 1996, para.1.

- ‘· To promote peaceful cooperation among ASEAN nations in the research and development of space science and technology and its applications by elaborating and implementing a long-term ASO space policy which would bring together the policies of member states and respect other national and international organizations and institutions;
- · To encourage and strengthen the development of collaborative space programs between the ASO space program and national space programs by integrating the latter progressively and as completely as possible into the ASO space program, in particular with regard to the development of space applications;
- · To elaborate and implement the industrial policy appropriate to its program and recommend a coherent industrial policy to the member states; and
- · To enhance the peaceful use and exploration of outer space and promote international cooperation among states and between states and international organizations.’

Membership in the ASO would be open to all states located in the South-East Asian region and require membership in the Association of Southeast Asian Nations (ASEAN). Furthermore, in order to operate effectively, the ASO model would also develop its own policies and legal framework, a structure of organization, activities and programs, financial arrangements, industrial policy, and procedures for dispute settlement.

5.1.1 Policy and Legal Framework

In accordance with the treaties, principles and declarations of international space law, the UN Charter, international law in general and ASEAN rules, the “international cooperation” principle would play a key role in the underlying framework of the ASO. The organization’s objectives would include the peaceful exploration and use of outer space on equitable and mutually acceptable bases. Furthermore, the ASO’s policy would aim to achieve the space capability necessary to support ASEAN’s sustainable space development goals and to advance human development. Finally, the ASO would aim to contribute space benefits to the people of ASEAN by integrating and adopting the member states’ space policies and by assembling all resources (such as human, financial, technical resources) needed to carry out ASO’s space activities and programs for promoting the sustainable development and common prosperity in the South-East Asian region.

5.1.2 Institutional Arrangements

The organizational structure of the ASO would consist fundamentally of three major bodies: the Council, the Executive Branch and the Space Cooperation

Committee. These bodies would ultimately be responsible for the achievement of all the objectives of the ASO.

The Council

Composed of representatives of member states, the Council would be the policy-making and supreme authority of the ASO. Its functions would include defining, adopting, and approving general policies, rules and working plans, establishing subsidiary bodies and working groups, approving accession, suspension and termination of membership, settling disputes, adopting and approving general budgets and setting the proportion of financial contribution of member states, and appointing the Director General. At least once a year, the Council would meet in an ordinary session. Each member would have one vote, unless a member state failed to participate in a mandatory program or did not pay the assessed amount of its contribution for the current financial year or for any one of the programs in which it took part.

The Executive Branch

The executive branch would be the administrative body responsible for performing the daily activities of the ASO. Appointed by the Council, the Director General, as the chief executive officer and head of the executive branch, would be responsible for the administration and would also be a legal representative of the organization. The Director General would be supported by a scientific, technological, administrative and secretarial staff. Furthermore, his or her duties would include the implementation and execution of all the policies, plans and programs of the ASO, taking all measures necessary and proper for the management of the organization, the annual reports, working plans and financial budgets, and the appointment and dismissal of staff.

The Space Cooperation Committee

The Space Cooperation Committee would be a special committee made up of representatives from the ASO and ASEAN. The Committee would be responsible for promoting and managing close cooperation between the ASO and ASEAN through the integration of policies on exploration and utilization in outer space and any other functions related to ASEAN economics, technology and science, society and culture, industry, etc. In order to foster close ties in the area of space technology development with applications for ASEAN society, the Committee would give recommendations and proposals to the Council.

5.1.3 Activities and Program Arrangements

The ASO would provide an important step for entrance into space activities and programs and offer the best opportunity to ASEAN countries for defining their needs for space science, technology, and applications, encouraging the establishment of those industries necessary to supply space activities and programs, and taking maximum advantage of the technologies explored and developed in the field of space. The space activities and programs of the ASO would predominantly include the following:

Mandatory Activities

The mandatory activities, in which all member states would be obliged to participate, would form the backbone of basic activities and programs. They would include training and education in space subjects and the research and development of all fundamental space systems, especially, for example, space system design, space technology (space transportation systems, robotics, and space operation), space science (space physical sciences, space life sciences and humans in space), space social sciences and humanities and space management and policy.

Optional Activities

The optional activities, in which all member states could choose to participate, would mainly extend the area of space applications by invention and eligible space technologies such as telecommunications, navigation, earth observation, and, geometrics.

In order to serve the objectives of the ASO, both categories of space activities and programs could undertake other necessary activities, for example, to collect and disseminate information to member states, and to provide advice and assistance for the harmonization of international and national programs.

5.1.4 Financial Arrangements

The ASO would mainly be financed by contributions from its member states calculated on a scale reviewed every three years. However, some expenditures of the ASO might also be partially covered by other income of the organization. With respect to mandatory activities and programs and the general budget, each member state would make an annual contribution. In the case of optional activities and programs, each participating member state would contribute to each accepted program's capital in the form of the purchase of shares. The amount of the capital, the value of each share and the proportional subscription

would be set in accordance with the recommendations of the Director General and the approval of the Council. However, the proportional subscription of each optional activity and program would be reviewed in the event of a new member joining an optional program, the increase of the capital, the withdrawal of a member from the ASO, the withdrawal of a member from an optional program, or the re-allocation of shareholding proportions. According to the financial procedure of the ASO, the minimum subscription by each member state would be one share in each optional activity or programs, while each member state would pay a minimum financial contribution (called the floor) toward the mandatory activities and programs and the general budgets to the ASO. The financial contribution of each state would not exceed twenty percent of the total amount of contributions approved by the Council.

5.1.5 Industrial Policy Arrangements

The industrial policies of the ASO would be to promote the global competitiveness of the ASEAN industry by maintaining and developing space technology, to meet the requirements of the ASO's activities and programs in a cost-effective manner, to encourage and develop the space technological industry in all member countries and, in particular, support the products of such an industry. In addition, using the principle of fair return, the ASO would also exploit the existing industrial potential of all member states by encouraging the rationalization and development of industrial structures within member states in accordance with market demand, and develop space technology and the products. The ASO would, through activities and programs, grant preferences, to the fullest extent possible, to industries in member states by providing opportunities to participate in the ASO's work.

5.1.6 The Dispute Settlement Procedure

If there were any disputes between two or more member states, or between any of them and the organization concerning the interpretation or application of the ASO's establishing documents or subsequent rules and regulations, the dispute settlement approach of the ASO would comprise of only two steps. First, a dispute would be brought to the Council and, in case the dispute was not settled, it would go to arbitration, at the request of any party to the dispute. The Arbitration Tribunal shall consist of three members. Each party to the dispute shall nominate one arbitrator. Moreover, as being the chairman of the Arbitration Tribunal, the third arbitrator shall be nominated by the mutual consent of the arbitrators of both parties. The decision of the arbitration tribunal would be made by a majority of its members and would be final and binding on all parties to the dispute.

5.1.7 The ASO Model Analysis

The proposed ASEAN Space Organization (ASO) would fulfill the role of promoting sustainable space development in the South-East Asian region by means of: establishing and promoting a long-term space policy on the research and development of space science and technology; utilizing and expanding space applications; implementing viable industrial policies; and promoting peaceful space cooperation. Regarding the structure and mechanics of the ASO, discussed above, there would be four levels of participants: (1) the ASEAN community; (2) the member parties; (3) the Council and the Space Cooperation Committee; and (4) the Director General. To further the development of space programs and activities within the South-East Asian region, it is proposed that the ASEAN community create the ASO. All South-East Asian states would be major parties in the ASO, receiving its benefits. The Council of the ASO and the Space Cooperation Committee would carry out key work for the organization and the ASEAN community, while the Director General would oversee the organization. In order to further understand the complicated standing of the proposed ASO, it is important to examine its legal status and dimension and the legal impact of setting up such an organization.

5.2 The Legal Status of the ASO

The ASO would be the future organization to facilitate international cooperation in the space field in the region. Therefore, in discussing functional arrangements and responsibility and liability issues within the framework of international organizations,[3] it is necessary to examine the legal status of the ASO in the light of both international law and international space law.

5.2.1 The ASO under International Law

Under international law,[4] in order for an organization to receive international

3 Q.C.E. Lauterpacht, "The Development of the Law of International Organization by the Decisions of International Tribunals", *Recueil des cours*: Collected Courses of the Hague Academy of International Law 1976, Vol. IV and Tome 152, p. 387-468; *Vienna Convention on the Law of Treaties between States and International Organizations or Between International Organizations*, 1986 (the "Vienna Convention"); and, Rudolf L. Bindschedler, "International Organization: General Aspects", *Encyclopedia of International Law*, 1995, Vol.II, p. 1289-1309.

4 "International legal personality is simply legal personality under the international legal system. It is the status enjoyed by subjects of international law, denoting their capacity to bear rights and duties under international law." Bin Cheng, "Introduction to Subjects of International Law", *International Law: Achievements and Prospects*, edited by Mohammed Bedjaoui, Martinus Nijhoff Publishers: The Netherlands, 1991, p. 23-25.

legal status it must demonstrate the following: (1) evidence of legal capacity explicitly or implicitly found in the constituent instrument of the organization,[5]

The term "subjects" is further described as follows: 'The idea of 'subjects' of the international legal system is a confusing idea, and the confusion stems in part from being conflated with the notion of international legal personality. However, while subjectivity is a status conferred by the academic community, personality is a status conferred by the legal system.'
See Jan Klabbers, *An Introduction to International Institutional Law*, Cambridge University Press: UK, 2002, p. 42-43. "International personality" is further examined in the following: 'We can identify three elements in the concept of international personality: in logical order, the first is the idea that the organization has a certain detachment from its members. The second is that, possessing its own rights and duties, it may as an entity assert its rights or be charged with its duties. And the third is that on matters which are covered by the functions of the organization, the members act only through the organization and not independently.'
See Lauterpacht *ibid*., p. 403-408. Schermers and Blokker provide a further analysis as follows: 'Concerning the basis of international legal personality of international organizations, traditionally three school of thought existed. The first school, such personality existed only if explicitly attributed to the organization in the constitution. The second school has developed the idea of objective legal personality of international organizations. As long as organizations have at least one organ which has a will distinct from that of the member states, they are ipso facto international legal persons. Legal personality in this view is "objective" in the sense that its existence dose not depend on the (subjective) will of the member states. It is bestowed upon the organization by international law, not by the intention of the parties. A third school of thought represents the currently prevailing view. Organizations are international legal persons not ipso facto but because the status is given to them either explicitly or, if there is no constitutional attribution of this quality, implicitly.'
See H.G. Schermers and N.M. Blokker, *International Institutional Law: Unity Within Diversity*, Nijhoff: the Netherlands, 2003, p. 988-989. The concept of international organization was described by Tammes as: '… A union of subjects of international law for the attainment of certain goals, having one or more organs serving the union. …Broadly, four approaches to the problem of the international legal personality of international organizations may be distinguished. (1) The first approach involves what one may call the 'Platonic Fallacy'. That is to say that some definite concept of international personality is postulated which more or less corresponds to statehood. A certain entity is considered prima facie to enjoy personality and therefrom it is deduced that the entity possesses all the capacities concomitant to personality. (2) The second approach may distinguish the inductive approach or, as O'Connell calls it, the functional approach. An organization has certain purposes as set out in its Constitution, and to attain these purposes certain functions are bestowed upon it. …This approach can also be found in various constitutive treaties. (3) The third approach involves an inductive-deductive sequence. Certain functions imply that the organization has certain capacities, or the organization has been granted such capacities. These capacities are then adduced as evidence that the organization possesses full international personality. (4) The fourth approach may be called 'strict constructionist'. In this approach an international organization has only those capacities which are explicitly granted in its constitution. These capacities are granted either by transfer of capacities by the member states or by a mandate of the member states.'
See Pieter J. Kuyper, *The Netherlands and International Organizations: International Law in The Netherlands,* VII, edited by H.F. van Panhuys, W.P. Heere, J.W. Josephus Jitta, Ko Swan Sik and A.M. Stuyt, Oceana Publications Inc. Dobbs Ferry, N.Y.: USA, 1979, p. 14-16.

5 Ian Brownlie, *Principles of Public International Law*, Sixth Edition, Oxford University Press: USA, 2003, p. 647-670; and C.F. Amerasinghe, *Principles of the Institutional Law of International Organizations*, Cambridge University Press, 2005, p. 77-86.

(2) the right to send and receive delegations,[6] and (3) the capacity to espouse its rights by bringing and receiving worldwide claims.[7] In addition, according to Article 6 of the 1986 *Vienna Convention on the Law of Treaties between States and International Organizations or between International Organizations*, organizations that have legal personality have the right to enter into treaties.[8] Therefore, the proposed ASO would be organized to benefit from legal personality[9] in international law with the aim of operating as an independent entity at an international level, separate from its member states. This would be achieved through the ASO's establishing documents either by a general provision or by the listing of particular rights on the subject similar to the ESA,[10] EUMETSAT,[11] ARABSAT,[12] and APSCO.[13] Having legal personality, the ASO would have the specific rights, duties, liabilities and powers necessary to carry out its functions, to conclude treaties, to acquire and dispose of moveable and immovable property, and to take legal action.[14]

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6 Klabbers, *supra* note 4, p. 44.

7 The ICJ's Reparation for Injuries Suffered in Service of the United Nations Advisory Opinion (ICJ Report 1914), p. 174-179; and Klabbers, *supra* note 4, p. 44.

8 Article 6 of Vienna Convention: *"The capacity of an international organization to conclude treaties is governed by the rules of that organization."*

9 "An 'artificial person' is an entity, such as a corporation, created by law and given certain legal rights and duties of human being: a being, real or imaginary, who for the purpose of legal reasoning is treated more or less as a human being." See, *Black's Law Dictionary*, 8th edition, 1999. 'The term person comes from the Latin word Persona, meaning originally the mask used by players on the stage, and hence also the character represented by an actor". … Legal personality is a concept, in practice, common to all legal systems. It is the status of being capable of bearing legal rights and duties in a given legal system, or, in other words, of being the direct addressees of the rules of the system.' See Cheng, *supra* note 4, p. 23-25.

10 Article XV of the ESA Convention:
'1. The Agency shall have legal personality.
2. The Agency, its staff member and experts, and the representatives of its Member States, shall enjoy the legal capacity, privileges and immunities provided for in Annex I.
3. Agreement concerning the Headquarters of the Agency and the establishments set up in accordance with Article VI shall be concluded between the Agency and the Member States on whose territories the Headquarters and establishments are situated.'

11 Article 1 of the EUMETSAT Convention: '3. EUMETSAT shall have legal personality. It shall in particular have the capacity to contract, to acquire and dispose of movable and immovable property and to be party to legal proceedings.'

12 Article 2 of the ARABSAT Agreement: 'An independent corporation shall be established within the framework of the League of Arab States, by the name of the Arab Corporation for Space Telecommunications. The Corporation shall have a full legal character and has the right, within its objects, to conclude and contract agreement and possess movable and immovable property and dispose of them and the right to litigate and undertake all legal measures.'

13 Article 3 of the APSCO Convention: 'The Organization shall be an inter-governmental organization. It shall be a non-profit independent body with full international legal status.'

14 Amerasinghe, *supra* note 5, p. 66-104.

5.2.2 The ASO under International Space Law

Although the term 'international organization' has not been defined in any international space treaties or conventions,[15] there are references to the term in several international space agreements.[16] The first mention provides a framework for carrying out space activities and considers the important role of international organizations as juridical bodies, since the UN General Assembly adopted the 1963 Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space[17] as well as the 1967 Outer Space Treaty.[18] As a result of the emphasis on capacity of legal persons, the Declaration and the Outer Space Treaty explicitly confer on international organizations the right to carry out their activities and the obligation to act in compliance with international space principles. Subsequently, the other agreements established by the UN Committee on the Peaceful Uses of Outer Space (UNCOPUOS)[19] give full recognition to international organizations as well. Therefore, we can conclude that international organizations,[20] under-

15 I.H.Ph. Diederiks-Verschoor, *An Introduction to Space Law*, 1999, p. 15.

16 Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space, 1963: '5. When activities are carried on in outer space by an international organization, responsibility for compliance with the principles set forth in this Declaration shall be bone by the international organization and by the States participating in it.'

17 *Ibid*.; see also Manfred Lachs, *The International Law of Outer Space*, p. 68-82.

18 Article VI of the Outer Space Treaty 1967.

19 Article 6 of the Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space, 1968; Article XXII of Convention on International Liability for Damage Caused by Space Objects, 1972; Article VII of Convention on Registration of Objects Launched into Outer Space, 1976; and, Article 16 of Agreement Governing the Activities of States on the Moon and Other Celestial Bodies, 1984.

20 The definition of the term "international organization" refers to an organization established by a treaty or other instrument governed by international law and possessing its own international legal personality; see, Schermers and Blokker, *supra* note 4, p. 21-39. Moreover, in case of the INTERCOSMOS programme, "INTERCOSMOS" is not an international organization but a form of collective of states in part due to the absence of a stable, well-defined structure (such as headquarters and a secretariat with an international staff), detailed rules governing the proceeding of its bodies, separate budgets and assets. Moreover, the 1976 Agreement on Cooperation in the Exploration and Use of Outer Space for Peaceful Purpose did not create a unified, autonomous international organization. This programme is found as a special form of multilateral cooperation of socialist countries (Bulgaria, Cuba, Czechoslovakia, Germany, Hungary, Mongolia, Poland, Romania, the Soviet Union and Vietnam) in the field of outer space, including working groups to study the physical properties of outer space, space meteorology, space biology and medicine, space communications, and the natural environment by means of space devices. The structure of the programme includes three levels of assembilies: the upper level is the meeting of leaders of the National Coordination Organs, the mid-level is the permanent mixed working groups, and the lowest level is listed as the interested organizations (the research institutes, manufacturing plants etc. of the interested countries). See E. Kamenetskaya, "The 'INTERCOSMOS' Program: On the Problem of the Representation in International Organiza-

taking separate space activities and programs for their members, are *de jure* subjects of international space law, responsible to their members.[21] In the case of the ASO, once established, it would also have the rights and obligations of a legal person in order to autonomously carry out its space activities. Moreover, *in practice,* to clearly demonstrate its legal status under international space law, the ASO, similar to the ESA[22] and EUTELSAT,[23] could formally accept rights and obligations pursuant to the Declaration of Acceptance.[24]

5.3 Legal Dimensions of the ASO in Space Activities

The framework of the ASO would essentially be composed of several elements supporting the goal of promoting sustainable space development in the South-East Asian region. However, on this subject, we shall merely consider the legal dimensions in space activities, especially activities to increase space cooperation regionally, internationally, and bilaterally. The status of the ASO as legal person is key to providing the organization with the capability to enter into international relations and act as a state in outer space. The ASO's legal identity is important for analyzing the relationships, the rights and the obligations between the ASO and its member states, non-member states, international organizations as well as private entities involved in space activities.

5.3.1 The ASO and Member States

In pursuing their objectives, member states[25] of the ASO would be active

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tions", *Proceedings of the 26th Colloquium on the Law of Outer Space*, October 10-15, 1983: Hungary, p. 117-119; and, B. Nagy, "The Legal Character of the INTERCOSMOS Programme", *Proceedings of the 26th Colloquium on the Law of Outer Space*, October 10-15, 1983: Hungary, p. 235-242.

21 Frans G. von der Dunk, "International Organization as Creators of Space Law", *Proceedings of 3rd ECSL Colloquium on International Organizations and Space Law*, Perugia: Italy, 6-7 May, 1999, p. 335-343; and, G. Lafferranderie, "The Outer Space Treaty and International Organizations Conducting Space Activities", *Proceedings of the 40th Colloquium on the Law of Outer Space*, October 1997: Italy, p. 161-168.

22 United Nations treaties and principles on outer space and other related General Assembly resolutions: Status of international agreements relating to activities in outer space as at 1 January 2008.

23 *Ibid*.

24 Viviana Iavicoli, "The Participation of International Organizations in Space Treaties", *Proceedings of 3rd ECSL Colloquium on International Organizations and Space Law*, Perugia: Italy, 6-7 May 1999, p. 381-386.

25 On this subject, we will discuss all members of the ASEAN Space Organization, including four subcategories: *full members*, which may participate with full rights in all activities of the organization, *associate* and *affiliate members*, which may participate but have no voting right in the principal organs, and *partial members*, which participate in some activities only;

participants[26] and play important roles in the constituent elements of the organization.[27] Additionally, under modern principles of international law,[28] each member state would have a duty to cooperate in good faith and to respect the internal rules of the organization. It is true that, in accordance with international law and the Charter of the United Nation,[29] international space law recognizes that although it primarily applies to states, organizations elevated to the level of states create rights and obligations for its member states with respect to certain activities by the organization.[30] This means that even though the ASO would control its activities and programs, its member states[31] would not only reap benefits but would also be jointly responsible and liable[32] for those activities and programs in the exploration and use of outer space.

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see, Schermers and Blokker, *supra* note 4, p. 53; Klabbers, *supra* note 4, p. 104-114; and Philippe Sands and Pierre Klein, *Bowett's Law of International Institutions*, Sweet & Maxwell: UK, 2001, p. 533-541.

26 Also on this subject, we will only be concerned with the internal relations between the ASEAN Space Organization and its member states, although member states play two roles in relation to their international organization: internal and external roles. Although it is not easy to make a distinction between them, in internal relationships, states operate as members of the organization, whereas, in external relationships, those same states operate as a counterpart to the organization such as in the relationship set down in the agreements on technical assistance concluded between international organizations and its members. See, Schermers and Blokker, *supra* note 4, p. 52 and 1072.

27 The internal bodies of international organizations are usually composed of representatives of member states and must consequently deal with the conflicts of interests between member states: each member state plays two roles in the relation to their organizations, internal and external roles. See, Schermers and Blokker, *supra* note 4, p. 52.

28 UNGA Res. 2625 (XXV) Declaration on Principles of International Law Concerning Friendly Relations and Co-operation among States in Accordance with the Charter of the United Nations (A/8082), adopted by consensus on October 24, 1970. See also, Article 2.2 of Charter of the United Nations: 'All members, in order to ensure to all of them the rights and benefits resulting from membership, shall fulfill in good faith the obligations assumed by them in accordance with the present Charter.'

29 Articles I and III of the 1967 Outer Space Treaty.

30 Articles VI and XIII of the 1967 Outer Space Treaty.

31 "Member" means one of the persons constituting a family, partnership, association, corporation, guild, court, legislature, or the like. See *Black's Law Dictionary*, 5th edition, 1979.

32 This research only uses the English language text of the 1967 Outer Space Treaty. The English text of the 1967 Outer Space Treaty distinguishes between responsibility (dealt with in Article VI of the Treaty) and liability (dealt with in Article VII). However, other translations, such as French and Spanish versions of the Treaty, do not distinguish between these terms. See, Frans G. von der Dunk, "Liability Versus Responsibility in Space Law: Misconception or Misconstruction?", *Proceedings of 34th Colloquium on the Law of Outer Space*, October, 1991: Canada, p. 363-371. See also Bin Cheng, "Article VI of the 1967 Space Treaty Revisited: 'International Responsibility', 'National Activities', and 'the Appropriate States'", *Journal of Space Law*, Vol.26, Nos. 1&2, 1998, p. 9-11.

a) International Responsibility[33]

Article VI of the Outer Space Treaty 1967[34] goes farther than general international law with respect to state responsibility: general international law considers the states as the only normal subjects carrying responsibility, but this article stipulates that, in case of activities in outer space run by an international organization, the international organization itself would have joint international responsibility with its member states. As an international space organization, the ASO, along with its members, would carry the burden of responsibility. This would be the case even though the states are the primary focus of responsibility for activities in outer space. Article XIII of the Outer Space Treaty 1967[35] confirms that member states of an international space organization are jointly responsible for the organization's activities in the

33 International responsibility means, "Every internationally wrongful act of a State entails the international responsibility of that State." See, Article 1 of the Responsibility of States for Internationally Wrongful Acts, adopted by the International Law Commission of the United Nation on 10 August 2001, *Official Records of General Assembly*, 56th Session; Supplement No. 10 (A/56/10) (the "Responsibility for Wrongful Acts"). The term is also defined as, "The state of being answerable for an obligation, and includes judgment, skill, ability and capacity or the obligation to answer for an act done, and to repair or otherwise make restitution for any injury it may have caused." *Black's Law Dictionary*, 5th edition, West Publishing Co.: USA, 1979. Article 2 of the Responsibility for Wrongful Act states that: 'The elements of an internationally wrongful act of a State are including: there is an internationally wrongful act of a State when conduct consisting of an action or omission: (a) Is attributable to the State under International Law: and, (b) Constitutes a breach of an international obligation of the State.'
Shaw also states in his text on international law that: 'The nature of (state) responsibility hinges upon certain basic factors: firstly, the existence of an international legal obligation in force as between two particular states, secondly there has occurred an act or omission which violates that obligation and which is imputable to the states responsible, and finally that loss or damage has resulted from the unlawful act or omission.'
Malcolm N. Shaw, *International Law*, 5th edition, Cambridge University Press: UK, 2003, p. 696. However, Professor Bin Cheng explains that, 'Responsibility and breaches of obligation do not necessarily involve the payment of compensation. Especially when no damage has been caused. Reparation can take many forms, such as for example assurances of non-repetition.' See Cheng, *supra* note 32, p. 9.

34 Article VI of the 1967 Outer Space Treaty: 'When activities are carried on in outer space, including the Moon and other celestial bodies, by an international organization, responsibility for compliance with this Treaty shall be borne both by the international organization and by the States party to the Treaty participating in such organization.'

35 Article XIII of the 1967 Outer Space Treaty: 'The provisions of this Treaty shall apply to the activities of States Parties to the Treaty in the exploration and use of outer space, including the Moon and other celestial bodies, whether such activities are carried on by a single State Party to the Treaty or jointly with other States, including case where they are carried on within the framework of international intergovernmental organizations.
Any practical questions arising in connection with activities carried on by international intergovernmental organizations in the exploration and use of outer space, including the Moon and other celestial bodies, shall be resolved by the States Parties to the Treaty either with the appropriate international organization or with one or more States member of that international organization, which are Parties to this Treaty.'

exploration and use of outer space. This treaty is only binding on those international space organizations whose members are party to the treaty. However, almost all ASEAN nations (see table no. 3.1) are party to the treaty. Consequently, both the proposed ASO and its member states would jointly share responsibility for the ASO's activities in outer space.

b) International Liability[36]

Following the Liability Convention 1972 an international launching organization is akin to a launching state[37] and takes on the burden of international liability. Article XXII of the Liability Convention 1972[38] regulates the liability

36 Liability means "the state of being bound or obliged in law or justice to do, pay, or make good something; the state of one who is bound in law and justice to do something which may be enforced by action." See *Black's Law Dictionary*, 5th edition, West Publishing Co.: USA, 1979. Furthermore, Professor Bin Cheng describes that, "Although responsibility is a broader concept than liability, the two terms are sometimes used interchangeably." He also states that, "the term liability is often used specifically to denote the obligation to bear the consequences of a breach of a legal duty, in particular the obligation to make reparation for any damage caused, especially in the form of money payment." See Cheng, *supra* note 32, p. 9–10.

37 Both Article I (c) of Convention on International Liability for Damage Caused by Space Objects, 1972 and Article I (a) of Convention on Registration of Objects Launched into Outer Space, 1976 state:
'The term "launching States" means:
i) A State which launches or procures the launching of a space object;
ii) A State from whose territory or facility a space object is launched.'

38 Article XXII of Convention on International Liability for Damage Caused by Space Objects, 1972:
'1. In this Convention, with the exception of articles XXIV to XXVII, references to States shall be deemed to apply to any international intergovernmental organization which conducts space activities if the organization declares its acceptance of the rights and obligations provided for in this Convention and if a majority of the States members of the organization are States Parties to this Convention and to the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies.
2. States members of any such organization which are States Parties to this Convention shall take all appropriate steps to ensure that the organization makes a declaration in accordance with the preceding paragraph.
3. If an international intergovernmental organization is liable for damage by virtue of the provisions of this Convention, that organization and those of its members which are States Parties to this Convention shall be jointly and severally liable; provided, however, that:
a) Any claim for compensation in respect of such damage shall be first present to the organization;
b) Only where the organization has not paid, within a period of six months, any sum agreed or determined to be due as compensation for such damage, may the claimant State invoke the liability of the members which are States Parties to this Convention for the payment of the sum.
4. Any claim, pursuant to the provisions of this Convention, for compensation in respect of damage caused to an organization which has made a declaration in accordance with

of international organizations involved in space activities and principally stipulates that an international organization and its member states shall be jointly liable for damages[39] resulting from the space activities of the international organization. Therefore, under this legislation, if the ASO's space activities (on Earth, in air space or in outer space) cause damage to another state or its natural or juridical person, or to another international organization, the ASO and its members have to share liability. Nevertheless, it is proposed that the ASO would first pay any claim for compensation in respect of such damage caused by its space activities, while its member states would take action for paying the sum of compensation the ASO failed to pay within a period of six months. According to paragraph 1 of Article XXII of the Liability Convention 1972, the Convention would apply to the ASO as soon as the ASO declared its acceptance of the rights and obligations set out in the Convention, provided that a majority of its member states were parties to both the Convention and the Outer Space Treaty 1967. Furthermore, paragraph 2 of Article XXII of the Convention would oblige member states of the ASO to take all appropriate measures to ensure that the ASO makes a declaration in accordance with paragraph 1 of Article XXII of the Liability Convention 1972.[40]

5.3.2 The ASO and Non-Member States and International Organizations

Well-planned international relations would be necessary for the development of the ASO's activities and programs. The ASO should look to beneficial external relationships with non-member states and other organizations throughout the world for a wide range of activities. The ASO, as legal personality, would be able to conclude international agreements with non-member states and other organizations. Of course the internal rules of the ASO would dictate procedures directing international cooperation including conditions for the participation of non-member states and organizations in mandatory and optional programs; the Council of the ASO would also review and approve each instance of such cooperation. Non-member states and organizations involved in the ASO's

paragraph 1 of this article shall be presented by a States member of the organization which is a State Party to this Convention.'

39 Article I (a) of the Convention on International Liability for Damage Caused by Space Objects 1972 provides that: 'The term "damage" means loss of life, personal injury or other impairment of health; or loss of or damage to property of States or of persons, natural or juridical, or property of international intergovernmental organization.'

40 Bruce A. Hurwitz, *State Liability for Outer Space Activities in Accordance with the 1972 Convention on International Liability for Damage Caused by Space Objects*, Martinus Nijhoff Publisher: the Netherlands, 1992, p. 70-74.

activities would be considered partners[41] and as such they would assume the rights and duties for such activities and programs in outer space.

With regard to the responsibilities and liabilities of non-member states and organizations involved as partners, international space law contains no specific international principles, declarations or conventions directly addressing this legal issue. Article VI of the Outer Space Treaty 1967 states that the responsibility for the space activities of international organizations "shall be borne both by the international organization and by the States Parties to the Treaty participating[42] in such organization(s)." On a strict interpretation, this means that liabilities are shared only among member states and do not extend to non-member but participating partners. Similarly, Article XXII (3) of the Liability Convention 1972 stipulates that international organizations and their members "shall be jointly and severally liable.[43]" It is clear that this article apportions liability only to member states of international organizations, not to non-member partners. However, although there are no specific rules on this issue, under general principles of international space law, non-member states and international organizations as partners in particular programs of international space organizations have borne responsibility and liability for the activities

41 "*Partner*" means:
'a member of a partnership or firm; one who has united with others to form a partnership in business. There are many kinds of partners such as:
a. Full or general partner (who participates fully in the profits, losses and management of the partnership and who is personally liable for its debts,
b. Junior partner (a partner whose participation in the firm is limited as to both profits and management),
c. Limited partner (a partner whose participation in the profit is limited by agreement and who is not liable for the debts of the partnership beyond his capital contribution),
d. Nominal partner (one whose name appears in connection with the business as a member of the firm, but who has no real interest in it),
e. Quasi partner (one who has joined with others in a business which appears to be a partnership but who is not actually a partner),
f. Special partner (A member of a limited partnership, who furnishes certain funds, and whose liability extends no further than the fund furnished).'
See *Black's Law Dictionary*, 5th edition, 1979.

42 "Participate" means: 'To receive or have a part or share of; to partake of; experience in common with others; to have or enjoy a part or share in common with others. To partake, as to "participate" in a discussion, or in a pension or profit sharing plan. To take equal shares and proportions; to share or divide, as to participate in an estate.' See *Black's Law Dictionary*, 5th edition, 1979.

43 Article XXII (3) of the Convention on International Liability for Damage Caused by Space Objects 1972 provides that: 'If an international intergovernmental organization is liable for damage by virtue of provisions of this Convention, the organization and those of its members which are States Parties to this Convention shall be jointly and severally liable.'

of those space organizations, for instance in the International Space Station (ISS) program.[44]

From the above analysis, it is apparent that non-member states and other organizations as partners in particular programs of the ASO, following general principles of international space law, would bear responsibility and liability for those activities undertaken by the ASO in outer space and, in my opinion, may be equally and jointly liable along with member states and the ASO itself. However, given the ambiguity in international law on the apportionment of liability, it would be beneficial to the ASO to insist on written agreements setting out joint responsibility and liability by non-member partners.

5.3.3 The ASO and Private Entities[45]

Private entities having become increasingly important world players in the exploration and use of outer space, including the Moon and other celestial bodies, at present have an important role to play in the development of new space systems and in the construction of basic space components. They are well placed to fully and effectively exploit research efforts and benefit from a complementary expertise that space agencies and international organizations lack.[46] The ASO should look to these private entities as an effective means of developing high space technology to leapfrog stages, of quickly closing the gap in space science and technology knowledge, and perhaps gaining economic and commercial benefits. Cooperation with private entities might require dynamic relationship management and face potentially complex regulatory hurdles, for instance in the area of technology transfer.[47] In order to minimize risk and ensure compliance with the Outer Space Treaty 1967, the ASO should only conclude special cooperation agreements with private entities that are under the authorization and continued supervision or jurisdiction of states

44 F.G. Von der Dunk and M.M.T.A. Brus (ed), The International Space Station: Commercial Utilisation from a European Legal Perspective, Martinus Nijhoff Publishers: the Netherlands, 2006, p. 15-32 and p. 92-93; and, Article 16 and 17 of Agreement among the Government of Canada, the Government of the Member States of the European Space Agency, the Government of Japan, the Government of the Russian Federation, and the Government of the United States of America concerning cooperation on the Civil International Space Station, 1998.

45 In this topic, "private sector" includes semi-private firms as well.

46 OECD Futures Project, *The Commercialisation of Space and the Development of Space Infrastructure: The Role of Public and Private Actors*, Fourth Meeting of the Steering Group, OECD Headquarters: Paris, 13-14 December 2004, p. 51.

47 *Ibid*.

that are party to the Outer Space Treaty 1967.[48] This will help to clarify the relationship between the ASO and private entities and their legal status. These private entities would be special partners in the space activities and programs of the ASO. They would consequently have all the rights and obligations related to the activities and programs in which they were involved and be jointly and severally liable with other partners and members and the ASO for those space activities and programs.

On the issue of responsibility and liability, there are no specific regulations or laws dealing with private entities involved as special partners in international space organizations. International space law applies principally to states and activities which are carried out by individual states or jointly with other states, or within the framework of international intergovernmental organizations.[49] However, it is also accepted that the distribution of responsibility and liability found in international space law applies to national space activities performed by governmental agencies or by non-governmental entities (private entities), which act individually or jointly with other states or international organizations.[50] As private entities are subject to the laws of an "appropriate" state[51] and such state, if a party to the Outer Space Treaty 1967, may bear responsibility for national activities in outer space,[52] Article VI of the Outer Space Treaty 1967 requires the state to closely supervise the private

48 Articles VI, VII and VIII of the 1967 Outer Space Treaty; and Frans G. von der Dunk, "Public Space Law and Private Enterprise: The Fitness of International Space Law Instruments for Private Space Activities", *Proceedings of the Project 2001 – Workshop on Legal Issues of Privatising Space Activities*, 19 July 1999, Vienna, Austria, p. 16.

49 Articles VI and XIII of the 1967 Outer Space Treaty; and, Henri A. Wassenbergh, *Principles of Outer Space Law in Hindsight*, Martinus Nijhoff Publishers: the Netherlands, 1991, p. 22.

50 Articles VI, VII, VIII and XIII of the 1967 Outer Space Treaty; Wassenbergh, *ibid*., p. 22-31; and von der Dunk, *supra* note 48, p. 12-39.

51 Article VI of the 1967 Outer Space Treaty does not clarify the meaning of the term "appropriate state". However, numerous academics have addressed this term. Wassengergh has stated, "'Appropriate State' could be the State of permanent residence or the main place of business of the private enterprise, the State by or under whose laws the private entity has been incorporated (the place of incorporation), and the state of the original licensing of the private entities"; see, Wassenbergh, *supra* note 49, p. 24. Stephen Gorove said logically that the "appropriate state" could be the state of nationality, since the responsibility is for "national" activities, but that drafters of the 1967 Outer Space Treaty used the phrase "appropriate State Party" and not "the states of nationality". He concludes that, "At least in some case the designation could refer to the launching state." He does not mention the criteria of these cases; see, Stephen Gorove, "Liability in Space Law: An Overview", Annals of Air and Space Law, Vol. VIII, 1983, p. 377. Herczeg suggested that the "appropriate state" includes (1) the state of seat of the non-governmental entity, (2) the state where production takes place, and (3) the launching state. See, Karl-Heinz Böckstiegel, "The Term 'Appropriate State' in International Space Law", *Proceedings of the 37th Colloquium on the Law of Outer Space*, October 9-14, 1994: Israel, p. 77-79.

52 Gijsbertha C.M. Reijnen, *Utilization of Outer Space and International Law*, Elsevier Scientific Publishing Company: Amsterdam, 1981, p. 112.

entities in their space activities. Article VII of the Outer Space Treaty 1967 and Article I (c) of the Liability Convention 1972 stipulate that a 'launching' state[53] controlling and authorizing (licensing) private entities' activities in outer space may be held liable to compensate for damages resulting from those activities.[54] These laws aim to create a chain of responsibility from states to private entities. Of course there may be instances in which a state is, at the same time, an "appropriate" state authorizing and supervising private entities and a launching state directly involved and retaining jurisdiction and control: such a state would bear responsibility on both counts.

To conclude, the ASO should cooperate with private entities mainly in order to develop high technology. As there will be shared responsibility, the ASO should clearly set out the terms under which these private entities and their activities will be authorized and supervised.

5.4 The Legal Impacts of the Establishment of the ASO in the World Community

In accordance with resolution 1721 (XVI) of the UN General Assembly proclaimed on 20 December 1961, the objectives of the Committee on the Peaceful Use of Outer Space (UNCOPUOS) are to (a) maintain close contact with governmental and non-governmental organizations related to outer space matters, (b) provide and exchange such information relating to exploration and use

53 Referring to Article VII of the 1967 Outer Space Treaty, Article I(c) of Convention on International Liability for Damage Caused by Space Objects 1972, and Article I(a) of Convention on Registration of Objects Launched into Outer Space, 1976, there are four criteria mentioned in the definition of the term "Launching State" including the following:
1) a state which "launches" (this criteria includes attempted launching as Article I(b) of the Liability Convention 1972 expressly clarifies);
2) a state which "procures" the launching (a "launching" state of this criteria has to qualify as a "procurement" for example: if a state has a satellite or other payload and asks another state to launch it, the first state has "procured" the launching, whereas supplying some small minor components to the payload or the launching of another state is not sufficient);
3) a state "from whose territory" a satellite is launched (the territory of the state for this criteria includes its territorial waters under the general rules of public international law, whereas obviously no national territory is involved if a launching is effected from the high seas. Furthermore, if a launching is effected from an airplane while in the national air space of a state, this air space could be considered as part of the "territory" of that state, as the state maintains sovereignty, jurisdiction and control over its air space under international and material air law.); and
4) a state "from whose facility" a satellite is launched (this criteria provide that a state is also a "launching" state if the launching is effected from its "facility" such as: on the territory, on board of a ship in the high sea, from an airplane in flight.);
See Böckstiegel, *supra* note 51, p. 80-83.

54 Wassenbergh, *supra* note 49, p. 24.

of outer space, and (c) assist in the study of measures for the promotion of international cooperation in outer space activities. Therefore, in order to build its status at an international level and cooperate closely with UNCOPUOS, when the ASO as an intergovernmental organization is established, the organization should, without delay, apply to UNCOPUOS to be given permanent observer status. Permanent observer status is not new to the United Nations; it promotes cooperation with non-member states. The UN has adopted the 1975 Vienna Convention on the Representation of States in their Relations with International Organizations of a Universal Character.[55] Although this Convention governs the status of representatives and observer states, its objective can be applied to international organizations. At present, the status of observer in UNCOPUOS has been granted to international space organizations of governmental and non-governmental character[56] and there are twenty organizations with permanent observance status such as the African Organization of Cartography and Remote Sensing (AOCRS), the Regional Centre for Remote Sensing of North African States (CRTEAN), the European Space Agency (ESA), the European Space Policy Institute (ESPI), the European Telecommunications Satellite Communications (EUTELSAT), and International Organization of Space Communications (Intersputnik).[57] According to Article 7 of the 1975 Vienna Convention the functions of a permanent observer include promoting cooperation with the organization; ascertaining activities in the organization; negotiating with the organization; and, safeguarding its interests in relation to the organization.[58] Each year, by invitation from UNCOPUOS, international organizations that are observers submit reports to UNCOPUOS[59] on their space-related activities and

55 The main purpose of this Convention is to define the legal position of the representatives of member states and the missions of the observers of non-member states; see, Kamenetskaya, *supra* note 20, p. 117-119.

56 Kamenetskaya, *supra* note 20.

57 Niklas Hedman, "UNCOPUOS, Its Decision Making Process, and the Role of OPSA", Presentation at the ECSL Summer Course on Space Law and Policy, 5 September 2006; see www.unoosa.org presentations made by UNOOSA: International Law (14/03/2007); UNGA Doc. A/AC. 105/L. 271, Draft Repor of Committee of the Peaceful Use of Outer Space, 16 June 2008; and, 'Space Activities of Member States and International Organizations', www.unoosa.org (07/07/2008).

58 Article 7 of the Vienna Convention on the Representation of States in their Relations with International Organizations of a Universal Character 1975 stipulates that:
'The functions of the permanent observer mission consist, inter alia, in:
a) ensuring the representation of the sending state and safeguarding its interests in relation to the organization and maintaining liaison with it;
b) ascertaining activities in the Organization and reporting thereon to the Government of the sending state;
c) promoting cooperation with the Organization and negotiating with it.'

59 www.unoosa.org/oosa/en/natact/index.html (14/03/2007): "Space Activities of Member States and International Organizations".

research, even though observers[60] have limited participation in international conferences and in the work of international organizations and, although they may take part in discussions and make suggestions, they cannot vote.[61]

If the ASO were granted the permanent status of an observer in UNCOPUOS, it would unquestionably have a great impact on space activities not only within the South-East Asian region but, arguably, in the world. It would give a voice to ASO members at the UN sessions, a forum to exchange information on space activities and stay informed of those issues discussed in the Committee, as well as access to its services.[62] Moreover, obtaining observer status would create an opportunity for ASO to cooperate with the specialized agencies of the United Nations and other international and national space agencies.

5.5 Problems and Prospects with regard to the Implementation of the Principle of International Cooperation in the ASO

Although the principle of international cooperation, as a fundamental principle of international space law, was specifically laid down in the Outer Space Treaty 1967 and later in the Declaration on International Cooperation 1996, it has, in fact, not become a legally binding obligation for the states to cooperate with one another in the exploration and utilization of outer space.[63] All states are free to determine the level of their cooperation in the exploration and use of outer space.[64] However, states should allow their cooperation in the field of space activities to be guided by other complementary principles, including the following:

> '1. The principle of equality and mutual benefit in which all states, including space powers and non-space powers, possess equal status in dealing with matters of cooperation. Any one state has no ground to claim privileged rights. Moreover,

60 The word "observer" might give the impression that these entities (non-member, other public international organizations, private organizations or individuals) with observer status fulfill a passive role. However, the opposite is often true. Observers often participate actively, transmitting their ideas to international organizations; see, Schermers and Blokker, *supra* note 4, p. 130.

61 Schermers and Blokker, *supra* note 4, p. 130-132.

62 Kamenetskaya, *supra* note 20, p. 118.

63 Knut Fock, "International Cooperation in Space – Legal Aspects for the Future", *Proceedings of the 33rd Colloquium on the Law of Outer Space*, October, 1990: Germany, p. 192-194.

64 Marietta Benkö and Kai-Uwe Schrogl, "Viewpoint: 'Space Benefits' Towards a Useful Framework for International Cooperation", Space Policy, Vol.11, No.1, February, 1995, p. 5-8.

all states should not seek advantages by infringing upon the interests of others, but should conduct themselves in a way beneficial to all relevant parties;[65]
2. The principle of respect for states' sovereignty in which all national conduct should accord the Charter of the United Nations and the fundamental principles of international law with the essential interests of the people of all countries;[66] and
3. The principle of equity and fairness in which all states, especially major space powers, should equitably and reasonably share the benefits and fruits of advanced space technology with developing countries.'[67]

Adherence to these additional principles together with the principle of international cooperation will encourage the establishment and success of ASO.

The establishment of the ASO will require overcoming some challenges as well as setting certain functional preferences[68] such as sharing interests and transferring technology. Guidance can be found in the examples of the development of other regional space organizations. ASEAN member countries are not powerful nations in the area of space exploration and utilization. However, they should pursue cooperative agreements with more powerful nations even though negotiations may be difficult due to the inequality of the parties and the absence of any legally binding duty for international cooperation. Those countries or organizations with highly developed space technology may only pursue such cooperative agreements if there is political will and a form of reimbursement.[69] The development of international cooperation in space activities between space powers and non-space powers should be founded primarily on the basis of equality and mutual benefit as well as equity and fairness. The transfer of technology from space powers to non-space powers like the ASO would probably involve minimal transfer and be limited to certain areas of space activities; a true transfer of technology and know-how such as hardware and system engineering management would not likely take place.[70] Space powers are quick to protect their space technologies such as

65 He Qizhi, "Basic Principles of International Cooperation in the Peaceful Uses of Outer Space", *Proceedings of the 26th Colloquium on the Law of Outer Space*, October 10-15, 1983: Hungary, p. 251-254.
66 *Ibid*.
67 *Ibid*.
68 Eligar Sadeh, *Space Politics and Policy: An Evolutionary Perspective*, Kluwer Academic Publishers: the Netherlands, 2002, p. 308.
69 Valnora Leister, "International Cooperation in Outer Space: Extending the European Model", *Proceedings of the 24th Colloquium on the Law of Outer Space*, September, 1981: Italy, p 207-210.
70 Anna Maria Balsano, "Technology Transfers and Public International Research Organizations: the Example of the European Space Agency", *Proceedings of the 37th Colloquium on the Law of Outer Space*, October 9-14, 1994: Israel, p. 121-130; Leister, *ibid.*, 69, p. 207-210; and, Sadeh, *supra* note 68, p. 313-314.

launching technology through intellectual property rights[71] and control tactics, claiming that the spread of this technology could create serious and dangerous situations for a peaceful world because this technology could be used both for civilian and military purposes.[72]

A second challenge for the ASO is the lack of a legally binding duty on states to cooperate with each other, as discussed above. Cooperation among ASEAN countries will play a key role in the successful establishment of the ASO. These days ASEAN member countries are moving toward a more integrated and interconnected future by way of the establishment of an ASEAN Community by 2015 and the creation of the ASEAN Charter to support the realization of ASEAN's community-building and to provide an enhanced institutional framework.[73] This trend does not ensure that ASEAN countries will cooperate in all areas. The creation of the ASO would require a commitment from ASEAN countries to cooperate on space exploration and utilization. In addition, the ASO would need to strike an appropriate balance between cooperation and competition in space activities to maintain respect for states' sovereignty and encourage members to join. Further decisions would need to be made on the nature of the ASO including its political character, which domestic and foreign policies it would promote, how it would manage national and regional security, how it would satisfy international accountability, and how it would most effectively become a world-leader in space technology.[74] In addition, the ASO would need to find ways to strive on behalf of its members to maximize national economic benefits, promote industrial autonomy, enhance economic competitiveness, and realize economic saving costs, as well as increase science and technology by enhancing capacities and knowledge gains.[75]

In the light of the above, members of ASEAN could implement the principle of international cooperation and other assistance principles by establishing a regional space organization, the ASO. Regardless of differences in cultures, politics and national interests, moving forward together they would each

71 In case of promoting commercial space activities, presently Space powers use and enhance the effective Intellectual Property mechanism for controlling and protecting their space business. Thus, the minimum technology transfer approach makes no sense to cooperate on a quid pro quo basis.

72 Boutros Boutros-Ghali, "International Cooperation in Space for Security Enhancement", *Space Policy*, Vol. 10, No. 4, November 1994, p. 265-276; and, Balsano, *supra* note 70, p. 121-130.

73 Cebu Declaration on the Acceleration of the Establishment of an ASEAN Community by 2015, www.aseansec.org/19258.htm(17/03/2007); Cebu Declaration on the Blueprint of the ASEAN Charter, www.aseansec.org/19261.htm(17/03/2007); Singapore Declaration on the ASEAN Charter, www.aseansec.org/21233.htm (20/11/2007); and, Charter of the Association Southeast Nations, www.aseansec.org/21069.pdf (20/11/2007).

74 Sadeh, *supra* note 68, p. 308.

75 Sadeh, *supra* note 68.

strengthen their development and utilization in the arena of space activities, share experience and learning, and close the enormous gap between ASEAN countries and other space powers.

5.6 CONCLUSION

Clearly to facilitate equitable access to and participation in space activities and the benefits derived therefrom, to coordinate efforts undertaken by regional organizations in the context of peaceful space activities, and to serve as a focal point for broader international cooperation for the exploration and utilization of outer space, the ASO is a most appropriate and effective model for the sustainable space development within the South-East Asian region. The organization would be mainly driven by the principle of international cooperation. In order to be recognized and respected within the international space arena, the ASO would be well advised to become an active member in the world community by building relationships not only with its members, non-member states and international organizations, and private sector players but also with the United Nations, especially UNCOPUOS, and UN specialized agencies.

6 Conclusions and Recommendations

> 'The more International Space Cooperation is spread out,
> the more benefits will be distributed to the greatest number of countries.'

The establishment of an international space organization is based on the concept of international cooperation. "International cooperation" can be defined as voluntarily cohesive action taken by a group of states in order to achieve and enhance the effective working together on particular activities with a united purpose. Each state has shared rights and collective obligations to cooperate with other states and it needs to compromise between common problems arising from bargaining and competition and profit distribution issues that tend to obstruct collective action. Naturally the concept of international cooperation is not new at all. At the end of the Second World War the concept of international unity and cooperation was captured in the United Nations Charter and subsequently through the formation of the United Nations this concept was sought to be put in practice. As a result, the UN immediately set about establishing cooperation regimes and solutions to deal with problems at an international level. Furthermore, this concept has in fact not only been asserted within modern international law in general, but also specifically in international space law.

By developing and applying the principle of international cooperation as one of the important standards of space law, the international community, led by the United Nations, has taken a strong stance on promoting international cooperation at all levels for the peaceful exploration and utilization of outer space. A key objective of international cooperation is to share the benefits of space activities among all countries, including developing countries. Furthermore, this cooperation can generally be divided into three main groups which are: global space cooperation, regional space cooperation and bilateral space cooperation. As a result of this research, it has become clear that regional space cooperation, through the creation of regional space organizations for sustainable development, is the most effective and practical means to share the capabilities of space science, technology, and applications. Such cooperative groupings offer obvious benefits for sustainable space development in geographic regions by pooling space expertise and other resources that support space activities and programs resulting in cost effectiveness. This can be achieved by promoting the further development of and equitable access to

space science and technology by reasonably and effectively utilizing space applications and by strengthening relationships among allied states and drawing non-allies closer.

There has not been sufficient progress in space activities recently where sustainable space development in the South-East Asian region is concerned. The ASEAN organization founded in 1967 currently plays an important role in supporting not only the economic and industrial development but also the political, cultural, social, scientific and technological development in the region. In the space arena, the ASEAN has established a Sub-Committee on Space Technology and Application (SCOSA) to provide a framework to enhance cooperation in space technology and applications and to implement space programmes. However, in practice, this Sub-committee only works with space power nations or space power organizations to provide space training courses and workshops. Therefore, the ASEAN itself does not have an individual space policy nor any appropriate space institutions to develop space activities for sustainable development within the South-East Asian region. At present, most countries in the South-East Asian region are members of the ASEAN and are developing countries. Because of this, space activities have been undertaken under the sponsorship of governments, acting either alone or in cooperation with others. Hence, some ASEAN countries have undertaken space activities by creating space agencies with government funds to support space programs. These national space agencies are, in fact, the most important foundation for the potential sustainable space development in this region. In the meantime, based on the principle of international cooperation in peaceful space exploration and utilization in outer space, all ASEAN countries are also involved in many levels of cooperation with other space power nations and international organizations. However, as yet, there obviously is no strong or concrete cooperation among ASEAN member countries regarding the establishment of a regional space organization with sustainable space development in this region. This could encourage the cooperation in the financial and human resources and the sharing of capabilities in space science, technology, and applications. As a result, ASEAN and its member countries should strongly consider and implement the notion of international cooperation in the peaceful exploration and utilization of outer space to enhance and develop their space activities so that they may become equal to those of other developed countries or other communities and to pursue a regional space cooperative system in a single rational framework, space policy and system.

Due to the size and nature of the South-East Asian region, space activities should be coordinated and the ASEAN countries should cooperate with one another even though the ASEAN is made up of countries with distinct political, social and economic fabrics and ASEAN member countries are not leaders in space technology. However, the "*from zero to hero*!" principle can be considered

when the ASEAN and its member countries look to the successful examples of other regional space institutions, especially ARABSAT, which is also made up of countries that are not leaders in space technology. Furthermore, in accordance with the ASEAN way (under one vision, one identity and one caring and sharing community[1]), the formation of the ASEAN Community, which should be established by the year 2015, indicates that the atmosphere of strong cooperation and good relationships is currently progressing throughout the South-East Asian region. Therefore, in my opinion, to strengthen the rule of law in space and to contribute to the progressive development of international space law within this region, an ASEAN Space Organization (ASO) should be established as soon as possible. The ASO should theoretically and practically be the most appropriate and effective model in the exploration and use of outer space for the benefits and for the interests of all ASEAN countries in spite of the fact that the establishment of an organization like the ASO will not immediately change the world. However, the ASO can guarantee that sooner or later the ASEAN community and all its people, irrespective of the degree of their economic, political and scientific development, will gain immensely from space exploration and exploitation under the guiding force of international cooperation.

In addition, the creation of an ASEAN Space Organization would not only create a coherent framework for ASEAN space policy and support other related ASEAN organizations involved in economics, technology and science, society and culture, and industry, but it would certainly also have an impact on the greater South-East Asian community and the world at large. It would create stronger ties not just between ASEAN countries but also with regional and international space organizations and other leading nations in space technology, which in turn would support the ASO's capabilities in facilitating and supporting the development and implementation of space activities and programs enormously.

In fact, the ASEAN and its member countries have had a certain level of experience in establishing a regional organization comparing with some European countries who founded the ESA and/or Arab countries who founded the ARABSAT. However, in order to guarantee the most practical and beneficial way in which the ASO can help all ASEAN countries to obtain truly valuable space benefits from sustainable space development within the South-East Asian region, the ASEAN and its member countries should work together to prepare and search for the most appropriate and effective solutions to solve the various problems that may arise with the establishment of ASO. Such problems would relate to the specific nature of space activities such as: financial resources and costs, competition, and political as well as security requirements. In particular,

1 See, the preamble of Charter of the Association of Southeast Asian Nations, 20 November 2007.

where competition is concerned, the ASEAN actually uses the principle of heightened competitiveness to promote its industrial policy within the South-East Asian region. Meanwhile, the ASO would use the principle of fair return to provide reasonable and equal opportunities to all members to participate in the development and utilization of the space technology industry among themselves. The ASEAN and its member countries would jointly need to find the most appropriate and the most effective and profitable solutions to this problem in order to create a balance between competition and future cooperation in space activities in this region.

Summary

The Asean Space Organization. Legal Aspects and Feasibility

The main rationale

In the 21st century, the influence of space activities on world society, economics, culture, the environment, and so on, has become increasingly important. Every country in the world needs to pay more attention to space activities and benefits; especially, the developing countries (such as the member countries of the Association of Southeast Asian Nations: ASEAN) which have been involved in and experiencing an increase in space utilization and exploration. However, it is clear that these countries need more financial resources, human resources and technical support for the sustainable development of space activities. Furthermore, they are faced with huge obstacles such as inadequate information, data access and cost, no involvement of end users, and sustainability of transferred technologies as well as commercialization of space activities which have become serious problems. These developing countries believe there is inequality among developed and developing countries in space benefits that may lead to international conflict between those counties.

The objectives and questions of the research

This research proposes ways to solve these problems, by showing how to increase the possibility of sustainable space development and how to obtain space benefits for developing countries (especially among ASEAN countries in the South-East Asian region) based on the concept of international cooperation. In order to achieve these objectives, this research will investigate and analyze the following questions:

1 What is the concept of international cooperation?
How has it been developed?
What is the current legal status in international space law?
2 What are the developments of space activities in ASEAN?
How is the above notion applied and implemented in ASEAN for sustainable space development? and,
3 What is the contribution made by this scheme to the development of international space law and ASEAN?

The outline of this research

In order to achieve the objectives and to answer all research questions, this research is divided into six chapters. *Chapter 1: International Space Cooperation* deals with the international legal evolution of space activities and the concept of international cooperation (such as general information, definition and legal status). *Chapter 2: The ASEAN Organization: A Case Study of Regional Cooperation* focuses on the evolution and recent status of the ASEAN Organization and its space activities for enhancing sustainable development in the ASEAN region. *Chapter 3: The Space Activities of ASEAN Countries* investigates the capacity of ASEAN member countries in past, present and future space activities in order to promote sustainable cooperation in the Southeast Asian region and to determine both strengths and weaknesses. *Chapter 4: Modern Regional Space Organizations: A Comparative Study for Launching an ASEAN Space Organization* is designed to explore and investigate the fundamental structure and experience of modern regional space organizations useful for setting up an appropriate and practical model of the regional space organization in the ASEAN region. *Chapter 5: The ASEAN Space Organization (ASO): A Feasible Model for Sustainable Space Development* will not only simulate a regional space organization for the ASEAN community, namely an ASEAN Space Organization (ASO) but also analyze the legal status of the ASO and its problems and prospects within the implementation of the concept of international cooperation in international space law for sustainable space development in the ASEAN region. Finally, *Chapter 6: Conclusions and Recommendations* will report on the result of the research and will suggest some recommendations for the effective application of the concept of international cooperation in international space law.

THE RESULTS OF THIS RESEARCH

This research has resulted in the realization that a definition of international cooperation can be made as a voluntarily cohesive action taken by a group of states, often in the context of an international organization, to achieve and enhance effective cooperation on particular activities with a united purpose. However, one of the key objectives of international cooperation in space activities is to share the benefits and the responsibilities among all countries, including developing countries. Since the beginning of the Space Age, the concept of international cooperation in space activities was not, in fact, as successful as it should have been even though this concept had been developed and conceived many times by the United Nations (such as the Outer Space Treaty 1967 and the UN Declaration 1996 on International Cooperation in Exploration and Use of Outer Space for the Benefit and Interest of All States, Taking into Particular Account the Need of Developing Countries). Furthermore, when considering international cooperation in relation to space activities,

it can theoretically be divided into three main groups which are: global space cooperation, regional space cooperation and bilateral space cooperation.

As a result of this research, it has become clear that regional space cooperation is the most effective and practical, because it does not restrict space benefits exclusively to the first user, making claim to the newly discovered or acquired space technology and accompanying benefits, thereby spreading the benefits equally among the other associated members. Moreover, regional space cooperation should naturally provide sufficient space benefits as countries that are located within the same geographical region, cooperating in space exploration and utilization, certainly stand to gain many substantial benefits such as sharing the capabilities of space science, technology, and applications and pooling space expertise and other resources that support space activities and programs resulting in cost effectiveness.

Therefore, with regard to the sustainable space development within the South-East Asian region and the feasible creation of an ASEAN Space Organization (ASO), it is of paramount importance that we should also investigate and incorporate the diligent harnessing of space activities of the ASEAN organization and all member countries of the Association of Southeast Asian Nations (ASEAN). However, this research states that, in spite of the promotion and strengthening of regional cooperation and solidarity of the ASEAN Community by the year 2015, there has not been sufficient progress in space activities recently where sustainable space development in the South-East Asian region is concerned. The ASEAN organization founded in 1967 presently plays an important role in strengthening prosperity and social stability, and ensuring durable peace in the region by continuing to develop in social, economic, political and technological areas. In the space field, the ASEAN has established a Sub-Committee on Space Technology and Application (SCOSA) to provide a framework for enhancing cooperation in space technology and applications and to implement space programs. However, in practice, the SCOSA only works with space power nations or space power organizations to provide space training courses and workshops. Presently, the ASEAN itself does not have a space policy nor any appropriate space institutions to develop space activities for sustainable development within the South-East Asian region. Meanwhile, this research demonstrates that, based on the rights to use Article I paragraph II of the Outer Space Treaty 1967, all member countries of the ASEAN (Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand and Vietnam) have recently participated in space activities in order to accelerate their economic and social development. Although they are actually non-space faring nations, they also cooperate with other space power nations and conduct with international organizations many levels of space cooperation to enhance their capabilities in space science, technology and application. However, the space powers do not, in fact, want to transfer their space know-

how as the space powers usually provide technological assistance to developing countries on reimbursement. Therefore, in the long run ASEAN countries intentionally want to break the cycle of technological dependency. At present, some ASEAN countries (such as Indonesia, Malaysia, the Philippines, Singapore, Thailand and Vietnam) have undertaken space activities by creating space agencies under the sponsorship of their governments to support space programs. These national space agencies form a very significant foundation for sustainable space development in this region. Furthermore, this research shows that at present there is no strong or concrete cooperation among all the ASEAN countries even though ASEAN space activities should be performed in the spirit of international peaceful cooperation, as a combined effort by all ASEAN countries would be much greater than the effort of one country alone.

The findings of this research demonstrate that, if there is regional space cooperation among countries in the South-East Asian region, this cooperation could be an effective way of stimulating the use of space applications and the development of space science and technology. Moreover, the establishment of an ASEAN Space Organization (ASO) would also minimize the gap between more and less developed ASEAN members, pursue a regional space cooperative system in a single rational framework, establish a space policy and system, and foster mutual understanding among them.

However, the ASEAN Organization and its member countries could study other successful regional space organizations to have a better understanding of how several countries can work together and jointly benefit from utilizing outer space for peaceful purpose in order to confirm that the establishment of an ASEAN Space Organization (ASO) would be a move in the right direction by the principle of international cooperation, with the knowledge that international space cooperation would not immediately change the world nor level the discrepancies between haves and have-nots. An analysis of existing organizations, such as the European Space Agency, EUMETSAT, ARABSAT and APSCO, provides useful models for creating an ASEAN Space Organization (ASO) in the form of a regional integration organization. An ASEAN Space Organization should also have a legal personality in order to strengthen the rule of law in space and to contribute to the progressive development of international space law.

Finally, this research once again strongly confirms that an ASEAN Space Organization (ASO) would be the most appropriate and effective basis for sustainable space development within the South-East Asian region and could guarantee that the ASEAN community and all its people, irrespective of the degree of their economic, political, and scientific development, would gain immensely from space exploration and exploitation under the guiding force of international cooperation. Furthermore, an ASEAN Space Organization (ASO)

would certainly have a huge impact on the whole world as described in the following sentence:

The more international space cooperation is spread out, the more benefits will be distributed to the greatest number of countries.

Samenvatting

DE ASEAN RUIMTEVAART ORGANISATIE. JURIDISCHE ASPECTEN EN HAALBAARHEID.

Aanleiding voor het onderzoek

In de 21ste eeuw is de invloed van ruimtevaartactiviteiten op de wereldgemeenschap, economie, cultuur, milieu, etcetera steeds groter geworden. Ieder land dient in toenemende mate aandacht te besteden aan ruimtevaartactiviteiten en de voordelen die deze activiteiten met zich meebrengen. Dit geldt met name voor ontwikkelingslanden, waaronder de lidstaten van de *Association of South-east Asian Nations* (ASEAN), die in toenemende mate betrokken zijn bij en ervaring opdoen met het gebruik en de exploratie van de ruimte. Duidelijk is echter dat deze landen voor de duurzame ontwikkeling van ruimtevaartactiviteiten meer financiële middelen, human resources[1] en technische ondersteuning behoeven. Bovendien zien zij zich geconfronteerd met enorme hindernissen, zoals ontoereikende informatie, toegankelijkheid en kosten van data, afwezigheid van betrokkenheid van eindgebruikers, duurzaamheid van overgedragen technologieën en commercialisering van ruimtevaartactiviteiten; al deze onderwerpen zijn uitgegroeid tot grote problemen. Deze ontwikkelingslanden zijn van oordeel dat sprake is van ongelijkheid tussen de ontwikkelde en de ontwikkelingslanden waar het gaat om de verdeling van de voordelen die voortvloeien uit ruimtevaartactiviteiten, hetgeen zou kunnen leiden tot internationale conflicten.

Doelstellingen en onderzoeksvragen

Dit onderzoek doet aanbevelingen om bovenstaande problemen op te lossen, doordat het inzichtelijk maakt hoe, op basis van het begrip internationale samenwerking, de mogelijkheid van duurzame ontwikkeling van de ruimtevaart kan worden vergroot, en op welke wijze door ontwikkelingslanden, meer specifiek de lidstaten van de ASEAN in de Zuidoost-Aziatische regio, voordeel kan worden verkregen uit ruimtevaartactiviteiten. Met betrekking tot deze

1 Er is voor gekozen om de term "human resources" in de Nederlandse vertaling te handhaven. Menselijke productiemiddelen wat een veelvoorkomende Nederlandse vertaling is, lijkt mij minder passend.

doelstellingen zullen in dit onderzoek de volgende onderzoeksvragen worden onderzocht en geanalyseerd:

1 Wat houdt het begrip internationale samenwerking in?
Op welke wijze is dit begrip tot stand gekomen?
Wat is momenteel de juridische status hiervan binnen het internationale ruimterecht?;
2 Welke ruimtevaartactiviteiten worden binnen de ASEAN ontwikkeld?
Op welke wijze wordt binnen de ASEAN het begrip internationale samenwerking geïmplementeerd en toegepast met het oog op duurzame ruimtevaartontwikkeling?; en
3 Wat is de bijdrage van het voorgaande aan de ontwikkeling van het internationale ruimterecht en de ASEAN?

De opzet van het onderzoek

Dit onderzoek is onderverdeeld in zes hoofdstukken waarin de onderzoeksvragen zullen worden beantwoord, ten einde de geformuleerde doelstellingen te verwezenlijken.

Hoofdstuk 1 Internationale samenwerking in de ruimtevaart behandelt de internationaal rechtelijke ontwikkeling van ruimtevaartactiviteiten en het begrip internationale samenwerking (zoals algemene informatie, definities en juridische status).

Hoofdstuk 2 De ASEAN: Een onderzoek naar regionale samenwerking focust zich op de ontwikkeling en huidige positie van de ASEAN, alsmede op haar activiteiten voor het vergroten van duurzame ontwikkeling op ruimtevaartgebied in de ASEAN regio.

Hoofdstuk 3 De ruimtevaartactiviteiten van de lidstaten van de ASEAN onderzoekt de capaciteit van de ASEAN lidstaten met betrekking tot vroegere, huidige en toekomstige ruimtevaartactiviteiten, ten einde duurzame samenwerking in de Zuidoost-Aziatische regio te bevorderen en de sterke en zwakke punten in dit kader vast te stellen.

Hoofdstuk 4 Hedendaagse regionale ruimtevaartorganisaties: Een vergelijkend onderzoek voor de oprichting van een ASEAN ruimtevaartorganisatie heeft tot doel gegevens die van pas kunnen komen bij het ontwikkelen van een passend en praktisch model voor een regionale ruimtevaartorganisatie in de ASEAN regio inzichtelijk te maken. Hiervoor zijn de fundamentele structuur van en ervaringen opgedaan met hedendaagse regionale ruimtevaartorganisaties onderzocht.

Hoofdstuk 5 De ASEAN ruimtevaartorganisatie (ASO): Een mogelijk model voor duurzame ruimtevaartontwikkeling gaat uit van de fictie van het bestaan van een regionale ruimtevaartorganisatie voor de ASEAN regio. In dit verband wordt de juridische status van een dergelijke organisatie geanalyseerd en wordt ingegaan op de problemen met en verwachtingen van de implementatie van het begrip internationale samenwerking binnen het internationale ruimterecht in het kader van de duurzame ruimtevaartontwikkeling binnen de ASEAN regio.

Hoofdstuk 6 Conclusies en Aanbevelingen geeft tenslotte een overzicht van de resultaten van dit onderzoek en doet enkele aanbevelingen voor de effectieve toepassing van het begrip internationale samenwerking binnen het internationale ruimterecht.

Onderzoeksresultaten

Dit onderzoek heeft geresulteerd in een definitie van het begrip internationale samenwerking, inhoudende een vrijwillige samenhangende actie van meerdere staten, meestal in de context van een internationale organisatie, om effectieve samenwerking, met betrekking tot specifieke activiteiten en met een gemeenschappelijk doel, te bewerkstelligen of te versterken. Echter, een van de hoofddoelstellingen van internationale samenwerking met betrekking tot ruimtevaartactiviteiten is het onder alle landen, waaronder de ontwikkelingslanden, verdelen van de voordelen en de verantwoordelijkheden die deze activiteiten met zich meebrengen. Sinds het begin van het ruimtetijdperk is het begrip internationale samenwerking met betrekking tot ruimtevaartactiviteiten niet zo succesvol geweest als het had moeten zijn. Dit ondanks het feit dat dit begrip door de Verenigde Naties (de VN) is ontwikkeld en neergelegd in onder meer het Ruimteverdrag van 1967 en de VN-verklaring inzake Internationale Samenwerking bij de Exploratie en het Gebruik van de Kosmische Ruimte voor het Nut en het Belang van Alle Staten, Rekeninghoudend met de Specifieke Behoefte van de Ontwikkelingslanden van 1996. Bovendien moet het begrip internationale samenwerking in het kader van ruimtevaartactiviteiten theoretisch worden onderverdeeld in drie hoofdgroepen, namelijk mondiale, regionale en bilaterale samenwerking.

De uitkomsten van dit onderzoek maken duidelijk dat regionale samenwerking op het gebied van ruimtevaart het meest effectief en praktisch is, omdat het de voordelen, die voortvloeien uit nieuw ontwikkelde of verkregen ruimtevaarttechnieken, niet slechts laat toekomen aan de eerste gebruiker, maar deze gelijkelijk verdeelt onder de andere leden van het samenwerkingsverband. Bovendien zou regionale samenwerking logischerwijs voldoende voordelen moeten opleveren, nu de landen die zich in hetzelfde geografische gebied bevinden op een kostenefficiënte wijze kunnen samenwerken bij de exploratie en het gebruik van de ruimte door het uitwisselen en toepassen van kennis en technologieën op ruimtevaartgebied. Eveneens kunnen voordelen worden behaald door het opzetten van gezamenlijke ruimtevaartprogramma's en het delen van andere faciliteiten die ruimtevaartactiviteiten en programma's ondersteunen.

Daarom is het, met het oog op de duurzame ontwikkeling van ruimtevaartactiviteiten in de Zuidoost-Aziatische regio en de mogelijke oprichting van een ASEAN ruimtevaartorganisatie, van het grootste belang dat eveneens de inspan-

ningen van de ASEAN en haar lidstaten op het gebied van ruimtevaart werden onderzocht. De uitkomsten hiervan zijn in dit onderzoek opgenomen. Een van de uitkomsten hiervan is echter dat, ondanks de inspanningen die worden gedaan ter bevordering en versterking van de regionale samenwerking en solidariteit tussen de ASEAN lidstaten tot het jaar 2015, recentelijk onvoldoende vooruitgang is geboekt met betrekking tot de duurzame ontwikkeling van ruimtevaartactiviteiten in de Zuidoost-Aziatische regio. De ASEAN, die is opgericht in 1967, speelt momenteel een belangrijke rol in het vergroten van de welvaart en de sociale stabiliteit en het verzekeren van duurzame vrede in de regio, door het voortdurend tot standbrengen van ontwikkelingen op sociaal, economisch, politiek en technologisch gebied. Op het gebied van ruimtevaart heeft de ASEAN de Subcommissie voor Ruimtevaarttechnologie en -toepassingen (SCOSA) ingesteld met het doel een raamwerk te ontwikkelen voor het verbeteren van de samenwerking in het kader van ruimtevaarttechnologie en de toepassing hiervan, alsmede voor de implementatie van ruimtevaartprogramma's. In de praktijk is het echter zo dat de SCOSA zich slechts bezig houdt met het geven van ruimtevaarttrainingen en workshops aan de ruimtevaartnaties of aan ruimtevaartorganisaties. De ASEAN heeft op dit moment geen eigen ruimtevaartbeleid, evenmin beschikt zij over instellingen die het ontwikkelen van ruimtevaartactiviteiten in de Zuidoost-Aziatische regio tot doel hebben. Ondertussen toont dit onderzoek aan dat alle ASEAN lidstaten (Brunei, Cambodja, Indonesië, Laos, Maleisië, Myanmar, Filippijnen, Singapore, Thailand en Vietnam), op grond van de rechten neergelegd in artikel I, paragraaf II, van het Ruimteverdrag 1967 recentelijk hebben geparticipeerd in ruimtevaartactiviteiten, met als doel het versnellen van hun economische en sociale ontwikkeling. Hoewel zijzelf niet kunnen worden beschouwd als "ruimtevaartnaties" (space faring nations) werken ASEAN lidstaten aan de verdere ontwikkeling van ruimtevaarttechnologie en toepassing hiervan, door samenwerking met ruimtevaartnaties en ruimtevaartorganisaties op verschillende niveaus. In feite willen de ruimtevaartnaties hun kennis op het gebied van de ruimtevaart echter niet overdragen; normaal gesproken verlenen zij slechts tegen vergoeding technologische ondersteuning aan ontwikkelingslanden. In dit verband zullen de ASEAN lidstaten op de lange termijn de cyclus van technologische afhankelijkheid willen doorbreken. Op dit moment hebben sommige ASEAN lidstaten, zoals Indonesië, Maleisië, Filippijnen, Singapore, Thailand en Vietnam, reeds stappen in die richting ondernomen door het oprichten van door de overheid gefinancierde nationale ruimtevaartorganisaties, met als doel de ondersteuning van ruimtevaartprogramma's. Deze nationale ruimtevaartorganisaties vormen een belangrijke basis voor de duurzame ontwikkeling van de ruimtevaart in de regio. Daarnaast toont dit onderzoek aan dat er op dit moment geen concrete samenwerking op het gebied van de ruimtevaart plaatsvindt tussen alle ASEAN lidstaten. Dit ondanks dat ruimtevaartactiviteiten zouden moeten worden ondernomen in de geest van het

begrip vreedzame internationale samenwerking, nu de inzet van alle ASEAN lidstaten gezamenlijk vele malen groter is dan die van een enkele lidstaat.

De uitkomsten van dit onderzoek maken verder duidelijk dat wanneer daadwerkelijk sprake zou zijn van regionale samenwerking op ruimtevaartgebied in de Zuidoost-Aziatische regio, dit een effectieve manier zou kunnen zijn voor het stimuleren van de toepassing en verdere ontwikkeling van ruimtevaarttechnologie. Bovendien zou de oprichting van een ASEAN ruimtevaartorganisatie de kloof tussen meer en minder ontwikkelde ASEAN lidstaten kunnen verkleinen en het wederzijds begrip tussen hen kunnen vergroten. Ook zou met de oprichting van een dergelijke organisatie naar een eenduidig raamwerk voor een regionaal samenwerkingsverband op ruimtevaartgebied kunnen worden gestreefd en een ruimtevaartbeleid en systeem kunnen worden ontwikkeld.

Voor een beter begrip met betrekking tot samenwerking tussen landen en het delen in de voordelen die voortvloeien uit een vreedzaam gebruik van de ruimte zou de ASEAN en haar lidstaten enkele reeds bestaande regionale ruimtevaartorganisaties onder de loep kunnen nemen, teneinde te bevestigen dat de oprichting van een ASEAN ruimtevaartorganisatie, uit het oogpunt van internationale samenwerking op ruimtevaartgebied, een stap in de goede richting zou betekenen. Dit uiteraard met de wetenschap dat deze samenwerking de wereld niet direct zal veranderen, noch de verschillen tussen de "haves" en "have-nots" onmiddellijk wegneemt. Een analyse van de bestaande organisaties, zoals de Europese Ruimtevaartorganisatie (ESA), EUMETSAT, ARABSAT en APSCO levert bruikbare modellen op voor het vormgeven van een ruimtevaartorganisatie in de ASEAN regio, in de vorm van een regionale organisatie ten behoeve van integratie. Een dergelijke organisatie zou rechtspersoonlijkheid moeten hebben om de rechtsregels die toepasselijk zijn op de komische ruimte te versterken en een bijdrage te kunnen leveren aan de voortschrijdende ontwikkeling van het internationale ruimterecht.

Ten slotte is dit onderzoek een sterke bevestiging dat een ASEAN ruimtevaartorganisatie de meest passende en effectieve basis vormt voor de duurzame ontwikkeling van ruimtevaartactiviteiten in de Zuidoost-Aziatische regio. Deze organisatie zou de ASEAN lidstaten en hun bevolkingen, ongeacht de graad van hun politieke, economische en wetenschappelijke ontwikkeling kunnen laten delen in de enorme voordelen die voortvloeien uit de exploratie en exploitatie van de ruimte, onder het leidende beginsel van internationale samenwerking. Voorts zal een ASEAN ruimtevaartorganisatie een grote invloed hebben in de wereld, zoals mag blijken uit de navolgende zin:

Hoe groter de schaal is waarop in de ruimtevaart wordt samengewerkt, des te groter het aantal voordelen dat zal worden verdeeld onder de grootst mogelijke hoeveelheid landen.

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Curriculum Vitae

Chukeat Noichim was born on 25 March 1967 in Nakhon-Sawan, Thailand. He obtained Master Degree in International law (specialization in Space Law) from Chulalongkorn University, Thailand in 1997. Furthermore, he obtained Certificate of Space Study, Summer Session Program from International Space University, France in 1999 and Certificate of Private and Public International Law from the Hague Academy of International Law, the Netherlands in 2006.

Since 1997-1999, he was a law lecturer at the Faculty of Law, Ratchatani University, Ubon-Ratchathani, Thailand. During 2000-2003, he was Dean of the Faculty of Law, Ratchatani University, Udonthani, Thailand. Moreover, since 2003 – present, he has been a law teacher at School of Law, Mae Fah Luang University, Chiang-Rai, Thailand.

In de boekenreeks van het E.M. Meijers Instituut voor Rechtswetenschappelijk Onderzoek van de Faculteit der Rechtsgeleerdheid, Universiteit Leiden, zijn in 2007 en 2008 verschenen:

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