

**MALAYSIA'S ENERGY SECURITY: CHALLENGES AND  
PROSPECTS**

*Dissertation submitted to Jawaharlal Nehru University  
in partial fulfillment of the requirements  
for the award of the degree of*

**MASTER OF PHILOSOPHY**

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**2008**



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**DECLARATION**

I declare that this dissertation entitled “MALAYSIA’S ENERGY SECURITY: CHALLENGES AND PROSPECTS” submitted by me for the award of the degree of MASTER OF PHILOSOPHY of Jawaharlal Nehru University is my own work. The dissertation has not been submitted for any other degree of this university or any other university.

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*To My Family.....*

## AKNOWLEDGEMENTS

I want to express my gratitude to my Supervisor Prof. Manmohini Kaul, whose guidance and valuable inputs made this work possible. Her valuable advice and critical analysis helped the most in completing my dissertation. Her keen interest in the subject enabled me to get deeper insights regarding my work and in all she has been a great mentor guiding all through.

I want to thank Prof. Ganganath Jha, for his timely analysis and constructive suggestions which helped me in making some important modifications in the work. His support was a great boost for all of us. I would like to thank Dr. Shankari Sundararaman, for sharing her perspective on the topic and for pointing out some crucial issues which needed to be there. I would also like to thank Prof. G.V.C. Naidu for his help and support. And a note of thanks also goes to the office staff, as they have always been very cooperative regarding the official work.

In the course of the study, I had to visit JNU Library and IDSA for material, so I would like to thank the office staff of both, as they were very helpful and generous in providing help. A note of thanks also goes to my friends and seniors and my sister Sulbha who supported me throughout and encouraged me to complete the study. My deepest gratitude goes to my dear husband Dr. Keerthi Kumar whose help and guidance made this possible. I have always greatly valued his deep understanding and thoughtful insights regarding a range of subjects. And his support has been the driving force behind this work.

14<sup>th</sup> July, 2008

  
Vasudha Aggarwal

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## Abbreviations

ADB	Asian Development Bank
AEEMTRC	ASEAN- EC Energy management Training and Research Centre
AEMEC	ASEAN Economic Ministers on Energy Cooperation
AMEM	ASEAN Ministers on Energy Meeting
APEREC	Asia Pacific Energy Research Centre
APSA	ASEAN Petroleum Security
APAEC	ASEAN Plan for Action in Energy Cooperation
APCSS	Asia-Pacific Council for Security Studies
APEC	Asia- Pacific Economic Cooperation
ARF	ASEAN Regional Forum
ASEAN	Association of South East Asian Nations
EE	Energy Efficiency
EEZ	Exclusive Economic Zone
EIA	Energy Information Administration
GDP	Gross Domestic Product
IAEA	International Atomic Energy Agency
LNG	Liquefied Natural Gas
LOSC	Law of Sea Convention
MECM	Ministry of Energy, Communication and Multimedia
MISC	Malaysia International Shipping Corporation
MMEA	Malaysian Maritime Enforcement Agency
MTJA	the Malaysia-Thailand Joint Authority
MINT	Malaysian Institute for Nuclear Technology Research
NEP	New Economic Policy
OECD	Organisation for Economic Co-operation and Development
OGJ	Oil and Gas Journal
OPEC	Organization of Petroleum Exporting Countries
PETRONAS	Petroleum Nasional Berhad
R&D	Research and Development



RE	Renewable Energy
RM	Malaysian Ringgit
SCS	South China Sea
SESCO	Syarikat SESCO Berhad
SLOC	Sea Lanes of Communication
SOGT	Sabah Oil and Gas Terminal
SOM	Straits of Malacca
SREP	Small Renewable Energy Power Programme
TERI	The Energy and Resources Institute
TNB	Tenaga Nasional Berhad
UBBL	Uniform Building By-laws

#### **List of energy units**

Bbl/d	Barrels per day
Bbls	Barrels
Ktoe	Kilo Ton of Oil Equivalent
mmbtu	Million British thermal units
MW	Mega Watt
MWh	Mega Watt hour
MMcf/d	Million cubic feet per day
Mmscf	Million standard cubic feet
Mmscfd	Million standard cubic feet per day
Nm	Nautical mile
tcf	Trillion Cubic Feet

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## MAP OF MALAYSIA



**Source: Country Analysis briefs, EIA (2007), page. 1, URL: [www.eia.doe.gov](http://www.eia.doe.gov)**

## **PREFACE**

Energy in the form of electricity and fuel is a part of our everyday life. But energy security is a complex issue. And after studying the subject, one becomes aware of the complex dynamics which go behind in ensuring energy supplies for any country. And how any disruption, can affect the day to day lives of the people. Energy security becomes critical for a country to survive, as energy overtakes many other factors in maintaining a normal lifestyle.

It encompasses many issues which are interlinked with it and are of great concern. The increasing need for energy sources is leading to depletion of fossil fuels. But energy security is needed for all the countries to ensure stability. The issue has mostly been seen from an importers' point of view, so looking at it from an exporters' point of view definitely interested me. This makes the study of Malaysia's energy security important from the point of view of an exporter of energy. Even if a country has huge reserves, that it forms a big percentage of its exports, still the security issue looms large.

Malaysia is an exporter of oil and natural gas to Japan, South Korea and Taiwan and earns a good amount of revenue. As a rising economy, it has its own problems linked to greater domestic demand for energy. This makes Malaysia's case for energy security stronger, as it has to balance out the internal plus external demand for energy. The greater use of energy is bringing forth greater challenges, which needs careful study. Malaysia's energy security, the current situation and the developments regarding it need to be looked at to access the situation.

This study is divided into five chapters, the first chapter looks at energy security as a concept and its theoretical aspect and its growing importance in the globalised world of today. And how energy security as a concept has widened in its approach and with energy exporting countries also coming under its ambit, it is defined in different terms. Then chapter two will try to look at the current energy scenario of Malaysia, while looking at the energy demand and supply of the country. It will present in detail how current

resources are used and how the current ninth Malaysia plan has catered to the energy policy issues.

The following chapter three will attempt to discuss the challenges faced by Malaysia in managing its resources at all levels i.e. national, regional and international. A country like Malaysia faces many domestic challenges because of the rising demand within the country. As the growing demand within country and export management brings up many challenges. Chapter four aims at exploring the future prospects of Malaysia's energy security, which can be promoted through cooperation and how Malaysia can deal with the challenges to its energy security at different levels. With many options available it can look for the best way forward and ensure enough energy resources for its domestic use and also for export purposes.

And the concluding chapter will bring out the overall assessment of the study. It will try to connect the earlier chapters to examine Malaysia's energy security as a whole. The chapters will try to look at the issue closely and will also try to find answers to some questions which are crucial for a country's security. And as Malaysia is an important nation in the Southeast Asian region, its energy security will lead to greater stability in the region and cooperative security will also be enhanced.

## CHAPTER I

### INTRODUCTION

Security as a concept has been contested by many scholars, “with controversies surrounding its meaning” (William T. Tow and Russell Trood 2004: 13). There have been different interpretations regarding it as well. The term ‘Security’ originated from the Latin word ‘securus’ which means free from danger. And security has been associated with nation-states for long and has been defined in terms of protecting national interests. Thus, the main area of interest for both academics and statesmen has been in finding ways to ensure state ‘Security’. However, there is no one definition, for example according to Barry Buzan (1983), “In the case of security, the discussion is about the pursuit of freedom from threat”.

This view defines the realist foundation of security which has dominated the world politics since the treaty of Westphalia laid down the state system. This was based on the hierarchical understanding of anarchic global system based on national power. So the key realist interpretations make military preparations the basis of national security, believing that offensive capabilities are needed for defending their territory. Thus, threats were seen in military terms only. And during Cold War, security studies mainly focused on military defense (Alan Collins 2003: 2). As David Baldwin (2007) also points out that,

*“During Cold War, security studies were composed mostly of scholars interested in military statecraft. If military force was relevant to an issue, it was considered a security issue; and if military force was not relevant, that issue was consigned to the category of low politics<sup>1</sup>.....”*

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<sup>1</sup> Military force, not security was the central concern for security studies (David Baldwin 1997: 2). With military standoff between the superpower, the emphasis placed on military threat was attacked for being too narrow.

This understanding of security was weakened by the transformation of international system from a hierarchical to an interdependent order<sup>2</sup>. Though the concept of security will always have nation-state as the nucleus of international system, the debate over what constitutes security has been going on for long. Now the term security encompasses a range of issues<sup>3</sup>. Immediately after the World War II, principal of collective security was introduced in the United Nations' charter to avoid confrontation between powers and since then various issues have been linked to the security of nations. Therefore, the concept has moved away from the military centered perspective to non-traditional security issues.

The concept of traditional security had to be redefined as conflicts between nations were not the only cause of insecurity. Globalization with its widening reach has also expanded the concept of security. As Xu Jian (2004) states "Many unconventional issues are getting pronounced and attracting more attention from the international society with the development of globalization in the post cold war period".

"Security studies have therefore thrown off the all-consuming element of military matters (which is better known as strategic studies) to encompass the myriad of issues that affect the security of states and individuals" (Alan Collins 2003: 6). This has led to alternative approaches to security i.e. cooperative security and human security<sup>4</sup>. As the earlier concept of security was under-developed and didn't include many important issues. Like, the concept of cooperative security is about ensuring security of a nation in a cooperative effort with others. The concept of national interest takes in the interests of the international system as a whole and also includes the trust between states to work in harmony with each other. It is held that states must co-operate with others to maintain

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<sup>2</sup> The concept of security got transformed after the end of Cold War or one can say, after the end of the bi-polar world. Once Non-traditional security threats came to the forefront, the concept of security widened (Andrew Tan 2001).

<sup>3</sup> In addition to Broadening security to other sectors, there has also been a deepening of security, as the referent object of security has also become a key issue in security studies literature (Alan Collins, 2003: 3).

<sup>4</sup> Another term Systemic security is also provided by Barry Buzan in his book, 'People, State and Fear: The National Security Problem in International Relations'. He explains the concept as systemic security which binds the security of individual, States and the International system together. He tried to broaden the understanding of security in its larger dimensions (Barry Buzan 1991).

harmony. And the interest in expanding the referent of security to include individuals or groups within a state has become part of human security (Alan Collins 2003: 4). It is concerned with the protection of individuals against fear, hunger and disease<sup>5</sup>. As Amitav Acharya (2001) puts it, “Human Security is a mixture of two aspects: freedom from want and freedom from fear”.

The concept of comprehensive security encompasses not just traditional military strength but also other non-traditional aspects. It incorporates environmental, economic, cultural, energy, food security, terrorism. And through comprehensive security, a country feels less vulnerable to external or internal threats. And not just this, the goal of comprehensive security can be achieved through cooperative security as through cooperation between nations at the international, national and regional level.

Thus security has widened as a concept and takes in a lot more issues that deal with the normal lives of people. As energy security is a part of the comprehensive security dialogue, therefore it has become important for countries to secure their energy resources in today’s world for the betterment of their country and people. Energy issues have achieved immense attention in the 21<sup>st</sup> century, because of its tremendous use in the day to day life<sup>6</sup>. And it has become a part of the global security agenda.

Energy is recognized as one of the most crucial elements for economic growth today. But the consumption of these non-renewable resources is being used faster than the earth can replenish them. It provides light, heat and transportation; which form the lifeline of today’s society, making one extremely dependent on these. The main energy resources are oil, gas and coal- the ‘Golden Fund’ of our planet. The famous Russian chemist Dmitry Mendeleev said, “To burn oil means to stoke a stove with banknotes” (Mikhail Y Pavlov 2006: 13). The quote signifies the importance of energy in today’s world. But the

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<sup>5</sup> Rather than traditional notion that emanates from achieving strategic stability for external defense, human security is achieved by changing domestic order that causes insecurity for people (Alan Collins 2003: 4).

<sup>6</sup> Energy is an essential part of growth and development today. And energy services extend well beyond the direct uses of heating, cooking and lighting to a range of essential building blocks of development. The 2002 World Summit on Sustainable Development, held in Johannesburg renewed attention to the critical role of energy in sustainable development (Responsible Growth for new Millennium, World Bank 2004).



growing demand for energy is leading to excessive use of these fuels. And with increasing economic development, the pressure has become immense on the existing stockpile of resources.

Energy resources can be divided into two kinds- conventional sources of energy and non-conventional sources of energy. The conventional sources of energy include Oil, Natural gas and Coal. These resources also come under the category of non-renewable resources as once used, these cannot be replenished. So the existing resources have to be used in a proper way, so that these are available for a much longer time. Whereas the non-conventional sources of energy include hydro-power, biomass, light etc. These resources are provided by nature in plenty, so they come under the category of renewable resources. According to World Resources (2005-06) "But mainly the commercial fuels that power the world's industrial economies are oil (about 40 percent of world energy consumption), coal (30 percent), natural gas (25 percent), hydroelectric and nuclear energy (5 percent)". The fossil fuels account for 95 percent of the world consumption.

Non-renewable resources will remain the primary sources of energy, meeting almost 90 percent of increase in demand in the coming years. "In the last 100 years world energy consumption has increased 12 times (doubling average 27 years) and has grown twice as fast as the Earth's population" (Mikhail Y Pavlov 2006: 12)<sup>7</sup>. "World energy demand has increased by 95 percent in the last 30 years and is also expected to rise by 50 percent over next 25 years and Asia is expected to be the world's largest consumer of primary energy by 2010, with overwhelming majority of its oil imported from outside the region" (Robert Manning 2000: 17-39). The control over resources has become extremely important for countries.

With the effects of globalization, the need for energy has grown and ensuring energy security has become important for countries as a part of comprehensive security. "And providing the energy needed to maintain and expand the living standards and economic

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<sup>7</sup> According to estimates energy consumption will increase from the present 14 billion t.c.f. to 37 billion t.c.f. by the end of twenty-first century (Mikhail Y Pavlov 2006: 13).

prosperity is one of the biggest challenges of the twenty-first century” (Responsible growth for new millennium, World Bank 2004). The more there is economic growth, the more there is need for energy. Energy security has become vital for countries today and has become a part of every country’s national security. As Senator Richard Lugar, Chairman of the Senate Foreign Relations Committee, introduced the Energy Diplomacy and Security Act (S. 2435), which “recognizes energy security as a central element of national security” (Vince L. Morelli 2006: 30)<sup>8</sup>.

### **Energy Security as a Concept**

The very first time when energy security became an issue of national strategy, was in 1913, when Winston Churchill made the decision to shift the source of power of British Navy from coal to oil<sup>9</sup>. Since then energy security has emerged again and again as an issue of great importance. And it has again come back into focus because of rising oil prices which have almost doubled in the last three years. There are other reasons as well which have brought the attention back on this issue. As cited by a well-known scholar *Chen Fengying (2006)* “.....outbreak of second Iraq war, rampant terrorist activities, geopolitical tension, rising energy demand and comparable shortages in supplies and continued soaring prices have once again put energy security on the agenda.” The growing demand for energy and the relative scarcity of these resources bring energy security to the forefront.

With growing energy demand in the background of economic globalization, energy security has become critical for rapid economic growth. The 1973 Arab oil embargo occurred at the time of increasing demand and brought out the issue of supply shocks

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<sup>8</sup> Report by Congressional Research Service (CRS), “European Union’s energy security challenges”, September 11, 2006 by Vince L. Morelli. For more details, see: URL: <http://italy.usembassy.gov/pdf/other/RL33636.pdf>

<sup>9</sup> This decision was made by Winston Churchill to make the British fleet faster than its German counterparts. And the switch also meant that the royal navy would not rely on coal from Wales but on the oil supplies from what was then known as Persia. ( Daniel Yergin 2006: 69 )

which caused huge damage to the importing countries<sup>10</sup>. The 1980 Iran-Iraq war led to artificial increase in world demand accelerating the crisis. Though the 1991 Gulf war created a tense situation, its impact on oil was modest in comparison to earlier crises<sup>11</sup>. These incidents demonstrate that energy crises can be extremely critical if not handled properly by concerned countries.

But “Energy security entered the lexicon of public policy in the wake of Arab oil embargo of 1973” (Patrick L. Clawson 1995: 140-148). Since then the meaning of security has expanded. The focus is no longer on the possibility of global confrontation between powers, as was the case during the Cold War era but includes the stability of prices and it’s repercussions for the demand/supply position of energy resources. “Today, the focus of energy security remains the effect of supply interruptions and oil price shocks on the economic performance of many countries” (Mehmet Ogutcu 2004: 450).

As Rodney K. Lay (2007), points out, Energy security is not a new issue. Since the first sticks caught fire and produced heat, the question of how to acquire and apply energy resources has been central to human existence. “At first the strategy to sustain energy was straightforward: Gather more of the seemingly inexhaustible supply at hand. This worked well for a time, and as society discovered more uses for energy, the problem of maintaining an adequate supply kept pace. Eventually, coal, natural gas, and oil replaced wood. Energy carriers such as water, wind, and electricity allowed for more creative uses, and demand grew with each new invention. Some nations had more resources than others, but in general energy was both affordable and plentiful to those who felt they needed it most. Supply and demand were in harmony, and humans enjoyed the stability they came to know as energy security. Not so today. The complacency born of easily

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<sup>10</sup> One of the important lessons learned from the 1973 embargo was that energy shocks can be significant and psychologically enduring despite being measurably small and transitory and in part, the rising world consumption at that time was also one of the reasons (Patrick L. Clawson 1995: 165).

<sup>11</sup> The invasion of Iran by Iraq produced serious disturbances in the Persian Gulf. Iraq gained control of positions of key Iranian oil province of Khuzestan and damaged Iranian Oil production and transportation facilities. And on the other hand, oil companies and governments began to stockpile oil to build reserves. These combined actions put upward pressure on oil prices which magnified the situation (Patrick L. Clawson 1995: 167)

acquired, sustainable energy has vanished. Supply and demand is at odds, and energy security is at best elusive”<sup>12</sup>.

Energy security has been described by Barry Borton (2004) as “a condition in which a nation has access to sufficient energy resources at reasonable prices for the foreseeable future without any risk of disruption”. And according to Daniel Yergin (2006) energy security can be described as, “In the developed world, the usual definition of energy security is simply the availability of sufficient supplies at affordable prices, different countries interpret what the concept means for them differently”

According to David Gray (2007), “Energy security results from abundant, reliable, affordable, and environmentally friendly energy. It is a state in which supply exceeds demand to the point that neither acquiring nor protecting the energy supply diminishes the benefits of using it. Energy insecurity arises when there is the potential for supply shortfalls, price volatility, and dependence on unreliable sources. With supply barely meeting demand, the world is decidedly in the latter state”. The European Commission<sup>13</sup> (2006) has defined energy security as – “the ability to ensure that future essential energy needs can be met, both by means of adequate domestic resources worked under economically acceptable conditions or maintained as strategic reserves, and by calling upon accessible and stable external sources supplemented where appropriate by strategic stocks”.

As the above definitions suggest, a country’s management of energy security lies in meeting the domestic need by way of maintaining reserves. For economic growth, securing energy needs a primary goal of nation-state. However, “energy security holds different meanings for different countries” (Daniel Yergin 2006). Although a standard definition is given by scholars, it remains incomplete if it does not take into account the specific needs of a country. For instance, European Commission definition looks at it only from the perspective of importing countries as most of the European nations are net

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<sup>12</sup> For details, see URL: [www.noblis.org/sigma\\_ens\\_dec07.pdf](http://www.noblis.org/sigma_ens_dec07.pdf)

<sup>13</sup> For more details, see: URL: [http://ec.europa.eu/index\\_en.htm](http://ec.europa.eu/index_en.htm)

energy importers. This definition does not hold good for an energy exporting country, which has to maintain its export capacity and has to use its abundant resources in a way that yields maximum benefits to them. For example, “Russia plans to promote economic growth and improve living standards through the maximum use of its energy resources” and as an oil/gas producer and exporter, it takes energy resources as a fountainhead of national strength” (Chen Fengying 2006: 3)<sup>14</sup>. Thus an energy producing country will always look at energy security from a different perspective than those who depend on external energy sources.

The basic concern here is that energy security has not been defined in a way that suits the perspective of individual nations. Though the basic principle lies in ‘securing energy for one’s country either by importing to fulfill the scarcity of resources or by exporting in case of abundance of resources, the main target lies in meeting the internal demand without affecting the growth pattern’. Therefore, energy security is not just about continued supplies and stable prices but takes different meaning in different scenarios. Countries adopt strategies to suit their specific energy security needs and adapt it according to their geo-strategic compulsions.

### **Debates on Energy Security**

Scholars have debated and differed on energy security issue. The first debate relates to the concept itself and its connection with ‘comprehensive security’ and the other one is about whether energy security lays in traditional security or non-traditional security. According to the first debate, there are two sets of literature - one focuses on energy and the other one on security<sup>15</sup>. The basic definition of energy security is security of adequate energy at a stable price. So “energy security is not only about securing access to energy supplies but securing reliable final energy which depends on a number of factors. Factors

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<sup>14</sup> “Considering it as an important factor for determining its international status, Moscow puts energy diplomacy at the core of its external activities” (Chen Fengying 2006: 4).

<sup>15</sup> The first set of debate is about the final energy supplies, which is represented by the conversion of primary energy into electricity, so a country has to secure energy which depends on a score of factors. So this is often seen as domestic politics with little implication or international politics. The focus is plainly on energy itself ( Xu Yi-chong 2006 : 266)

like market reforms to improve economic and energy efficiency, prevention of large area power outages, protection of power plants from terrorist attacks and energy conservation” (Xu Yi-chong 2006: 266). This set emphasizes on securing the final energy and not on the supply security. The other set of literature on energy security is “supply-oriented i.e. supply interruptions and oil price shocks remain the main concern for some analysts. So security is equated with self-sufficiency”<sup>16</sup> (Xu Yi-chong 2006: 266). Here the issue is more focused on the supply and consumption and put forward the view that supply part of energy security dictates a country’s security.

The issue has been studied from the impact of globalization on scarce resources, making countries more inter-dependent. The message is that no country can develop in isolation and can be completely self-reliant (even in terms of energy).

The second trend in the debate is about whether energy security lies in the realm of non-traditional/unconventional security or traditional/conventional security. As Xu Jian (2004), points out, “Conventional security is referred to issues of so-called high politics, such as national defense, territorial disputes, sovereignty, inter-states’ military posture. These issues are concerned with the survival of a nation and thus are regarded as the core of international security”. For some energy security comes under the category of traditional/conventional security, as supply disruptions is part of conventional security, which includes military attacks, regional instability, warfare, foreign sponsored espionage, disruption to trade and supply routes and change in regional balance of power.

On the other side, the issue is put under the non-traditional/unconventional security “which refers to security issues of the so-called low-politics, including economic security, terrorism, environment pollution, energy security, population explosion, drug trafficking etc and these issues are often beyond the concerns of conventional security in

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<sup>16</sup> Focusing on the supply side, and being state centered and self- sufficient – that is when a country starts importing a large amount of oil and gas, it becomes vulnerable to potential energy sanctions and it will likely engage in political and military competition with other energy importing countries ( Xu Yi-chong 2006 : 266)

the past” (Xu Jian 2004: 25)<sup>17</sup>. Issues like ethnic strife, religious fundamentalism, international terrorism, environmental degradation, food security, population migration and refugee issues which are not directly related to traditional concept of security but are equally important. Therefore, according to this view, energy security falls under the rubric of non-traditional/unconventional security.

Though the debate continues, it can be argued that energy security has characteristics of both traditional and non-traditional security. So on the one hand it is held as non-traditional as it is not a part of “military security”, on the other hand it comes under traditional security framework as it involves the safety of supply routes. The view of non-traditional/unconventional security supporters believe that international environment has become complex as there are number of destabilizing issues which affect security. These are: piracy and terrorism. Also as aptly described, “coupled with a likely decline in regional energy supplies have increased the potential for confrontation over resources such as oil and other hydrocarbons and over energy infrastructure such as pipelines and dams” (Lorraine Elliott 2004: 170). Under the concept of comprehensive security, energy security becomes part of national security as it assumes that “non-military” issues also influence national security. “The traditional/conventional security and non-traditional/unconventional security are two aspects of comprehensive security like a coin’s two sides” (Xu Jian 2004: 25).

As the traditional security issues have become more moderate in the global scene, the non-traditional concerns are growing. And energy security has become a great concern for countries these days.

### **Perspectives of Energy Producers and Consumers**

Energy security implies assuring adequate supply of energy at a reasonable cost. There are two sides of Energy security i.e. security of demand and security of supply. “Energy

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<sup>17</sup> See Jian, Xu (2004), “New Challenges, new approaches: Unconventional Security and International Security Cooperation”.

importing countries want security of supply from energy exporting countries and energy exporting countries want security of energy demand in energy importing countries” (Hugo Mc Pherson et.al. 2005: 79). For both consumers and producers, this implies dependency<sup>18</sup>. But at different times in different countries, the critical elements of energy security are viewed differently.

For developed countries, energy security is more about sufficient supplies at affordable prices. Like Europe, they are trying to manage their dependence on imported natural gas from Russia etc. For Japan, it’s a necessity, as it has scarce domestic resources. “But for developing countries, it is about how changes in energy prices affect their balance of payments” (Daniel Yergin 2006: 69-82). For countries like India and China, the situation is tricky as they have to adjust to the changing international system while managing their growing economies. And East Asia’s rapid economic growth has increased its use of energy. “The current pattern of energy consumption growth is becoming unsustainable from both environmental and energy security perspectives” (Haruhiko Kuroda 2007: 157-158).

“While energy security has hitherto been discussed from the perspective of importers, increasingly the debate is getting enlarged to include the exporters, as it is becoming evident that long-term security lies in recognizing and deepening the interdependence” (Ligia Noronha, TERI 2006). To achieve global energy security both perspectives have to be taken into account. From the point of view of an energy exporting country, it means ensuring right payments for their resources, also ensuring a market for its energy supplies, to avoiding any supply disruption, to fulfilling the domestic needs. Thus an energy producing country has to keep all these factors in mind and has to make sure that its export potential is not affected. Countries vying to be in a dominant position as energy consumption is increasing<sup>19</sup>, like “Russia, wants to gain primacy over main pipelines and

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<sup>18</sup> Interdependence between producers and consumers and their joint desire to provide long-term uninterrupted access to energy products provides the basis of establishing global energy security (Patrick L. Clawson 1995).

<sup>19</sup> The world is currently witnessing renewed resource nationalism as countries seek to respond to the current high energy prices, either in terms of acquiring oil and gas reserves when these are not available domestically, or using them to flex geopolitical muscles when they are, but there is an urgent need to



market channels through which it ships its hydrocarbons to international markets” (Daniel Yergin 2006: 69-82). Similarly, Malaysia though a small exporter of energy has been engaged in regional dialogue to ensure safety of its resources and has also been trying to diversify energy use in order to maintain its export capacity.

Challenges facing exporters of energy are:

- An exporter has to ensure security of demand from the energy importing countries, so that there’s always a market for its energy exports. An exporting country gets a good percentage of its revenues from energy exports which are crucial to a country’s development. For example, Countries like Venezuela and Mexico count on oil revenues in their economic development plans.
- It has to maintain its export capacity, to balance the trade in the country. As a small fall in the export percentage can be a huge problem for country’s trade volume.
- It has to ensure efficient use of non-renewable resources domestically as an increased demand for these resources can affect its exports. And it also provides an alternative for further increasing its energy exports, as decreased use within the country will provide more resource for trade.
- It has to keep a check on the growing domestic demand for energy by providing non-conventional solutions to the demand problem which includes an increased use of renewable resources and avoiding any wastage of energy.
- It also has to make sure that the supply routes are protected, which requires providing military security on the way and prevent attack on the supply containers through the energy trade lanes<sup>20</sup>.
- “It has to mitigate any potential loss of competitiveness of its exports in the international market” (Hugo Mc Pherson et.al. 2005: 79)

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understand the interdependence of energy systems and the complementary interests of energy producers and consumers, and the need for stability in markets and supplies (Ligia Noronha, TERI 2006).

<sup>20</sup> This issue relates to maritime security and “maritime issues are at the forefront of current regional security concerns” (Jin Hyuk Paik and Anthony Bergin 2004: 177). With dangers like Piracy, terrorism; safety of vessels has become extremely crucial.

From the point of view of an importing country, almost an equal number of issues come to the forefront. An energy importing country has to ensure security of supply to meet the domestic demands. To illustrate for India and China, it is about ensuring enough supply of energy, so that it doesn't affect their economic growth<sup>21</sup>. For developing countries resource scarcity and keeping with rising demand is a major challenge. Resource scarcity has led to greater dependence on different sources of energy, which may not be environment friendly.

Challenges to be met by consumer countries are as follows:

- Consumer has to ensure security of supply from energy exporting countries, so that the demand within the country can be met. The demand for fuel is expanding more so in developing countries. Like the “world’s fastest growing markets are within developing Asia” and this “growth requires increasing and steady flow of energy to fuel it” (Mehmet Ogutcu 2004: 451). These countries are dependent on imported fuel to a large extent.
- Consumers have to make sure that the resources are used in an optimum way in the country, to avoid huge dependence on energy imports. Also to minimize any loss of energy, so that the balance of trade is not affected by increased imports. In other words, it has to seek conservation of energy.
- It has to rely more and more on the resources available in the country itself, by diversifying the use of energy. By the use of renewable resources, which can be huge advantage to a nation which is resource pressed.
- It has to ensure continues supply of resources, so that the normal processes of the country are not affected. As a nation’s stability and growth can be affected by energy shortages.
- Even importing countries have to protect the transport networks delivering oil to their countries. As a lot of investment goes in to import fuels.

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<sup>21</sup> China has had one of the fastest growths in energy demand in the last two decades and has now become the world’s second largest oil consuming nation and as it’s a rapidly growing economy, its demand will soar in the coming years. And India which is the world’s sixth largest energy consumer, receives 70 percent of the crude oil by imports. According to World Energy Outlook, India’s dependence on oil imports will grow to 91.6 percent by the year 2020 ( World Energy Outlook 2006)

- It also has to keep investing in different oil producing countries so that it is not fully dependent on one country as such for fuels. A country has to ensure import diversification.

It is obvious from the above debate that energy security is equally important for both energy exporting and importing countries. Any interruption in flow of energy will affect both. As “Producers and consumers are more tightly linked in global symbiotic relationship that reduces prospects of serious disruptions to energy market” (Patrick L. Clawson 1995: 23-33). As Ligia Noronha (2006), also points out, “Energy producing and consuming countries are interdependent on each other for smooth running of energy market. But there is an urgent need to understand the interdependence of energy systems and the complementary interests of energy producers and consumers, and the need for stability in markets and supplies. Just as importers of energy seek to assure themselves of supply stability and consequently, to diversify sources of supply and even energy sources, exporters look to greater price and demand stability to ensure worthwhile investments in exploration and development and steady income flows” (Energy Security Insights TERI)<sup>22</sup>. Thus energy security is linked to management of better relations between consumers and producers and also by establishing cooperative security for the benefit of both.

Ensuring energy security is essential for all the countries worldwide. Major benefits ensure with better relations and stronger cooperation leads to stability and progress in energy security. Countries have realized that they need to move away from a more traditional supply-centric approach to a more integrated approach. “Though supply issues still include maritime security, price rise, import diversification and security of pipelines but the focus is on the management of resources and environmental issues” (Energy Security Insights 2007: 4)<sup>23</sup>. With issues as wide as environmental sustainability,

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<sup>22</sup> Energy Security Insights, The Energy and Resources Institute (TERI), Vol. 1 (2), 2006. For more details, see URL: [www.teriin.org/esissue2june06.pdf](http://www.teriin.org/esissue2june06.pdf)

<sup>23</sup> Energy Security insights look at energy issues and how energy decisions can affect the future. For more details: URL: [www.teriin.org/energysecinsights/april\\_07final.p65](http://www.teriin.org/energysecinsights/april_07final.p65)

domestic management of resources and even increase in appliance efficiency (as in Japan), the meaning thus takes on a wider definition.

### **Energy Security- A Challenge**

With the increasing use of energy resources, it is becoming a challenge for countries to ensure their energy security. As the continuing rapid growth in energy demand has become an issue of concern. By 2030, the world be consuming two-thirds more energy than today and developing countries will replace the industrial world as the largest group of energy resources (Responsible growth for new millennium, World Bank 2004: 79). “The world uses 80 million barrels (3.36 billion gallons) of oil every day. If this oil was put into barrels and those barrels were lined up side by side, they would stretch 1.5 times around the equator. The approximate barrel per person per year varies widely from less than half a barrel in Ethiopia to more than 75 barrels in Saudi Arabia. The ratio of use in India to that in China to that in the United States is approximately 2:6:70 barrels”<sup>24</sup>. So energy security needs to be worked upon as a challenge.

Clearly, the most obvious problem is about the resources itself. Firstly, the depletion of resources has been one of the biggest fears, as Jeff Rubin, Chief Strategist and Chief Economist at CIBC World Markets (2008) says about challenges is that “The first is depletion. You have to run faster to stand still. Depletion from existing fields has accelerated to over four percent, a rate that currently cuts nearly four million barrels per day out of each year’s production”<sup>25</sup>. With no way to replenish the resources consumed, it raises many questions. How long will these resources last?, Can there ever be a substitute?, Once these get exhausted are they left with any reliable source of energy?, those countries which are fully dependent- what will happen to them?. Though there are a large number of questions, the answers are few.

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<sup>24</sup> For additional information, see URL: <http://en.wikipedia.org/wiki/Petroleum>

<sup>25</sup> For additional details, see URL: <http://www.grinzo.com/energy/index.php/2008/01/15/cibcs-must-read-report/>

Secondly, the rising demand for oil and gas complicates the situation. The dependence on energy resources has come to a level now, from where there's no way back, but to go on satisfying the growing demand through alternate means. As the CIBC report predicts that "surging demand in developing economies combined with accelerated depletion of existing supply and widespread delays in getting new oil fields up and running will see the global supply of oil fall as much as eight million barrels a day below U.S. Department of Energy and International Energy Agency estimates by 2012" (CIBC World Markets report 2008).

Challenges to energy security assume both the supply and consumption patterns. Not only is the supply issue important, it includes a country's efficient use of its resources. This brings in the issue of risks to energy security for many countries in the future. According to IEA (International Energy Agency), "the growing risk to energy security in the coming decades will lie in- Increasing dependence for supplies on decreasing number of producers, greater risk of disruptions to supply and danger of political instability in producer and transit countries"<sup>26</sup>. Therefore, strategies for cooperation need to be strengthened. Also the geo politics of the region has to be taken into account.

As the importing countries are getting more and more dependent on energy imports, it puts a lot of pressure on the producing countries. And the exporting countries escalate their exploration efforts to manage their export capacity. So with increased efforts, countries vie for more, leading to confrontation over areas with rich resources. Many incidents have been witnessed, which show that how countries are running to get their share of pie. And the South China Sea dispute is one of the most glaring examples of this scramble for greater resources<sup>27</sup>. Almost six governments in the region have made

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<sup>26</sup> International Energy Agency, described the risks to energy security recently, as the demand for energy has grown over the years.

<sup>27</sup> The South China Sea dispute emerged in the 1990s, as China's presence in the region created tension. But it escalated in 1995, when China occupied mischief reef which was under Philippines claim. And this was also the time when ASEAN came in, as it expressed its concern through statements. Later ASEAN, decided to have a regional code of conduct with China on this issue but it dragged on for years. And though a Declaration on the conduct of Parties in South China Sea was signed in 2002, the issue is still unresolved. So it has been a point of tension for almost two decades ( Clive Schofield and Ian Storey 2005: 42)

territorial claims in the Spratlys and it has been a tense issue for countries since the early 1990s. "The spratly island dispute has been seen as a major challenge to regional stability also in the region" (Amitav Acharya 2004). The problem of competition over energy resources has become normal. And these disputes occur because control over energy resources is considered essential to national security. So these conflicts can become a major bone of contention between nations. And this fight for resources can transform into territorial rivalry leading to instability in the region.

The growing dependence of countries on new sources of supply has also become a problem. As in some of the countries, even security systems also are not fully developed like the oil fields offshore West Africa, Caspian Sea. And more so, some of the producing countries are going through political instability which makes the supplies extremely vulnerable. Internal instability can be a big problem for countries who export energy and definitely for the importing countries, as the supplies can be disrupted at any point of time. Like some attacks on oil facilities, reduced exports from Nigeria, a major supplier to many countries.

The concentration of reserves in some regions has definitely led to many problems, as these countries with more resources are trying to use it for other purposes. With two-thirds of the World's oil reserves in the West Asia, it will go on shaping the international relations in the years ahead. And also, Russia over the last 5 years has become central to world wide supply, by providing almost 40 percent of the world's total production. And when it cut off natural gas supplies to Ukraine, it affected whole of the Europe. As Usman Aminuddin (2006) points out, "The World is seeing what is termed as Energy Imperialism". There are two forms of it- one is typified by Russia in an attempt to more than quadruple the price of gas it charges Ukraine, to bring itself back in the sphere of influence"<sup>28</sup>. The other form of it involves consumer states like U.S. aggression on Iraq to

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<sup>28</sup> This situation is a typical case of countries which have huge resources. Not just this, even OPEC the oil producer's cartel restricted oil supplies in the 1970s its show it's influence. Even the two Latin American producer states, Venezuela was threatening to disrupt supplies to the US and Bolivia wanted to take back control of gas resources from multinationals. (Usman Aminuddin 2006: 34-35)

secure energy supplies, shows that countries can go beyond any limits to have access to resources.

With the growing menace of terrorism, the supply issue has become troublesome. The sea lanes which are the lifelines of energy supply are more vulnerable to disruptions now than ever before. This brings in the issue of maritime security as there have been many suicide attacks on commercial and military vessels, piracy and weapons are being smuggled through ships. As “Some major security concerns also include pollution from oil spills, safety of sea lanes, illegal fishing and exploitation of offshore resources”<sup>29</sup> (Jin-Hyun Pak and Anthony Bergin 2004: 178). And the main transit points are more in danger like the Strait of Hormuz, the Suez Canal which connects Mediterranean Sea and Red Sea, the Bosphorus strait, Strait of Malacca. Not just this, there can be supply disruptions due to a score of other reasons. So securing chokepoints will require continues monitoring.

Globally, environmental issues have become important. Efforts have been taken in this direction but some countries are still not abiding by the Kyoto Protocol, according to which limits are set for each country regarding carbon emissions. And over-exploitation of fossil fuels and the growing urge of countries in exploiting the existing reserves has been a major challenge, as it is one of the main causes of environmental degradation. Energy security also leads to environmental hazards, as burning of fuels is the main cause of pollution and global warming, which is causing climate change. Many other issues are also added to it like oil spills in the seas causing damage to the sea weeds and animals. Environmental security at national, regional and global level needs to be “strengthened and implemented for both environment and security reasons” (Lorraine Elliott 2004: 171). For that “Global action must be complemented by environmental policies on national and local levels” to reduce the effects of environmental degradation (Ian Goldin and Kenneth Reinert 2007: 222).

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<sup>29</sup> Major Maritime issues can be divided into five categories: Disputes about sovereignty of offshore islands, issues of maritime boundaries, protection of seaborne trade, resource conflicts and maintenance of law and order at sea (Jin-Hyun Pak and Anthony Bergin 2004: 179).

Other risks to environment are also involved in the waterways like in the straits of Malacca, the increase in traffic volume and, sometime heavy fog poses the risk of ship collisions and the threat of shore-based pollution. Accidents threaten the health of the Straits eco-system, particularly when cargo and oil spill over major fishing grounds and beaches. From the year 1995 to 2003 there were 44 cases of collisions and 15 cases of grounding occurred in the Straits of Malacca (Shafiah Fifi Muhibat 2007). Obviously Southeast Asian states face a huge challenge in mitigating the risk of pollution in the management of the Straits in the years to come.

Another disturbing fact which will become reality in the coming years is that with the growing demand of energy not just in the importing but also in the exporting countries will make situation tricky. The “exporting countries are set to turn importers because of the ever-expanding domestic demand in the countries”<sup>30</sup> (Clifford Krauss 2007: 27). Due to sharp growth, several important suppliers may start importing oil to satisfy their internal demand. The report by CIBC World markets<sup>31</sup> (2008) also says “that the soaring internal rates of oil consumption in Russia, Mexico and in other OPEC countries would reduce crude exports as much as 2.5 million barrels a day by the end of the decade”.

With all these possible risks and with increasing demand all over the world and limited resources, the only way to secure energy is by improving their use in a more optimum way, i.e. both demand and supply sides have to be taken care of. The dependence on non-renewable sources of energy needs to be cut down, so that these can be used for a longer time. As the savings that can be achieved through implementation of energy efficiency measures are great. “The projections for the cost-effective reduction in primary energy inputs for a given level of energy services are 40 percent for transition economies and 45 percent for developing economies in the next twenty years” (World Bank 2004).

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<sup>30</sup> Growth in demand among oil exporting countries is one aspect of a larger issue, breakneck economic growth in parts of the developing world. China and India are expected to account for much of the increase in global oil demand in the next 20 years. So the internal demand and growing economies will be the most important reasons in turning major oil exporters into net importers in 5 to 10 years (Clifford Krauss 2007).

<sup>31</sup> The report by Canadian Imperial Bank of Commerce (CIBC), looks at the recent trends in the world energy markets. For more details: URL: <http://research.cibcwm.com>



But at the current pace of rising demand for these resources, this seems difficult. Although many countries are making pioneering efforts in this area, in order to decrease their dependence. “Sweden is planning oil phase out by making use of renewable resources and Iceland plans to become energy independent by deploying renewable energy” (Alternative resources 2006). Not just this, some countries are reducing the use of other sources of energy to a great extent. Many other ways have also been devised by countries like Japan, who have made appliances which are efficient and use less energy. “In Southeast Asia, the introduction of cogeneration technology, a method to produce both heat and electricity from a single fuel source, has been successfully applied in Thailand, Indonesia and Malaysia and cogeneration plants can use almost anything as fuel, including coal, gas, petroleum, and agricultural by-products, such as rice husks, oil palm or even animal waste” (ASEAN Energy Business Forum 2005).

Energy security goes on a long way, if countries have better relations with their neighbors and have good bilateral/multilateral ties. As this eliminates one of the most potent challenges faced by countries in securing their resources i.e. conflicts. The conflicts over resource rich areas have become a huge problem for nations which are looking for more and more reserves. Most importantly, the relations between producer and consumer countries have to be healthy to avoid any disruptions. In Southeast Asia, ASEAN “the organization with the most well integrated institutional structure in the region” (Cao Sy Kiem 2007: 133-134) is trying to take an integrated approach towards energy security.

Another issue which needs to be tackled is meeting the growing demand for energy in developing countries and this is possible only by the efforts taken in the respective countries by diversifying the use of resources<sup>32</sup>. So when the developing countries will try to diversify energy use, it will lessen the pressure on the usual resources. The use of renewable resources and which are in plenty in a particular country can be of great importance as the dependence can be reduced on oil and gas which are being demanded

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<sup>32</sup> “From the political and security perspectives, diversifying energy sources and varying the energy mix would enable countries to better withstand energy supply shocks in the short run and demand squeeze due to sudden surge in demand coupled with insufficient investment in energy infrastructure to keep up with the demand” (NEAT Working group report on energy cooperation 2007: 3).

by growing countries at an alarming rate today. The initiative has to be taken by the countries in their own respective ways for a better world.

Though one cannot set an agenda for energy security, there are some basic principles which have to be followed to ensure energy supplies for a longer duration. The principles of optimum use, minimizing losses, increasing supply options, reducing dependence on non-renewable resources, better demand management, avoiding supply disruptions, preventing environmental degradation and of course better relations between nation to avoid many other problems. Keeping in mind the challenges involved, a global energy security pattern has to be established, which can only come through the efforts of the countries. As Anant Sudarshan (2007), points out that “energy security is being looked at as a multi-faceted challenge where success will not only require reliable and affordable supplies, but also smart and more enlightened consumption patterns”<sup>33</sup>.

In general sense energy security seems to encompass all this but to understand one single countries’ perspective on energy security, one need to study it deeply. Specific study gives an insight into a countries’ way of handling its resources. Asia is one of the most important growing regions of the world. And being a developing region, it has its own difficulties in securing energy. So, energy development in the developing world becomes more difficult. With countries like India, China, Indonesia, Malaysia, the region is experiencing tremendous growth. And a study on energy security in this region will definitely bring up some pertinent questions.

### **Malaysia’s energy security**

Energy Security is an issue of great importance in Asia, which is one of the fastest growing regions of the world. Though India and China are the main growing

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<sup>33</sup> “The multiplicity of issues discussed highlight the fact that today, questions relating to sustainable consumption are seen as being crucial to ensuring energy security and sustainability” (Anant Sudarshan, TERI 2007: 4).



economies<sup>34</sup>, Southeast Asia is also making steady economic growth in the aftermath of financial crisis of 1997-98. “Though the region in comparison is a minor energy consumer, it plays a crucial role in the East Asian energy security equation” (Robert Manning 2000). The region includes some significant energy exporters i.e. Indonesia, Malaysia, Vietnam and Brunei. Malaysia is an important player in Southeast Asian energy market. It is endowed with conventional energy resources such as oil and gas as well as renewable resources like hydro, biomass and solar energy. Its primary energy mix consists of coal, oil, Natural gas and hydro power, as in other Southeast Asian countries. Concerns of Malaysia’s energy security are rooted in projections of country’s future energy demand and supply. “It’s consumption of energy is expected to rise over the next two decades, as being a developing economy it has higher energy intensity because shift from an agricultural to an industrial economy requires significant increases in energy use” (Responsible growth for the new Millennium, World Bank 2004).

It is Southeast Asia's second-biggest crude producer, after Indonesia. It is also the world's third-largest producer of liquefied natural gas, after Indonesia and Algeria, making it a favorable place for investment by Foreign Oil Companies. This makes the study of Malaysia’s energy security important from the point of view of an exporter of energy. It will have to manage both security of demand (for exports) and security of supply (for rising demand) to ensure energy security. Even if a country has huge reserves, that it forms a big percentage of its exports, still the security issue looms large, as “The economy is a net energy exporter with 11 percent of export earnings in 2004 derived from crude oil, LNG and petroleum products” (APEC Energy demand and supply outlook 2006). With increased economic growth, comes increased demand for energy to fuel the expanding economy<sup>35</sup>. And with it also comes the issue of managing domestic demand and side by side keeping intact its export capacity.

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<sup>34</sup> “Headline growth in developing Asia is heavily influenced by the performance of China (which carries weight of about 37%), and by India and Korea (which have combined weight of 30% of regional income)” (Asian Development Outlook 2006: 3).

<sup>35</sup> According to Asian Development Outlook (2006), rising incomes and private consumption spending will continue due to the growth pattern.

Being a developing exporting country, it has its own problems. Malaysia has to secure its resources, even though many challenges come in its way. Though Malaysia has been very strategic in managing its resources at the domestic level and also at keeping up the pace of its energy exports. Still more efforts have to be made to decrease the inefficiency and to meet the growing need of the country. Malaysia's Liquefied Natural Gas (LNG) facility may face challenges in dealing with the growing competition in the world market. In spite of challenges, Malaysia is securing energy through cooperation with other nations. Though there have been many incidents of territorial claims among neighboring countries. And ASEAN is a driving force through which Malaysia is fully cooperating and has played a leading role particularly after Indonesia's domestic problems prevented it from playing the leadership role. The issue of energy security from the perspective of a particular country needs to be examined.

## CHAPTER – II

### MALAYSIA'S ENERGY SCENARIO

Southeast Asia is a sub region of Asia included in the monsoon belt, consisting of countries that lie geographically east of India, south of China and north of Australia. And the region can be seen as two geographical regions- 'mainland' Southeast Asia to include the countries of Myanmar, Thailand, Laos, Cambodia and Vietnam and 'insular' Southeast Asia, comprising Malaysia, Singapore, Brunei, Indonesia and the Philippines (D.R. Sardesai 1997: 6).

The ten developing countries (except Singapore) of Southeast Asia have experienced immense growth in the last 10 years. Although after the 1997-98 economic crisis, there was uncertainty about the future growth in this region, most of these economies recovered in 1999<sup>36</sup>. The core members of ASEAN, i.e. Malaysia, Indonesia, Singapore and Thailand have been averaging around 6 percent of annual Growth<sup>37</sup>.

“Southeast Asia, while a relatively minor energy consumer, by virtue of geology and geography, plays a pivotal and multifaceted role in the East Asian energy security equation” (Robert Manning 2000: 169). The region abounds in natural resources, including oil and gas. It has around 2 percent of world oil reserves and almost 3.5 percent of world oil production. Not just this it has 4 percent of world's gas reserves, and accounts for 20 percent of world production (BP Statistical review of world energy 2005). It includes some of the major energy exporters like Indonesia, Malaysia, Brunei, Vietnam. Indonesia is the largest hydrocarbon producer in Southeast Asia, which makes

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<sup>36</sup> The financial crisis of 1997 shattered the miracle economies of Southeast Asia. The over-reaction of financial markets and speculation led to the speedy withdrawal of investments from the region. The panic created by this speculation became the most important reason which set off a tumble in both currency and stock markets. It started with the devaluation of Thai Bhat, followed by that of Philippine Peso, Malaysian Ringit and Indonesian Rupiah. Though the countries suffered a major setback, but with tough reforms, most of these countries regained by 1999, part of what they lost since the crisis started (Harald Thaler 1999).

<sup>37</sup> The economies of Southeast Asia expanded by 5.5 percent in aggregate in 2006, above the average of previous five years (Asian Development Outlook 2006: 31).

it the main energy exporting country in the region, followed by Malaysia, which has the second largest oil reserves in the region.

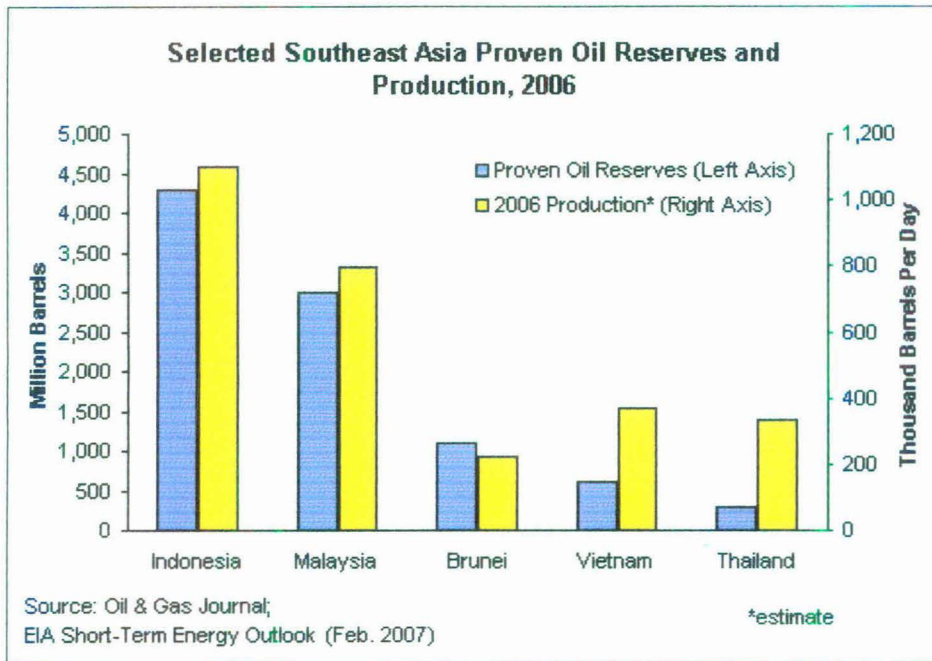
Though the potential of oil and gas was first recognised in Vietnam's Mekong-Con Son basin in the mid-1980s (Harald Thaler 1999: 10). Currently, the proven oil reserves in January, 2007 were 3.0 bn barrels. While Malaysia has expanded its reserves base over the last decade, Indonesian reserves have fallen over the same period and its exports potential has also come down<sup>38</sup>. Among other main oil nations of Southeast Asia, Thailand and Brunei have kept their reserves fairly steady over the least years. In all, Southeast Asia represents 1.1% of the world oil reserves. Basically Southeast Asia is significantly more prominent with respect to natural gas reserves. And again Indonesia and Malaysia account for 77% of the total reserves in Southeast Asia (APEC Energy demand and supply outlook 2006).

A look at the table (2.1) shows that among the major oil producing countries, Indonesia, Malaysia and Brunei form the three most important oil producers in the region. As most other countries are resource deficient, so energy reserves do not form a major part of their exports. But the countries with huge production, depend on energy exports to a large extent.

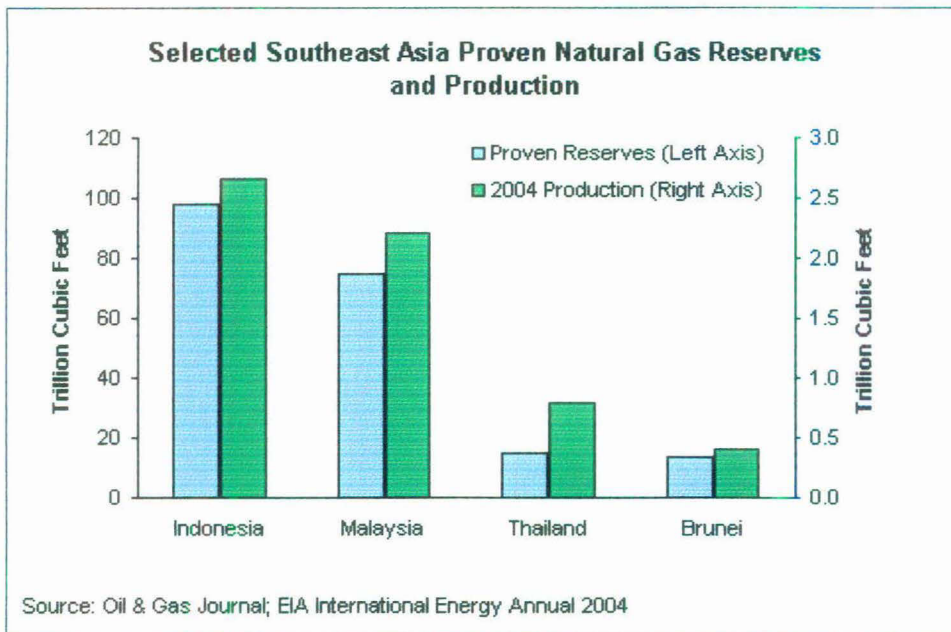
In the case of Natural gas, Indonesia and Malaysia are again the leading producers, table (2.2), brings out the clear picture of the current situation in Southeast Asia. These countries are major exporters of Liquefied Natural Gas to Japan, South Korea, Taiwan and China, who account for 75 percent on world LNG consumption. Massive consumption of resources due to economic growth has resulted in making them dependent on external sources.

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<sup>38</sup> According to many analysts there is an expected drop in Indonesia's export potential. Many reasons are cited for it. Firstly, the Indonesian Government's determination to boost gas supplies to its domestic market will limit the nation's LNG export potential (World Energy Council 2008). Secondly, at the country level, internal conflict of Indonesia is hampering the growth of its LNG industry due to which the exports are declining (Global LNG Market 2006).



(Table 2.1) Source: Country Analysis Briefs (March, 2007), EIA<sup>39</sup>.



(Table 2.2) Source: Country Analysis Briefs (March, 2007), EIA

<sup>39</sup> <sup>39</sup> The figure is from Country Analysis Briefs, Malaysia energy data, statistics and analysis- Oil, Gas, Electricity and Coal. For more details, URL: [www.eia.doe.gov](http://www.eia.doe.gov)

The energy scene in Southeast Asia is mainly about Oil and Natural Gas, which form the main energy resources produced and exported from the region. So the current energy equation puts Malaysia in the second position in terms of oil and gas production.

### **Malaysia's energy scenario**

Malaysia's economy achieved robust 5.9 percent GDP growth in 2006, up from 5.2 percent in 2005 (Asian Development outlook 2007). The Ninth Malaysia Plan, issued in 2006, reiterates an official target to lift the economy to "developed nation" status by 2020. Its economy is strongly moving ahead and this growth is primarily attributed to rapid increase in country's exports over the years<sup>40</sup>, with energy exports forming a substantial part of it. As "a net hydrocarbons exporter, high international prices provide a cushion for government spending", in "2006, a \$1 per barrel rise in the price of crude oil corresponded to RM228 million (\$62 million) higher oil related revenues" (Asian Development Outlook 2007: 217). Energy export revenues from oil in 2006 formed 37% of the government income. Oil exports form a large part of government revenues.

It is situated in one of the most strategic locations in Southeast Asia, as its western coast runs alongside the straits of Malacca which is the crucial route of energy trade in the region (Country Analysis Briefs, EIA 2007). Its geographical location makes it entitled to a large Maritime boundary. Sabah and Sarawak are separated by the South China Sea and have different histories and incorporating these states in Malaysia has been a major challenge. Malaysia overall "remains under-populated particularly in Sabah and Sarawak. And it has one of the few governments encouraging population growth, with a declared objective of 80 million towards the end of the twenty-first century" (John Funston 2001: 165).

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<sup>40</sup> The outlook for Malaysian economic growth is positive for the next five years, as its main determinant, global trade, is expected to stay firm. Double-digit export growth will be the main factor enabling the economy to expand at an average rate of 5.2% a year during the forecast period (Country Forecast, July 2006: 29). For more details: the Economic Intelligence Unit Ltd., URL: [www.eiu.com](http://www.eiu.com)



The economic change in Malaysia has come gradually. “At Independence, Malaya relied on primary products- tin, rubber and later palm oil and timber. Primary products, plus oil, discovered in large quantities in the 1970s made up some 70 percent of exports until the early 1980s” (John Funston 2001: 168). The policy at that time supported *laissez faire*, with limited state involvement and domination of foreign firms in the economy. But the 1969 riots brought about a fundamental change<sup>41</sup>. And according to the New Economic Policy (NEP), poverty reduction and restructuring of the society became the main functions. With the expansion of “government intervention”, it “set a target of at least 30 percent Bumiputra ownership of commercial and business activities” (John Funston 2001: 168). And the “question of giving concessions in education, industry and civil service to Bumiputra was more relentlessly pursued” (D. R. SarDesai 1997: 290).

In accordance with greater governmental involvement in meeting the NEP goals, the existing foreign companies had to work under new guidelines and in most cases were brought by state companies. Due to economic slowdown in 1985, the economy was affected but it reacted back by greater privatization, liberalization and incentives for foreign companies. “The changes coincided with favorable international influences and ushered in an unprecedented period of growth, registering over 8 percent for a period of nine years before the Asian crisis” (John Funston 2001: 170). In 1999, the economy came out of the financial crisis with more than 5 percent growth.

At the energy front, the 1980 decision of Malaysian government to move away from huge dependency on oil to a four fuel strategy has helped in developing its natural gas resources. The plan was to develop sustainable energy resources. “Malaysia’s profound transformation from an agriculturally based economy in the 1960s into an industrially oriented nation in the 1990s indicates that adequate supply of energy, especially the supply of electricity is critical to sustaining its industrial development momentum” (Choy Yee Keong 2005). Thus Malaysia formulated a limit on the oil and gas production levels.

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<sup>41</sup> “Tensions between Malays and Chinese manifested themselves in the worst form ever in the fiercely fought elections of 1969” and “these riots followed the elections and shredded the fabric of social harmony, taking a toll of more than 20,000 lives, mostly Chinese”. This had immense effect on the politics in Malaysia, so much so that “Politics has never been the same in Malaysia since” (D.R. SarDesai 1997: 286).

Also, by diversifying its energy needs to gas, coal, hydro, it has emerged as an important energy trader in Southeast Asia.

Besides, Malaysia is endowed with conventional energy sources such as oil and gas as well as non-conventional sources like hydro, biomass and solar energy to fuel its economy with more than eighty percent of its primary energy supply coming from oil and gas. Its primary energy mix consists of coal, oil, Natural gas and hydro power. It consists of 62.7% Petroleum, 11.6% hydroelectric power, 15.1% natural Gas, 3.2% coal, 0.5% biomass (Country Analysis Briefs 2007). Though Nuclear energy exists as an option, but according to the Malaysia's National Energy Policy it is not expected to opt for nuclear energy during this plan<sup>42</sup>. "The (Malaysian) government has not made any decision on this event, though Deputy Prime Minister Najib Tun Razak has stated that we may go nuclear," Razali told reporters when asked to comment on the country's nuclear ambition (National Energy Policy 2007). But it definitely has plans for nuclear power after 2020. So, Malaysia's fuel mix mainly consists of petroleum products.

As in any developing nation, energy consumption per capita in Malaysia is still low but is expanding at a rapid rate in tandem with economic development. In addition, energy intensity with respect to gross domestic product had shown an increasing trend historically. So with the use of energy resources increasing due too rapid economic development, Malaysian government has been making plans to deal with the situation. And regarding this, during the last plan (2000- 2005) itself, the development of the energy sector was focused on ensuring a secure, reliable and cost-effective supply of energy, aimed at enhancing the competitiveness and resilience of the economy (Ninth Malaysia Plan 19: 393). Efficient utilization of energy resources as well as the use of alternative fuels, particularly renewable energy, was encouraged. Energy-related strategies were streamlined to reduce the impact of rising oil prices on the economy. During the current Ninth Malaysia plan (2006-2010), energy sector is performing favorably in improving energy supply security to meet the increasing demand. According

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<sup>42</sup> According to National Energy Policy, Malaysia, currently, there is no nuclear power generation plant in Malaysia and neither is there a plan to embark on a nuclear power programme in the foreseeable future. The only nuclear reactor in the country is a 1 megawatt-thermal research reactor owned and operated by Nuclear Malaysia.

to this plan, the Five-Fuel Strategy recognizes renewable energy resources as the economy's fifth fuel after oil, coal, natural gas and hydro.

**Final Energy Consumption by Source ( Fuel Mix ) 2000-2010**

Source	2000	2005	2010	2000	2005	2010
	Petajoules	Petajoules	Petajoules	% of Total	% of Total	% of Total
Petroleum Product	820.0	1023.1	1372.9	65.9	62.7	61.9
Natural Gas	161.8	246.6	350.0	13.0	15.1	15.8
Electricity	220	310	420.0	17.7	19.0	18.9
Coal and Coke	41.5	52.0	75.0	3.4	3.2	3.4
Total	1243.7	1631.7	2217.9	100	100	100
Per capita consumption (gigajoules)	52.9	62.2	76.5			

(Table 2.3) Source: 9th Malaysia Plan (chapter 19: 394), Ministry of Energy Communication and Water and Economic Planning Unit<sup>43</sup>.

The 9th five-year plan, focuses on the security, reliability and cost-effectiveness of energy supply and on the sustainable development of the energy sector. So the development of the energy sector focuses on diversification of fuel sources through greater utilization of renewable energy with emphasis on reducing the dependency on petroleum products.

But petroleum products remain to hold the greatest percentage of Malaysian fuel mix. Oil and gas are primarily used to fulfill transport requirements and fuel, petroleum continues

<sup>43</sup> Ninth Malaysia plan (2006 – 2010) and Chapter 19 covers the policy on sustainable energy. For more Details: URL: [www.epu.jpm.my/rm9/english/Chapter19.pdf](http://www.epu.jpm.my/rm9/english/Chapter19.pdf)

to be used as feedstock for Malaysia's petrochemical, polymer and other downstream industries.

### **Energy demand and Supply**

With the growth in economy, energy demand in Malaysia is also growing at a fast rate. As developing economies generally have higher energy intensities because they shift from agricultural to industrial economies and that requires increase in energy use<sup>44</sup> (Responsible growth for new millennium, World Bank 2004). Malaysia also being a developing economy has increasing energy intensity, which is leading to greater use of energy resources. As the figures show, the consumption rate grew from 5.6% in 2000 to 38.9% in 2006 (APEC Energy demand and supply outlook 2006).

As the economy is growing at a rate of 5.9% as in 2006, its industrial sector will show more growth than other sectors. Energy in Malaysia is basically demanded by the three sectors namely, Industrial sector; commercial and residential sector and the transport sector<sup>45</sup>. Around 40.5% of the total energy consumed is used in the transportation sector, 38.6% is used in the Industrial sector, 13.1% in the commercial and residential sector and a very small percentage of 0.5% in the agricultural sector (9<sup>th</sup> Malaysia Plan 2006).

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<sup>44</sup> Energy intensity- is the amount of energy consumed per unit of Gross domestic product (GDP) and is a useful indicator of how efficiently an economy uses energy. It tends to decline once an economy reaches a mature industrial stage and transitions to a service economy. And tends to increase when a growing economy shifts to an industrial structure, as the fuel mix transitions from traditional to modern fuels such as electricity. So energy intensity increases when economies first industrialize and grow (Responsible growth for the new millennium, The World Bank 2004: 81).

<sup>45</sup> Commercial & Public Sectors refers to the energy consumed by wholesale and retail trade; the operation of hotels and restaurants; post and telecommunications; real estate, renting and business activities; the collection, purification and distribution of water; maintenance and repair of motor vehicles and motorcycles; financial intermediation, except insurance and pension funding; computer and related activities; sewage and refuse disposal; public administration and defense; education; and other community, health, social and personal service activities (Earth Trends, Country Profiles 2003). For more details: [http://earthtrends.wri.org/searchable\\_db/variablenotes\\_static.cfm?varid=288&themeid=6](http://earthtrends.wri.org/searchable_db/variablenotes_static.cfm?varid=288&themeid=6)

**Final Energy Consumption/Demand by Sector 2000-2010**

<b>Source</b>	<b>2000 Petajoules</b>	<b>2005 Petajoules</b>	<b>2010 Petajoules</b>	<b>2000 % of Total</b>	<b>2005 % of Total</b>	<b>2010 % of Total</b>
Industrial	477.6	630.7	859.9	38.4	38.6	38.8
Transport	505.5	661.3	911.7	40.6	40.5	41.1
Residential and commercial	162	213.0	284.9	13.1	13.1	12.8
Non- Energy	94.2	118.7	144.7	7.6	7.3	6.5
Agriculture and Forestry	4.4	8.0	16.7	0.4	0.5	0.8
<b>Total</b>	1243.7	1631.7	2217.9	100	100	100

(Table 2.4) Source: 9<sup>th</sup> Malaysia Plan (chapter 19: 395), Ministry of Energy  
Communication and Water and Economic Planning Unit.

A look at the Industrial sector shows that the energy consumption has increased as in table (2.4), 38.4% of the energy is consumed by the industrial sector in 2000 and in 2005 though the increase is very small, but there has been an increase in the consumption which can be attributed to the growing needs of a developing economy. But according to APEC energy demand and supply outlook (2006) energy demand in industrial sector is projected to grow at an average annual growth rate of 4.3% until 2030, lower than its average annual growth of 7.5% over the past two decades. Although petroleum products were the main energy consumed, its share to total demand continued to decline while that of natural gas increased, in line with the Fuel Diversification Policy. And as the government has been promoting this diversification, so the share of oil demand in industrial sector is projected to contract at 21 percent in 2030 from 35 percent in 2002<sup>46</sup>. By contrast, the demand of natural gas will surpass that of oil as the leading fuel, and will

<sup>46</sup> According to APEC Energy demand and supply outlook (2006), as there will be a shift in industry structure from energy-intensive to non-energy intensive as well as improvements in energy efficiency will lead to lower projected growth in energy demand. And energy intensity in the industrial sector is expected to fall at an annual rate of 0.8 percent reaching 105 Mtoe in 2030 from 132 Mtoe in 2002.

account for 43 percent of industrial energy demand in the coming years (APEC energy demand and supply outlook 2006).

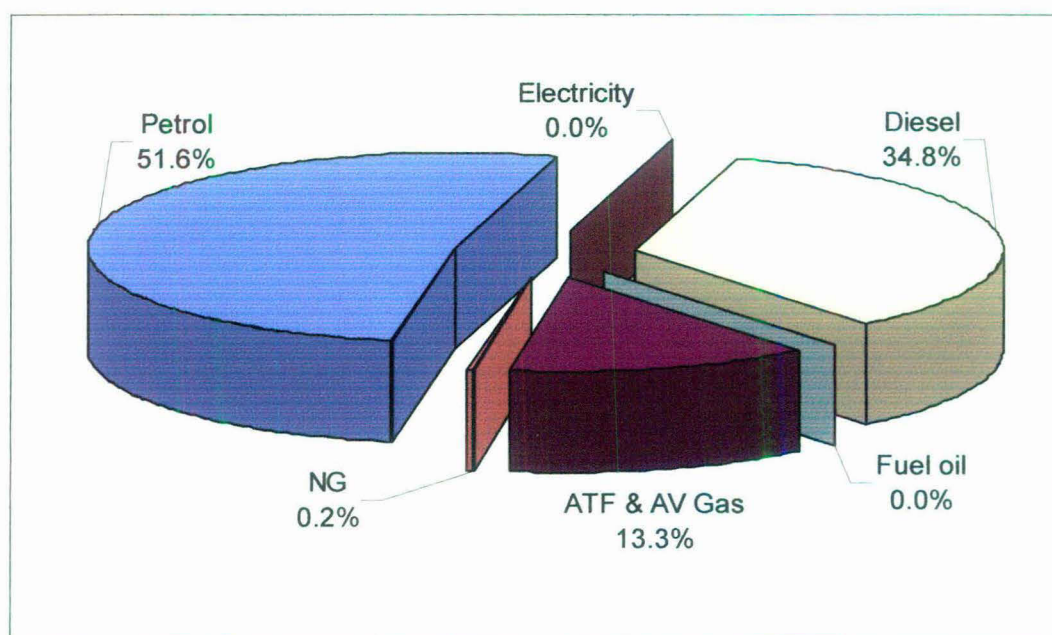
The transport sector was the largest consumer of energy, accounting for 40.5 percent of the total final energy demand in 2005<sup>47</sup>. Due to rapid growth and dramatic increase in the number of vehicles, the usage of fuels has increased tremendously, leading to higher energy intensity in this sector. There has been much increase in the energy consumption in the transportation sector as the percentage has changed over a period of five years and moreover, with the increase in income levels as well as unconstrained expansion of the cities, the private vehicle population has been growing steadily in Malaysia (Report on energy use in transportation sector in Malaysia 2005). The road transport in the country represents 86 percent of the total transport energy demand in 2002, making it the main energy consumer, because of the limited availability of rail transport. And the energy demand in this sector is projected to grow at an annual rate of 3.5 percent<sup>48</sup> (APEC Energy demand and supply outlook 2006).

Figure 2.5, shows that transportation sector is mainly about petroleum products i.e. petrol accounts for 51.6 percent of the total energy consumed and diesel accounts for 34.8 percent of the total. This points to the fact that transport sector in Malaysia depends almost wholly on oil, as the percentage of natural in the fuel types is negligible.

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<sup>47</sup> Transportation represents energy used for all transport except international marine bunkers. It covers road, railway, air, internal navigation (including small craft and coastal shipping not included under marine bunkers), transport in the industry sector, and energy used for transport of materials by pipeline and non-specified transport. Energy used for ocean, coastal and inland fishing is not included here but is reported under agriculture (Earth Trends, Country Profiles 2003). For more details: [http://earthtrends.wri.org/searchable\\_db/variablenotes\\_static.cfm?varid=534&themeid=6](http://earthtrends.wri.org/searchable_db/variablenotes_static.cfm?varid=534&themeid=6)

<sup>48</sup> And by fuel type, the trend of growth will show significant differences with gasoline growing at 2.9 percent per year, diesel at 4.2 percent per year and natural gas at 9.2 percent per year (APEC Energy demand and supply outlook 2006). So with Malaysian government's efforts to reduce use of petroleum products, the use of natural gas will grow over the years.



**Figure 2.5: percentage of transportation sector energy use based on fuel type (2002), National Energy Balance 2003.**

But Malaysian government is trying to introduce Natural gas as primary fuel in the transportation sector to reduce dependence on oil. However, more than 80% of vehicles are still running with petrol fuels. So, it is a challenge for Malaysian government to implement energy security or to reduce energy intensity especially in terms of petroleum fuels used in transport sector (Report on energy use in transportation sector in Malaysia 2005).

A look at the residential and commercial sector shows, that there has been slow growth in energy demand in this sector. According to the figure (2.4), it formed 13.1 percent of the total energy consumed in 2005 and will be 12 percent of the total in the year 2010. And it is projected to grow at 3.1% over the years<sup>49</sup>. The demand for electricity is expected to grow at an annual rate of 4.9 percent which is slower than the growth rate between 1997

<sup>49</sup> According to APEC Energy demand and supply outlook (2006), the main drivers influencing energy demand in the commercial sector is economic growth and weather condition. Owing to Malaysia's predominantly humid weather conditions, about 40 percent of total energy demand in the commercial sector will be required for space cooling. So the expected growth in energy demand in commercial sector is attributed to demand for cooling and lighting.

and 2002 (APEC Energy demand and supply outlook 2006). But the promotion of energy conservation and other measures by the government have resulted in slow growth of electricity demand by the residential and commercial sector.

These three sectors consume a significant part of the energy produced, as almost 92 percent of the energy is demanded by these sectors. So Malaysia needs to manage its resources in the optimum way, as with increasing energy intensity, there is greater use of fuels. And with the projections for coming years, it becomes tougher, as according to the Country forecasts by Economic Intelligence Unit (2006: 27), the existing energy supplies of Malaysia at current usage rate, are sufficient for 19 years in the case of oil and 33 years for natural gas.

**Final Energy Supply<sup>50</sup> by Source 2000-2010**

Source	2000	2005	2010	2000	2005	2010 % of
	Petajoules	Petajoules	Petajoules	% of Total	% of Total	Total
Crude Oil and Petroleum Product	988.1	1181.2	1400.0	49.3	46.8	44.7
Natural Gas <sup>51</sup>	845.6	1043.9	1300.0	42.2	41.3	41.6
Coal and Coke	104.0	230.0	350.0	5.2	9.1	11.2
Hydro	65.3	71.0	77.7	3.3	2.8	2.5
<b>Total</b>	<b>2003.1</b>	<b>2526.1</b>	<b>3127.7</b>	<b>100</b>	<b>100</b>	<b>100</b>

(Table 2.6) Source: 9<sup>th</sup> Malaysia Plan (chapter 19: 395), Ministry of Energy Communication and Water and Economic Planning Unit.

<sup>50</sup> Refers to the supply of commercial energy that has not undergone a transformation process to produce energy (Ninth Malaysia plan 19: 395).

<sup>51</sup> Excludes flared gas, reinjected gas and exports of liquefied natural gas (Ninth Malaysia plan).



The energy supply side shows that total supply of energy increased from 2003 petajoules in 2000 to 2526 petajoules in 2005, as shown in table (2.6). The main sources of supply were crude oil and petroleum products and natural gas. Though the share of crude oil declined but that of coal and coke increased, indicating the reduced dependence on a single source of supply<sup>52</sup>.

Energy demand and supply scenario in Malaysia is currently more tilted towards petroleum products as in the case of other developing countries. With the three main sectors of industry, transportation and commercial; demanding most of the energy in Malaysia. And the supply side shows greater demand for oil and gas by the sectors. Malaysia's energy scene is a typical case of a growing economy, with increasing energy intensity and greater dependence on petroleum products. Internal demand is rising due to better living standards and that is leading to faster use of fuels for transport and industry in the country. A look at the main energy resources specifically will present a clear picture of production, demand and consumption. So the demand and supply of Oil, Natural gas and coal can be examined for getting the complete knowledge of Malaysia's energy sector.

### **Oil in Malaysia**

According to Oil and Gas Journal (2007) "Malaysia held proven oil reserves of 3.0 billion barrels as of January 2007, down from a peak of 4.6 billion barrels in 1996". Malaysia's oil production occurs offshore and mainly near peninsular Malaysia.

Malaysia has historically been very dependent on its oil reserves, both as a source of export earnings and as an energy resource within the country (Ann Davison et. al. 1988). Though, the first exploration well in Malaysia, Menumbok-1, was drilled in Sabah in 1897 and commercial oil was eventually discovered at Miri in Sarawak in 1910 although this field initially only produced 83 Bbls per day. Nearly all of Malaysia's oil is of

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<sup>52</sup> The share of crude oil and petroleum products is expected to decline to 44.7 percent while coal will increase to 11.2 percent by the year 2010. And efforts by government will be intensified to increase the use of alternative fuels (Ninth Malaysia Plan 19: 403).

offshore origin; in fact it was not until 1975, after output had begun from offshore West Malaysia, that the country passed the 1,000 Bbls per day mark (Ann Davison et. al. 1998). The most important oil fields are Bekok, Bokor, Erb West, Bunga Kekwa, Guntong, Kepong, Kinabalu Pulau, Samarang, Seligi, Semangkok, Tapis, Temana and Tiong.

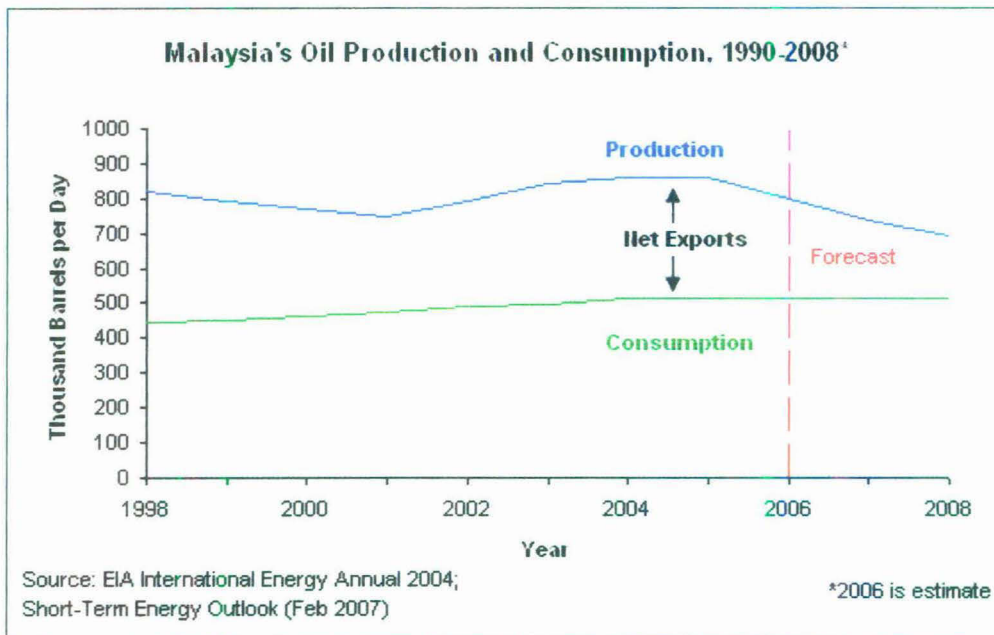
### Oil Production 2003-2007

Year	Oil - production	Rank	Percent Change	Date of Information
2003	729,200	27		2001 est.
2004	690,000	27	-5.38 %	2003 est.
2005	785,000	22	13.77 %	2004 est.
2006	770,000	23	-1.91 %	2005 est.
2007	770,000	23	0.00 %	2005 est.

(Table 2.7) Source: Department of statistics, Malaysia<sup>53</sup>

“Crude oil and condensate reserves increased from 4.5 billion barrels in 2000 to 5.3 billion barrels in 2005. The average production of domestic crude oil and condensate increased from 681,000 barrels per day (bpd) in 2000 to 727,000 bpd in 2005” and “Based on this production level, which is in line with the National Depletion Policy, the reserves are projected to last for 19 years. Although the total refining capacity declined from 591,000 bpd to 546,500 bpd, it was sufficient to meet the demand for petroleum products”. During 2006, Malaysia consumed an estimated 515,000 bbl/d of oil. “The export of crude oil and condensate increased to 369,000 bpd with a value of RM28.5 billion in 2005. Major export destinations were Australia, Thailand and the Republic of Korea” (Ninth Malaysia Plan 2006-2010).

<sup>53</sup> Department of Statistics. For Details: URL: [www.statistics.gov.my](http://www.statistics.gov.my)



**(Figure 2.8) Source: Country Analysis Briefs (March, 2007), Energy Information Administration (Page 3).**

Oil has been a large energy source for Malaysia in the past yet, with the decline of oilfield reserves, Malaysia is expected to become a net oil importer by the end of the decade. Due to the decreasing oil reserves, Petronas oil and gas company is examining new options to keep up with the increasing consumption rates<sup>54</sup>. New projects include the Bunga Kekwa Project, which will more than double current oil field production and new oil reserve findings are being made in the shallow waters off the coast of Malaysia (Country Analysis Briefs, EIA 2007).

<sup>54</sup> The company likes to play up similarities to the world's oil majors, but as a state-owned company, its activities are interwoven with national interests, and it plays the national oil company card to its advantage overseas. But Petronas is not quite like other Asian NOCs either, priding itself on a level of operational efficiency, capital management and global presence that, it believes, sets it apart from the Chinese and Indian state firms that more recently burst onto the international scene (Energy Intelligence Group 2007). For more details: [http://www.jetfuelintelligence.com/DocumentDetail.asp?document\\_id=206995](http://www.jetfuelintelligence.com/DocumentDetail.asp?document_id=206995)

“Malaysia’s national oil company, Petroleam Nasional Berhad (Petronas), dominates upstream and downstream activities in the country’s oil sector. Petronas is one of the world’s largest integrated oil and gas companies with net income for the year 2004-05 of US\$9.4 billion. Petronas is the only remaining wholly state owned enterprise in Malaysia, and is the single-largest contributor of government revenues” (Country Analysis Briefs EIA 2007). “It holds exclusive ownership rights to all exploration and production projects in Malaysia, and all foreign and private companies must operate through Production Sharing Contracts (PSCs)<sup>55</sup> with the national oil company. ExxonMobil (through its local subsidiary Esso Production Malaysia Inc.) is the largest oil company by production volume, and there are numerous other foreign companies operating in Malaysia via PSCs. Petronas is a major player in the retail and marketing sector, but faces competition from Shell, Chevron, and BP” (Country Analysis Briefs EIA 2007).

And in line with efforts to develop new sources of growth in the energy sector, Malaysian companies continued to venture in energy-related industries and services abroad<sup>56</sup>. These included RM29 billion investments by Petronas in 35 countries both in upstream and downstream activities (Ninth Malaysia Plan). TNB also invested in the development of a power plant in Pakistan and extraction of coal in Kalimantan, Indonesia.

Although Malaysia's oil consumption is increasing, the total percentage of oil in the energy sector is decreasing. Malaysia is trying to diversify their energy sources by decreasing dependence on oil in order to insure energy security and longevity. But the depleting reserves scenario raises many questions for the oil export capacity of the Malaysian government. According to a study by Peck Yean Gan and ZhiDong Li (2008),

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<sup>55</sup>This relationship is governed by production sharing contracts (PSC) which allow the contractors to recover cost and a share in profit. The PSCs were introduced in 1976 to ensure the country had greater control over its oil and gas reserves. Prior to that, Malaysia, like many other countries, received only a small royalty from the revenue earned by the oil companies. The PSCs are now Petronas' main source of income; not surprising then that Fortune magazine voted it in 1997 as having the best return on turnover.

<sup>56</sup> Petronas blazed the trail with the now-popular Asian NOC strategy of targeting resource-rich but politically unpalatable countries, exploiting Western companies' reluctance to venture there. Although its international focus spans many countries, Petronas Chief Executive Hassan Marican cites Sudan, Myanmar, Iran, Turkmenistan and Uzbekistan -- something of a rogues' gallery -- as the main sources of new production, alongside regional neighbors Vietnam and Indonesia (Energy Intelligence Group 2007).

“a turn from current oil export position to oil import is expected to take place as soon as in 2013”.

### **Natural Gas**

Malaysia has an abundance of natural gas reserves throughout its 13 states. It is endowed with natural gas reserves that are three times larger than its oil reserves. With the total proven natural gas reserves of 2400 billion cubic meters, Malaysia is ranked the 13th largest in the world. Malaysia's natural gas production has been rising steadily in recent years. Major natural gas fields include Bedong, Bintang, Damar, Jerneh, Laho, Lawit, Noring, Pilong, Resak, Telok and Tujoh (Country Analysis Briefs 2007).

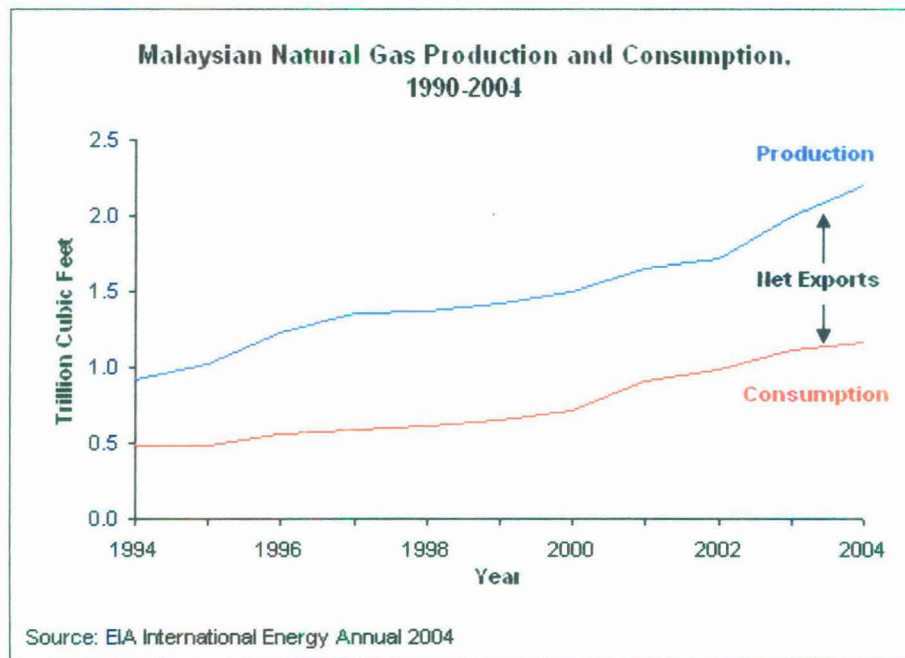
The gas off Sarawak was the first to be developed for an LNG (Liquefied Natural Gas) export project. The discovery of new gas fields contributed to the increase in reserves from 84.3 trillion cubic feet (tcf) in 2000 to 85.2 tcf in 2005 and is expected to last for 33 years. The average natural gas production increased from 4,367 million standard cubic feet per day (mmscfd) to 5,800 mmscfd. Natural gas is also imported from West Natuna, Indonesia beginning 2002 and the Malaysia- Thailand Joint Development Area (MTJDA) in 2005 ( Ninth Malaysia plan 19: 397). “As Production occurs in the lower part of the Gulf of Thailand in the Malaysia-Thailand Joint Development Area (JDA) managed by the Malaysia-Thailand Joint Authority (MTJA). Malaysia's Production of natural gas also comes from Sarawak by the Bintulu LNG complex. Leading producers of Malaysian natural gas are BP, Amerada Hess, Petronas and Exxon Mobile”<sup>57</sup> (Country Analysis Breifs 2007).

The total amount of natural gas consumption and production is expected to increase over the next few years as well as the percentage of total energy use. “The average demand for natural gas in Peninsular Malaysia increased from 1,643 mmscfd in 2000 to 2,141

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<sup>57</sup> As in the oil sector, Malaysia's state-owned Petronas dominates the natural gas sector. The company has a monopoly on all upstream natural gas developments, and also plays a leading role in downstream activities and LNG trade. Most natural gas production occurs from PSCs operated by foreign companies in conjunction with Petronas (Country Analysis Briefs, Malaysia, 2007).

mmscfd in 2005. The power sector continued to be the major consumer accounting for 66 per cent, followed by the non-power sector at 28 per cent. The remaining 6 per cent was exported to Singapore” (Ninth Malaysia Plan 2006-2010).



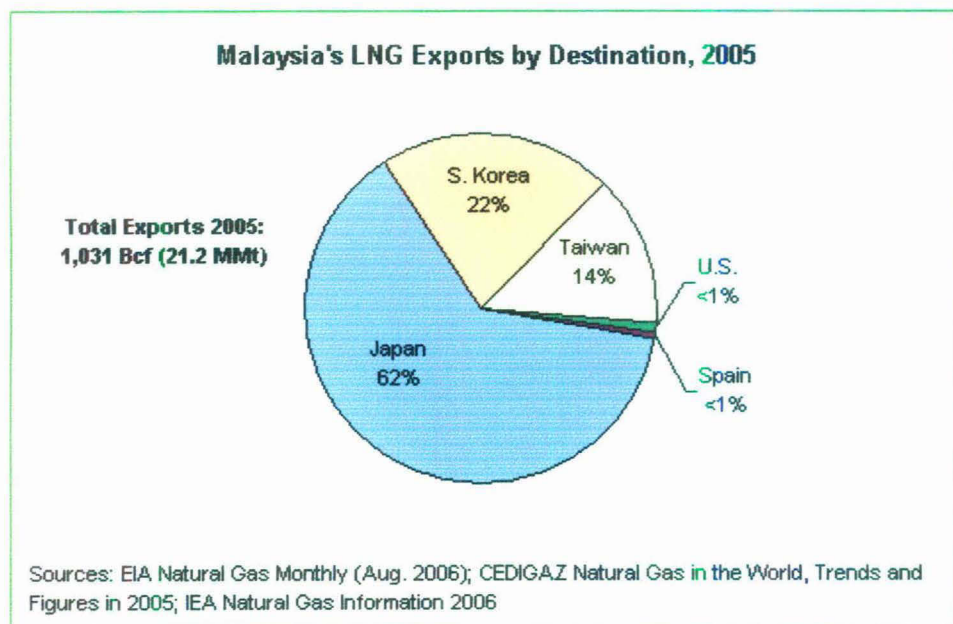
**(Figure 2.9) Source: Country Analysis Briefs (March, 2007), Energy Information Administration (Page 5).**

To meet the increasing demand from the non-power sector, the Natural Gas Distribution System (NGDS) was expanded from 455 kilometres to 1,365 kilometres. As the development of Malaysia’s natural gas transportation network is being carried within the framework of the peninsular gas utilization project<sup>58</sup>. This started in 1984 and is intended to process and transmit gas to end-users in the power, industrial, commercial and residential sectors through a trans-peninsular natural gas pipeline system. With the gas

<sup>58</sup> Malaysia has one of the most extensive natural gas pipeline networks in Asia, owing to the multiphase Peninsular Gas Utilization (PGU) project that was completed in 1998. The goal of the PGU was to expand natural gas transmission infrastructure on Peninsular Malaysia. All told, the PGU system spans more than 880 miles and has the capacity to transport 2 billion cubic feet per day (Bcf/d) of natural gas. Not only has the PGU initiative helped boost domestic natural gas consumption, it has also helped expand regional natural gas trade (Energy Information Administration, Malaysia 2007).

pipeline, the country has been able to provide gas to remote areas too. And this has increased the use of natural gas. The natural gas distribution is carried out by PETRONAS Gas Bhd and Gas Malaysia Sdn Bhd. PETRONAS Gas Bhd supplies natural gas to the IPP's in various part of peninsular Malaysia. Gas Malaysia Sdn Bhd is supplies natural gas to the industrial and residential sectors from the natural gas main stream (EC-ASEAN Cogen propprame 2003). The gas distribution system is well managed.

Malaysia is a significant net exporter of natural gas, primarily in the form of liquefied natural gas (LNG). “In 2000, Malaysia accounted for approximately 15% of the total liquefied Natural Gas exports in the world. In 2005, Malaysia exported just over 1 Tcf of LNG, mostly to Japan, South Korea and Taiwan”<sup>59</sup>(Country Analysis Briefs 2007).



**Figure (2.10): Source: Country Analysis Briefs (March, 2007), Energy Information Administration (Page 6).**

<sup>59</sup> The majority of Malaysia's shipments went to Japan, South Korea, and Taiwan, although small amounts of LNG were also sent to the United States and Spain.

Exports of liquefied natural gas (LNG) increased from 15.4 million tonnes in 2000 to 21.9 million tonnes in 2005. In 2005, total export earnings from LNG amounted to RM20.8 billion compared with RM11.4 billion in 2000. LNG is primarily transported by Malaysia International Shipping Corporation (MISC), which owns and operates 23 LNG tankers, the single largest LNG tanker fleet in the world by volume of LNG carried. MISC is 62 percent-owned by Petronas and also has significant involvement in oil shipping activities (Country Analysis Briefs, Malaysia 2007).

Not just this, Petronas has been expanding its LNG business world over and within the country too. The MLNG Dua plant facility is part of Malaysia's Petronas LNG Complex located in Bintulu, Sarawak. The LNG Complex comprises MLNG Satu (completed in 1983), MLNG Dua (1995) and MLNG Tiga (2003) plants. The MLNG Satu and MLNG Dua plant facilities, each comprising three independent process trains, are capable of delivering 7.6 and 7.8 million metric tons per annum (mtpa) of LNG, respectively. The expansion of the complex in 2003 with MLNG Tiga added two more trains, bringing the total capacity to about 23 million mtpa<sup>60</sup>. The three plants are being operated as one integrated site, which is currently the world's largest LNG producer at a single location (World Refining 2006).

And Malaysia is also a member of 'The Gas Exporting Countries Forum' (GECF), an organization set up in 2001. Its members meet at the ministerial level once a year to discuss Gas and LNG technology, trade, strategy, projects, pricing etc. Other members of the GECF include Algeria, Nigeria, Libya, Egypt, Trinidad and Tobago, Venezuela, Russia, Iran, Qatar, Oman, the United Arab Emirates, Brunei, Malaysia, Indonesia and Norway (Hadi Hallouche 2006). Natural gas is extremely important for Malaysia both from the point of view of power generation and energy exports. And it is one of the leading nations in LNG production and supply in the world.

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<sup>60</sup> MLNG Tiga has a production capacity of up to 3.8 million metric tons per train per year. Feedstock for the trains, which liquefy natural gas for storage, is natural gas from reserves, located 100 km off Bintulu. The LNG is shipped via supertankers to existing and new LNG buyers, where it is regasified and piped to customers (World Refining 2006).



## Coal

Coal use in Malaysia is not as extensive as of oil and gas. Malaysia's coal resource to date is estimated at about 1050 million tones of various qualities of coal. Of the total, 69% is found in Sarawak, 29% in Sabah and 2% in peninsular Malaysia (John Thaddeus 2006). But the development of coal resources has been difficult in Malaysia because the reserves are located in the interiors where the infrastructure is poor and it is costly to dig it because of underground mining. But Malaysia's total coal consumption is expected to increase from 4.2 million tonnes in 2000 to 13 million tones in 2005.

So, among the fossil fuels, coal is projected to grow at the fastest rate of 9.7 percent per year, followed by natural gas at 2.9 percent and oil at 2.7 percent. Coal demand will increase substantially to meet the rising electricity demand, accounting for 93 percent of the total incremental coal demand (31.2 Mtoe) (APEC Energy demand and supply outlook 2006). This is in line with Malaysia's target to increase the share of coal in the electricity generation sector. As according to Ninth Malaysia Plan (2006 – 2010), to ensure security and reliability of electricity supply as well as reduce the high dependence on gas, the sources of fuel for power generation was further diversified with the increased use of coal<sup>61</sup>.

As a result, the share of coal to the total generation mix increased from 8.8 per cent in 2000 to 21.8 per cent in 2005 while that of natural gas decreased from 77.0 per cent to 70.2 per cent. In this regard, two coal-based plants were commissioned by Tenaga Nasional Berhad (TNB) while the Sejingkat plant was expanded by Syarikat SESCO Berhad (SESCO). During the Plan period, a total of 6,420 megawatts (MW) of new generation capacity was installed (Ninth Malaysia Plan).

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<sup>61</sup> The consumption of coal for power generation and industrial use is expected to reach 19.0 million tonnes and 2.2 million tonnes, respectively, in 2010, due mainly to the commissioning of two new coal-based generation plants in Peninsular Malaysia. Efforts will be continued to enhance the security of supply by exploring the potential of developing local sources, particularly in Sarawak as well as securing long-term supplies from abroad (Ninth Malaysia Plan).

Though its use is increasing, but most of the coal used in power generation and by the cement factories is imported from other countries. Malaysia is a net importer of coal and imports will increase about 14 times from 2002 to 2030 reaching 33.4 Mtoe in 2030 (APEC Energy demand and supply outlook 2006). Coal use in Malaysia is increasing but most of it is imported to meet the internal demand. So reliance on coal is not such a good option, but as other energy sources form a part of exports, so the government is trying to increase coal usage in the country. So with increased usage of coal and natural gas, Malaysian government can reduce oil use.

### **Electricity/ Power Generation**

Electricity generation is basically dependent on petroleum products as shown in table 3.0, with oil and gas being the main sources. But the share of oil has been decreasing in comparison to the years before like the share of oil decreased from 2.2% in 2005 to 0.2% in 2010. And likewise, the share of Natural gas is increasing showing greater dependence on gas. Not just this, in consonance with the growth of the economy, peak demand increased from 10,657 MW in 2000 to 13,779 MW in 2005<sup>62</sup>. With the expansion in the installed capacity from 14,291 MW to 19,217 MW, the reserve margin increased from 34.1 per cent to 39.5 per cent, which was more than adequate to meet demand (Ninth Malaysia Plan 19: 398).

The table 2.10 also shows that there is an increased use of coal in electricity generation, as its use increased from 21.8% in 2005 to 36.5% in 2010. And there is also a move to shift to other sources of energy rather than depending wholly on oil and gas.

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<sup>62</sup> Electricity Consumption is the amount of electricity consumed by each country or region in the year specified. This variable includes electricity from all energy sources. This variable accounts for the amount of electricity consumed by the end user, meaning that losses due to transportation, friction, heat loss and other inefficiencies are not included in this figure. For details : [http://earthtrends.wri.org/searchable\\_db/variablenotes\\_static.cfm?varid=271&themeid=6](http://earthtrends.wri.org/searchable_db/variablenotes_static.cfm?varid=271&themeid=6)

### Fuel Mix in Electricity Generation (2005 – 2010)

	Year	Oil (% of Total)	Coal (% of Total)	Gas (% of Total)	Hydro (% of Total)	Others
<b>Malaysia</b>	2005	2.2	21.8	70.2	5.5	0.3
	2010	0.2	36.5	55.9	5.6	1.8
<b>TNB</b>	2005	0.5	22.5	71.9	4.9	0.2
	2010	0.1	38.1	56.8	3.4	1.6
<b>SESB</b>	2005	42.6	-	43.0	13.6	0.8
	2010	0.5	18.5	47.2	26.5	7.3
<b>SESCO</b>	2005	4.7	25.0	58.9	11.4	-
	2010	3.0	21.2	44.1	31.7	-

**(Table 2.11): Source - Ninth Malaysia Plan (2006 – 2010), Chapter- 19.**

And also the electricity generation industry in Malaysia now operates in a privatized environment. So out of the total installed capacity, 34.4% is owned and operated by five Independent Power Producers (IPPs), and this entry of IPPs have taken a substantial slice of generation market from TNB, which prior to 1992 had a complete monopoly of electricity supply industry (John Thaddeus, 2005). So now others players who have entered the market are Sabah Electricity Sdn. Bhd. (SESB) and SESCO in electricity generation<sup>63</sup>. So the electricity generation industry has widened and almost all the suppliers show a greater reliance on gas for generation.

<sup>63</sup> SESB was founded on 1 September 1998 to take over the business of electricity supply from Sabah Electricity Board, a statutory body of the Federal Government, which had been supplying electricity to consumers in Sabah and Labuan. TNB and the State Government of Sabah own SESB. SESB sold 1,912 Gwh of electricity in the year 2000. Its total installed capacity was 487.7 MW in the end of 2001. And it sold 3,447 Gwh of electricity in 2005, with the future projections of 4,808 Gwh in 2010. And SESCO is a statutory authority established by the State Government of Sarawak. The Sarawak Government has a 55% ownership and Sarawak Enterprise Corporation Bhd (SECB) holds the remaining 45% shares. SESCO is an

According to Ninth Malaysia Plan, “during the Plan period, the fuel mix for power generation will mainly comprise coal and natural gas. With the operation of the Tanjung Bin and Jimah coal-based plants, the share of coal in the generation mix will increase to 36.5 per cent in 2010. The share of gas in the fuel mix is expected to decline to 55.9 per cent while oil and hydro below 10 per cent”. And with efforts in direction of diversification, Malaysian government is trying to diversify the fuel use.

### **Other sources of Energy**

Under the energy diversification policy, Malaysian government is making efforts to promote the utilization of renewable energy (RE) resources<sup>64</sup>. A roadmap for the development of solar, hydrogen and fuel cells is also formulated during the Plan period (Ninth Malaysia Plan 19: 401).

Presently, the government of Malaysia is encouraging the promotion of the fifth fuel policy. Greater effort is currently undertaken to encourage the utilization of renewable resources, such as biomass, biogas, solar and mini-hydro for energy generation<sup>65</sup>. As part of this effort, in August 2004, a total of 60 small renewable energy project applications were approved for operation. And under the Small Renewable Energy Power Programme (SREP), two projects with a combined grid connected capacity of 12 MW were implemented. With the increasing energy consumption in tandem with rapid economic growth and the depleting domestic energy reserves, the Malaysian government has taken an active approach to sustainable use of energy. So, in 2005, the government of Malaysia

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integrated utility and sold 2,537Gwh of electricity in the year 2000. At the end of year 2001, the total installed capacity was 546 MW and sold 4610 Gwh of electricity in 2005 (National Energy Policy Review Malaysia). And according to Ninth Malaysia Plan, SESCO will sell almost 6383 Gwh of electricity in 2010.

<sup>64</sup> Energy diversification is conventionally defined as a move away from reliance on either one or two primary sources of energy, usually fossils fuels, to non-fossil fuels.

<sup>65</sup> Biomass is defined as any plant matter used directly as fuel or converted into other forms before combustion. This category includes wood; vegetal waste such as wood waste and crop waste; animal materials and wastes; sulphite lyes (also known as black liquor, a sludge that contains the lignin digested from wood for paper making); and other solid biomass (Earth Trends, Country Profiles, 2003). For more details: [http://earthtrends.wri.org/searchable\\_db/variablenotes\\_static.cfm?varid=542&themeid=6](http://earthtrends.wri.org/searchable_db/variablenotes_static.cfm?varid=542&themeid=6)

introduced the use of bio-diesel for the transport sector as a step toward sustainable energy development through diversification of energy sources.

Another aspect of Malaysia's energy sector is hydroelectricity, which accounts for 2.8 percent of the total electricity production. In 1994, the Malaysian Government approved for a large-scale Bakun hydroelectric project, which was completed last year. This project includes construction of river diversion tunnels, 415 miles of overhead lines and 285 miles of distribution infrastructure in order to provide energy to all parts of Malaysia. The Malaysian government is also investigating ways to sell electricity to other parts of Southeast Asia. Thirdly, in the diversification of energy resources, Malaysia is also looking at the cleaner option of nuclear power. Though it is still at the level of consideration, but the state-owned utility TNB is in favour of nuclear power and according to Malaysian Nuclear Licensing Board, plans for nuclear power after 2020 will be brought forward and two reactors will be built. And the Malaysian Institute for Nuclear Technology Research (MINT) has been operating a 1 MW Triga research reactor since 1982 (Kusnanto Anggoro 2007).

Also, to promote the wider application and utilization of photovoltaic technology in buildings, the Malaysia Building Integrated Photovoltaic Technology Application Project (MBIPV) was also launched<sup>66</sup> (Ninth Malaysia Plan 19: 401). Malaysia has been trying to diversify the use of other resources to balance the fuel mix. And bio-mass and hydro are very important substitutes.

### **Ninth Malaysia Plan (2006 – 2010)**

According to the Ninth Plan period, the energy sector will continue to focus on sustainable development to enable it to support economic growth, enhance competitiveness as well as contribute towards achieving balanced development. In line

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<sup>66</sup> Solar power from photovoltaic involves the conversion of solar energy to electricity in photovoltaic cells. Passive solar energy for the direct heating, cooling and lighting of dwellings or other buildings is not included in this category (Earth Trends, Country Profiles 2003). For more details: [http://earthtrends.wri.org/searchable\\_db/variablenotes\\_static.cfm?varid=542&themeid=6](http://earthtrends.wri.org/searchable_db/variablenotes_static.cfm?varid=542&themeid=6)

with the thrust of the National Mission to improve the standard and sustainability of the quality of life, emphasis will be directed towards efficient production and utilization while meeting environmental objectives (Ninth Malaysia Plan 19: 402). According to the Ninth Malaysia Plan:

“Towards this end, the strategies of the energy sector will be- ensuring sufficiency, security, reliability, quality and cost-effectiveness of energy supply; improving the productivity and efficiency of energy suppliers and promoting market-based approach in determining energy prices; reducing the high dependence on petroleum products by increasing the use of alternative fuels; promoting greater use of renewable energy for power generation and by industries; intensifying energy efficiency initiatives in the industrial, transport and commercial sectors as well as in government buildings; expanding rural electricity coverage, particularly in Sabah and Sarawak; and developing new sources of growth in the energy sector including participation of local companies in energy-related industries and services abroad”.

Energy security is put on priority by the Malaysian Government as in Ninth Malaysia plan. Managing the wide range of environmental side effects associated with exploitation of resources for development, is crucial for nations security. Knowing these risk factors, Malaysian government is trying to evolve a policy which will be for the benefit of the country and its people. Malaysia's energy scenario paints a clear picture of high dependence on petroleum products and the electricity generation is also tilting more towards dependence on coal and gas rather than oil. As is visible from the statistics, Malaysia is dependent more on oil and gas, which is putting a pressure on the current resources as the demand is increasing many fold. But according to the present plan, and the fifth fuel policy, the government is trying to shift the balance with greater use of renewable resources in power generation. Though Malaysia has been successful in managing its resources but still much needs to be done to achieve energy security. It has been able to provide enough for the use within the country and for export purpose also.

Malaysia has been managing its resources, so that its benefits are more widely shared. As it is one of the leading producers of oil and gas in the region, it needs to maintain that position in the future too. And not just this, it has to also make sure that the internal demand is met with optimum use of resources. And with the right plans and policies, Malaysia can make sure that its export capacity doesn't fall below the current levels. Though the issue of decreasing reserves is not in their hands but with right plans, the situation has been managed for some time.

With increased use of alternative sources of energy and optimum utilization as outlined in Ninth Malaysia Plan also, it can ensure energy security in a better way.

## Chapter –III

### CHALLENGES TO ENERGY SECURITY

Energy security has to be ensured by a country in its national interest. It becomes important for a country to make sure that there is enough to meet the demands for these resources at reasonable prices. In developed and developing countries securing supplies has become extremely competitive. A country's energy security lies in meeting the domestic need by way of maintaining reserves internally or through an external source, at an affordable price. Nations are realizing that path to success means securing energy needs.

Countries are fighting with each other to get hold of more and more resources. "The planned aggression against Afghanistan and Iraq by the world's major powers was made to gain control over valuable mineral resources" (Aparajita Biswas 2004: 75). That makes energy security crucial, as these reserves are the lifeline of the state machinery today. Without power or transport, life cannot be imagined in today's world. And electricity is the basic requirement for the mankind. Increased growth and development has led to excess use of resources.

With the rising prices of oil, the situation has worsened over time<sup>67</sup>. The Southeast Asian region is not entirely free from the impact of the rising oil prices. Some of its member countries are particularly vulnerable to disturbances in energy supply since they are highly dependent on oil imports (Singapore, Thailand, and the Philippines are the most oil dependent Southeast Asian economies). "Further increase in oil prices, especially if sustained for a longer period of time, will have adverse repercussions on Southeast Asian

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<sup>67</sup> Global crude oil prices are shooting through the roof. And the international price of crude oil has been volatile for a long time, as it increased from an average of US\$ 30.18 per barrel in 2000 to US\$ 55.70 in 2005 per barrel to US\$145 on July 5, 2008 (up from \$51 per barrel in January 2007) (International Herald Tribune May, 2008 and Hindustan Times, July 5, 2008: 17).



economies”<sup>68</sup> (ASEAN Energy Business forum 2005). Higher costs of energy supplies will cause stronger inflationary pressures, will force interest rates to rise and trigger a reversal in consumption and investment behavior (ASEAN Energy Business Forum 2005). So region is not immune to any changes regarding the energy issue. But there’s never a situation which doesn’t have a solution. Though the solution cannot be straightforward but there are definitely ways in which dependence on these energy resources can be reduced.

However there are commonalities in challenges faced by most of the nations. The most potent of these is the rising demand for energy in the globalised world which is growing at an alarming rate. The rise in prices of oil, is putting pressure on consumer countries. The issue of security of supply is a major challenge due to growing menace of terrorism posing threat to the transportation of resources. As “this maritime orientation also dictates the security, political and economic outlook of states” (Jin Hyuk Paik and Anthony Bergin 2004: 177)<sup>69</sup>. Countries which do not have enough resources to meet the needs within their countries depend hugely on the imported fuel, which again increases the chances of vulnerability to the supply routes.

Some of these concerns regarding energy security cut across the borders and are equal in intensity for all the countries in ensuring it. It involves many policy measures by the respective governments and efforts by the people to reduce the dependence on these resources. Some of these challenges put countries in grave danger of regional conflicts which can escalate to worse situations. With these common challenges in the background, one can look at specific country situation. With reference to Southeast Asia, energy security is a challenge which needs to be tackled in a way that it doesn’t affect the overall growth of the region. And similarly, the countries in particular are also facing many challenges in the way of securing energy. According to Patrick L. Clawson (1994),

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<sup>68</sup> The rising oil prices have made the Southeast Asian countries vulnerable to other kinds of problems too. In 2005, oil prices were on an average 42% higher than in 2004. In countries that allowed faster pass through, such as Indonesia and Thailand there is clear evidence that rising oil prices did in fact pinch growth (Asian Development Outlook 2006: 4).

<sup>69</sup> Maritime issues are at the forefront of current regional security concerns (Jin Hyuk Paik and Anthony Bergin 2004).

energy security “concerns the overall state of a country’s energy system in terms of its production, transmission, storage and consumption patterns”.

### **Challenges to Malaysia’s energy security**

Malaysia is one of the crucial countries in Southeast Asia in terms of energy. And as the figures show that it is second largest producer of oil and gas in the region. With huge natural gas reserves Malaysia is also trying to shift to greater use of gas and coal, in place of oil. It has been going ahead with the plan of greater diversification in energy use<sup>70</sup>. And by realizing the importance of energy as a vital component in economic and social development, the government of Malaysia has been continuously reviewing its energy policy to ensure long-term reliability and security of energy supply.

Still challenges prevail in the way of securing enough energy supplies. The first and foremost challenge comes from within, as Malaysia is a growing economy, so its energy demand is also rising by the day. “With real gross domestic product (GDP) growth of 5.9% in 2006, Malaysian economy is on a growth trajectory” (Asian Development Outlook 2007: 216). The demand is also expected to rise and not just this; many other issues also come forward when one talks about the prevailing challenges to securing energy. The challenges can be looked at from different perspectives. And can be categorized into three levels, namely- national level, regional level and international level. As Malaysia faces challenges to its security of energy at all these levels. And with this distribution, the idea becomes clear as to what kind of challenges surface at different levels.

With the distribution in three broad areas, one can assess the current scenario and also look at the future trends in the particular issues. At the domestic and regional level,

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<sup>70</sup> According to Ninth Malaysia Plan (2006 – 2010), In this regard, efforts will continue to be undertaken to reduce dependence on petroleum products while utilizing them efficiently. In addition, efforts will be intensified to increase the supply and use of alternative fuels including.

security issue becomes crucial, as the basic concern here lies in managing the available resources and the delivery infrastructure; which are both extremely important.

### **Domestic/National level**

At the National or Domestic level, Malaysia faces a range of challenges. These are: Rising internal demand for fuel, Continues depletion of existing resources, Infrastructure challenges, Emergency preparedness and Environmental degradation.

### **Growing Internal Demand**

The overall demand is expected to increase at an average rate of 6.3 percent per annum during the ninth plan period, due to higher GDP growth (Ninth Malaysia Plan 19: 402)<sup>71</sup>. With the internal demand set to rise, Malaysia has to deal with the challenge of managing it, as it leads to greater use of resources within the country. There can be three sub headings under this: first, increasing pressure on existing resources, second it can affect Malaysia's export potential and third the issue of fuel subsidy which is keeping the demand artificially high.

With the expected improvement in the quality of life of the population, there will be an increase in energy consumption. In this regard, per capita consumption of energy is expected to rise from 62.2 GJ in 2005 to 76.5 GJ in 2010<sup>72</sup> (Ninth Malaysia Plan 19: 402). In a developing country like Malaysia, the increase in demand for energy has many reasons. And rise in standard of living accounts for a major part of it. As with better jobs, better salaries and greater spending power, the standard of living changes. A look at the developed countries shows that the energy intensity is very high as the standard of living of the people there is very high which leads to greater use of energy resources in the daily

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<sup>71</sup> The Ninth Malaysia Plan (2006-2010), by the Malaysian government is a more integrated approach towards the issue of energy security. For more information regarding the plan- [www.epu.jpm.my/rm9/english/Chapter19.pdf](http://www.epu.jpm.my/rm9/english/Chapter19.pdf)

<sup>72</sup> Though the Malaysian government is trying to benchmark its energy consumption with other countries like Germany, Korea and Denmark. But still there is an increase in the demand and the government has been making policies regarding it.

life. Another key factor in the increased demand for energy is the rise in vehicle ownership in the region, brought about by the more affluent lifestyle of its population as well as the rising need to transport business people and industrial products.

In the transportation sector, there's an increase in the demand. There is an increased requirement for transportation services by the manufacturing and agriculture sectors as well as the tourism industry in Malaysia. "And in the industrial sector, energy intensive industries such as chemical, cement and ceramic, iron and steel are the main consumers and these sectors will remain the main energy consumers constituting 41.1 percent and 38.8 percent of the total energy demand in 2010" (Ninth Malaysia Plan 2006: 402).

"Surveys late in 2006 suggest rising consumer confidence, in line with growing incomes and receding inflation", "consequently private consumption spending will continue to grow" (Asian Development Outlook 2007: 218). The rising domestic demand is a challenge for the Malaysian government and it becomes worse when one looks at the export of energy from Malaysia. As Malaysia is a significant exporter of energy in Southeast Asia. And petroleum products form a substantial part of the total exports from Malaysia i.e. Palm oil, rubber, tin, petroleum products and electronic equipment. Being an exporter of energy puts Malaysia in a tricky position as it has to fulfill the internal demand as well as maintain its export capacity.

This increased use of energy resources domestically can have a negative affect on Malaysia's export potential<sup>73</sup>. And it further leads to loss of huge revenues to its government, as energy exports earn Malaysia high revenues. Though the country has been trying to manage its resources but it may become a problem as its resources are depleting and according to the Country forecasts by Economic Intelligence Unit (2006) "the existing energy supplies of Malaysia at current usage rate, are sufficient for 19 years in the case of oil and 33 years for natural gas".

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<sup>73</sup> As increased domestic use of energy resources is directly proportional to a decrease in a country's export potential due to the limited stock. So energy efficiency becomes very important for energy producing countries to reduce dependence on oil and gas (Ninth Malaysia plan 2006)

So with the estimated time period for the depletion of energy resources, it becomes a challenge to its energy security. But with spiraling domestic needs, its export credentials can suffer a dent in the future. As an exporter, Malaysia exports to some of the important countries of the world like Japan, Korea, Taiwan and China. In 2000, Malaysia accounted for approximately 15% of total liquefied natural gas exports. With the large amount of Natural gas exported, it earns some hefty revenues. "In 2005, total export earnings from LNG amounted to RM20.8 billion; it shows that Malaysia's gas export is very profitable from the point of view of revenues" (APEC Energy demand and supply outlook 2006).

"During 2006, Malaysia consumed an estimated 515,000 bbl/d of oil, with net exports of 283,000 bbl/d and the export of crude oil and condensate increased to 369,000 bpd with a value of RM28.5 billion in 2005" (Ninth Malaysia Plan 2006). With the export of oil and gas increasing coupled with the increase in the demand for energy resources, it has become a challenge to secure energy. According to APEC Energy Demand and Supply Outlook (2006), "the projected flat domestic production of natural gas together with increasing demand over the outlook period would reduce Malaysia's natural gas export capability, thereby reducing the net export position of natural gas from 79 percent in 2002 to 7 percent in 2030". Energy security faces a lot of challenges in its way and the government and the state-owned Petronas have been trying to look at other options<sup>74</sup>.

Thirdly, the rise in oil price can also affect the Malaysian economy. Though the current oil price surge has not significantly halted the growth of the Southeast Asian economies, it would be naive to assume the situation remaining the same if the current upward trend in oil prices persists. For Malaysia, "which is a net oil exporter benefits from higher global oil prices, though the trade dependent economy is also vulnerable to secondary effects if those higher oil prices erode global economic growth" (Asian Development outlook 2006). For Malaysia, as "a net hydrocarbons exporter, high international prices provide a cushion for government spending", in "2006, a \$1 per barrel rise in the price of crude oil corresponded to RM228 million (\$62 million) higher oil related revenues"

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<sup>74</sup> Petronas, the national oil company has been very active in exploring the offshore areas and options in other energy producing countries to increase production. It has invested in almost 29 countries to offset the declining domestic oil reserves (APEC Energy demand and supply outlook 2006).

(Asian Development Outlook 2007: 217). Energy export revenues from oil in 2006 formed 37% of the government income. Though oil exports form a large part of government revenues, a price rise can affect the economy in other ways too. According to APERC Report (2002), “For an energy exporting economy, the oil producing sector does not constitute a dominant proportion of overall economy, therefore the gains in by oil price would be more than offset by non-oil sector losses”.

Not just this, the “oil prices rose to \$135 per barrel” on May 22<sup>nd</sup>, 2008 (The Times of India 2008: 25), “an increase of almost 230% in the last four years”. But this increase is not translating to an increase in fuel prices within the country. The issue of oil subsidies is creating a demand and supply imbalance. According to a report in The Times of India, ‘Costly Oil Subsidies’ (2008), “Malaysia said it has no plans to raise petrol and diesel prices despite the mounting cost of subsidies, which could hit a record of \$15.56 billion this year. Its petrol pump price of \$0.60 a litre is one of the lowest in Asia”.

By doing this, countries are “keeping the demand artificially high” by “not passing the rising oil prices onto the customers”, and this way “the oil demand is not checked commensurate with the price change and it takes longer to restore the supply-demand balance” (Swaminathan S Ankalesaria Aiyar 2008: 26)<sup>75</sup>. Energy subsidies also affect the “economic efficiency, environment and government budget and removing energy subsidies can help to achieve sustainable development. More funds (savings from removal of subsidies) could be channeled to social or welfare projects and higher resultant energy prices can lead to lower demand growth and thereby less adverse impact on the environment” (Mohd Zamzam Jaafar & Ryemie Amran Mohamad PTM 2001).

Energy subsidies are leading to greater damage to the environment. “A study has shown that under pricing of energy occurs in eight of the largest countries outside OECD: China, India, Iran, Kazakhstan, Russia, South Africa and Venezuela. On the average, the end-use prices of energy in these 8 countries are approximately 20% below their market-based

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<sup>75</sup> See Swaminathan S Anklesaria Aiyar (Swaminomics), “Oil Subsidies are bogus socialism”, The Times of India, May 25<sup>th</sup>, 2008.

reference level. The subsidized price has contributed to substantial economic losses and a burden on the environment. If the energy price subsidy in the eight countries is removed, it is likely that world energy consumption could be reduced by 3.5%, thus improving average global energy intensity and the world CO2 emission would fall by 4.6%” (Mohd Zamzam Jaafar & Ryemie Amran Mohamad PTM 2001). With the effects being far more severe, many countries are realizing that they cannot do with price subsidies in the wake of rise in oil prices. To make matters worse, artificially low prices encourage waste, along with all the concomitant costs in terms of pollution, traffic congestion and misallocated capital. As Mikhail V Pavlov (2006), points out, “Many countries subsidize energy consumption, distorting market parameters and many billions of dollars are annually spent to actually promote the burning of mineral fuels”.

The government of Malaysia provides large subsidies for fuel consumption and tax exemption on fuel cost. In 2006, the subsidies were estimated to be equivalent to 28% of average retail prices and totaled roughly RM19 billion or about 14% of federal government spending (Asian Development Outlook 2007). Subsidies by the government absorb up to one quarter of its energy exports revenues. “Malaysia's fuel subsidy bill may rise to 35 billion ringgit in 2008, if crude oil prices remain close to 100 US dollars per barrel”, state news agency Bernama reported Monday, citing Second Finance Minister Nor Mohamed Yakcop. Though Malaysia “increased the fuel prices in 2006, citing the spiraling cost of crude oil. The move was condemned by political and civil groups, arguing it was unnecessary as the country is a net exporter of oil”<sup>76</sup>.

According to ADB (2006), the fiscal position of Malaysia will be strengthened once these subsidies are phased out. Malaysia needs to look at the option of phasing out the subsidies. “Reducing or eliminating fuel subsidies so that the cost of energy is transferred to consumers is a key tool to encourage energy conservation” (UNESCAP 2007)<sup>77</sup>. As many other countries are trying to adjust their fuel prices according to world oil prices. Like Indonesia, which has one of the lowest fuel prices in Asia, raised fuel prices by an

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<sup>76</sup> For details, see, URL: [http://www.hemscott.com/news/latest\\_news/item.do?newsId=57266947108869](http://www.hemscott.com/news/latest_news/item.do?newsId=57266947108869)

<sup>77</sup> See, URL: [http://www.unescap.org/pdd/publications/themestudy2006/11\\_ch5.pdf](http://www.unescap.org/pdd/publications/themestudy2006/11_ch5.pdf)

average of 28.7 percent this month to help cut a surging subsidy bill that has hit the government's 2008 budget, China increased retail fuel prices by around 10 percent late last year, Taiwan President Ma Ying-Jeou's administration has announced that it is abolishing price controls on petrol and diesel from June 1<sup>st</sup> and India is also set to increase petrol and diesel prices (The Times of India May 26, 2008). Doing away with subsidies, in a gradual manner can be a way out. In the end it can be said that, "the balance may be restored only at much higher prices, because oil suffers from exceptional barriers to additional production" (Swaminathan S Ankalesaria Aiyar 2008: 26).

### **Depletion of Resources**

As these resources are non-renewable and limited, so the problem of depleting resources also comes forward<sup>78</sup>. As with greater use, the limited resource pile can get exhausted in few years. The same issue looms large for Malaysia too and for this reason it is looking at different choices. Like many countries, "Malaysia faces complex choices in planning to expand its energy mix and ensuring energy security", said International Atomic Energy Agency (IAEA) Director-General Dr Mohamed ElBaradei. He said, "In Malaysia, more than 90 % of the electricity was generated from fossil fuels. But with natural gas reserves decreasing and electricity demand continuing to rise, Malaysia had begun looking at other possibilities to ensure its future energy security" (ASEAN Energy Business Forum 2005).

As according to the Country forecasts by Economic Intelligence Unit (2006) "the existing energy supplies of Malaysia at current usage rate, are sufficient for 19 years in the case of oil and 33 years for natural gas". And "Malaysia's net import dependency will increase from minus 57 percent (net energy export position) in 2002 to 32 percent in 2030" (APEC Energy Demand and supply outlook 2006). And with intensive resource exploitation, the need to turn to some other sources of energy comes in. The countries

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<sup>78</sup> Depletion of resources refers to the growing exploitation of existing reserves alongside the limited availability of these non-renewable sources of energy. The over-exploitation of resources which are already in shortage leads to depletion (Earth trends, country profiles 2003). URL: [http://earthtrends.wri.org/searchable\\_db/variablenotes\\_static](http://earthtrends.wri.org/searchable_db/variablenotes_static)



face a challenge of working out a way that the resources are used in a more proper way. Domestically, these three basic issues are interrelated as the growing demand puts a pressure on the limited reserves and also on the export potential of Malaysia. The pressing concern that Malaysia needs to tackle is energy supply security as limited domestic energy resources coupled with increasing energy demand will reduce the economy's export capability and increase dependence on imported energy sources.

### **Infrastructure Challenges**

For the Asian and Southeast Asian region, “which has the world’s highest economic growth rate, energy infrastructure development presents a critical challenge and in order to supply the energy that the region needs for future economic growth and to reduce the large portion of its population without access to modern energy supplies will require a substantial increase in the size and diversification of energy infrastructure” (UN ESCAP 2007). And in the APEC Energy ministerial meeting (1998)<sup>79</sup>, “ministers recognized that continuous development of adequate energy infrastructure is essential as a stimulus for economic recovery as well as for sustainable development in the region”.

Energy infrastructure according to ESCAP (2007) normally includes,

- the physical infrastructure required for the exploration, development and production of energy
- transformation of energy, such as electric power generation and oil refining
- transmission and distribution of energy, such as electric power transmission lines and oil and gas pipelines
- storage of energy products

“The discussion of energy supply security includes energy crisis management and infrastructure protection” (Paul Belkin 2008: 28). Infrastructure protection and development are crucial parts of energy security, as “the existing global energy

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<sup>79</sup> For details, see, Third Meeting of APEC Energy Ministers "Energy: Driving Force for Economic Recovery and Development" Ginowan, Okinawa, Japan, October 9-10, 1998.  
URL: [www.apec.org/1998APECEnergyMinisterialMeeting/Asia-PacificEconomicCooperation.htm](http://www.apec.org/1998APECEnergyMinisterialMeeting/Asia-PacificEconomicCooperation.htm)

infrastructure is very vulnerable from the source to the consumer as it was created when terrorism was not yet a global threat. Nuclear power stations, refineries, and choke points in the maritime transport network are especially critical” (Heinrich Kreft 2007: 23).

Looking at the first part which includes exploration, development and production is managed by Petronas in Malaysia. “Petronas holds exclusive ownership rights to all exploration and production projects in Malaysia, and all foreign and private companies must operate through Production Sharing Contracts (PSCs) with the national oil company”(Country Analysis Briefs 2007).

Both in the oil and gas sector, Malaysia’s state-owned Petronas dominates; it plays a leading role in downstream activities and LNG trade. Malaysia’s proven oil reserves have declined in recent years, despite growth in E&P activities. Petronas and its various PSC partners have been most active exploring offshore areas, especially in deepwater zones that pose high operating costs and require substantial technical expertise. Despite several new projects that are set to come on-stream in the next several years, like Malaysia’s new oil production projects include the Kikeh block, the country’s first deepwater oil and natural gas discovery. Field operator Murphy Oil expects initial production of 40,000 bbl/d in January 2008, ramping up to 120,000 bbl/d later in the year and many more. But EIA<sup>80</sup> (2007), forecasts that “Malaysia’s oil production will fall to 693,000 bbl/d in 2008, a 13 percent decrease from 2006 levels”. With spiraling demand and falling production levels, it becomes a huge challenge for the Malaysian government.

Malaysia has been very active in exploration efforts and has tied up with many foreign companies to joint exploration and production processes. With new developments, there are more ways to explore reserves in the deep seabed, and Malaysia has been making efforts to engage. At present, “Petronas is invested in 29 countries, with an upstream component in 23 of these countries” and “In case of natural gas, production has risen steadily in recent years, reaching 2.2 Tcf during 2004, up 47 percent since 2000”

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<sup>80</sup> See Energy Information Administration, Country Analysis Briefs, February 2007- Malaysia energy data, statistics and analysis. URL: [www.eia.doe.gov/countryenagureport.pdf](http://www.eia.doe.gov/countryenagureport.pdf)

(Country Analysis Briefs 2007). But the rising internal demand and the export of gas is putting a strain on the current reserves.

And with greater exploration activities in the offshore areas, it is leading to other regional challenges like conflicting claims and delays in production capacity. As once an area becomes a conflict zone, the exploration and production is stopped for the time or delayed and this in turn, creates supply disruption. It brings in the regional challenges of boundary disputes and overlapping claims as in Spratlys and Ambalat.

Secondly, in case of electricity generation and oil refining, Malaysia has been forthcoming. Malaysia' electricity sector, its generation is basically dependent on petroleum products. And outlined in the second chapter also, the electricity generation industry in Malaysia now operates in a privatized environment. So out of the total installed capacity, 34.4% is owned and operated by five Independent Power Producers (IPPs), and this entry of IPPs have taken a substantial slice of generation market from TNB, which prior to 1992 had a complete monopoly of electricity supply industry (John Thaddeus 2005). This change has brought in many advantages for the consumers.

And with increase in installed capacity from 10,657 MW in 2000 to 13,779 MW in 2005 (Ninth Malaysia plan 2006). The government is trying to adjust to the rising needs of the people. But the growing demand is definitely putting pressure on the generation capacity. With greater demand there has to be corresponding increase in the electricity generation also. But with the fall in production levels, high demand and dependence on oil and gas; the challenges seem far more complicated.

A look at the oil refining sector shows that according to Oil and Gas Journal (2007), "Malaysia had about 545,000 bbl/d of refining capacity at six facilities as of January 2007" and "Petronas operates three refineries (259,000 bbl/d total capacity), while Shell

operates two plants (200,000 bbl/d), and ExxonMobil<sup>81</sup> one (86,000 bbl/d)". Malaysia has invested heavily in refining activities during the last two decades, and is now able to meet the country's demand for petroleum products domestically, after relying on the refining industry in Singapore for many years (Country Analysis Briefs, EIA 2007). But the growing demand comes again as a challenge faced by the refining industry in Malaysia. Though the recent investments in refining have brought it to the level of meeting the internal demand, but it cannot be sustained for a long time in view of rising consumption of petroleum products.

Thirdly, the transmission and distribution of energy, is of extreme importance to maintain the balance between demand and supply in the country. "The electricity demand of Malaysia will increase by 4.7 percent per year over the outlook period, to reach 274 TWh in 2030" (APEC Energy demand and supply outlook 2006). The electricity transmission system is extensive in Malaysia and was further expanded with the completion of new transmission projects to link new generation plants to the main grids as well as provide connections to new industrial and commercial areas. These included the Manjung-Air Tawar line in Peninsular Malaysia as well as the East Coast Grid and the Northern Grid in Sabah (Ninth Malaysia Plan 2006). Malaysia has been trying to stay updated with the current rise in demand but this increase can put a lot of pressure on the transmission system in the country.

The distribution network was also expanded to provide greater access and enhance the quality of electricity supply to consumers. During the Plan period, "the supply of electricity to rural areas was further improved. The implementation of rural electrification projects benefited 59,960 housing units, mainly in Sabah and Sarawak" (Ninth Malaysia Plan 2006). But still the distribution system in Sabah and Sarawak, are not fully developed to reach the deepest villages. And the natural gas distribution system in

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<sup>81</sup> "ExxonMobil (through its local subsidiary Esso Production Malaysia Inc.) is the largest oil company by production volume, and there are numerous other foreign companies operating in Malaysia via PSCs" (Country Analysis Briefs 2007).

particular needs to be expanded. The Peninsular Gas Utilization (PGU)<sup>82</sup> comprising main gas transmission pipelines, supply pipelines and laterals, in Malaysia spans now over 1700 kms in peninsular Malaysia. But with use of natural gas in sectors other than the electricity sector has been promoted as part of the government strategy to diversify energy sources, so “the share of natural gas in total final energy demand will grow at 5.1 percent per year mainly due to strong demand growth in the industry sector, as a result of domestic availability and competitive price” (APEC Energy demand and supply outlook 2006).

However, in order to utilize natural gas in the industrial sector more extensively a comprehensive pipeline system will be required. “The Natural Gas Distribution System (NGDS) was expanded from 455 km in 2000 to 1,365 km in 2005. The NGDS network will be further expanded to a total of 2,005 km in 2010 with an estimated investment requirement of US\$168 million. The network is projected to supply 6.9 Mtoe of natural gas in 2010” (APEC Energy demand and supply outlook 2006). According to APEC estimates, “as natural gas demand is projected to grow strongly and reach 20.4 Mtoe in 2030, the domestic gas pipeline network will need to be expanded further over the outlook period at an estimated cost of US\$2-3 billion”. This presents a challenge in keeping up with the rising demand in Malaysia.

So the investment requirements in the energy sector will be huge, to fulfill the growing need for electricity and fuels, to take care of the changes in the living standards of the people. According to projections by APEC (2006), “The energy industry of Malaysia will need a total investment of between US\$107-135 billion. The majority of the investment will be required for electricity generation and transmission (US\$59-72 billion) and oil

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<sup>82</sup> Peninsular Gas Utilization (PGU) project is an infrastructure development project to process and transmit natural gas from the offshore fields of Trengganu to end-users in the power and industrial and commercial sectors. In December 1997, the final phase of the PGU project was completed. The entire PGU system now spans over 1,700 km in the western and eastern part of the peninsula, comprising main gas transmission pipelines, supply pipelines and laterals. The PGU project has now become the backbone for Malaysia's industrialization process. For details, see, URL: [http://www.bappenas.go.id/index.php?module=Filemanager&func=download&pathext=ContentExpress/&view=188/hn\\_gas\\_jakpost.pdf](http://www.bappenas.go.id/index.php?module=Filemanager&func=download&pathext=ContentExpress/&view=188/hn_gas_jakpost.pdf)

and gas production (US\$28-41 billion)". The main cause behind the challenges is the rise in demand for energy, which is bringing forth all kinds of issues. And the infrastructure challenges need to be handled properly, as majority of the problems for Malaysia emanate from supply issues. It is clear that energy demand and the cost of supplying it will be substantial in coming decades. "The challenges faced in meeting demand will include securing finance and ensuring legal and institutional structures are conducive to energy development and governments will have an important role to play in creating and maintaining an enabling environment for investment" (UNESCAP Report 2007).

### **Emergency Preparedness**

Though Malaysia is an exporter of energy, it is assumed that Malaysia does not need to stockpile energy resources for any problem regarding oil scarcity. And that's true to an extent, if Malaysia is sure that with greater exploration and other efforts, it can meet the demand for energy. As a situation can arise, when the production may come down due to depletion of resources and on the other hand, demand increases. As this scenario has turned many energy exporters into net energy importers and Clifford Krauss (2007)<sup>83</sup> points out "even the exporting countries are set to turn importers because of the ever-expanding domestic demand in the countries". But there needs to be some provision in case of depletion of reserves. Emergency prepared includes, "The 'Hiranuma Initiative, Creation of Emergency Network, Initiative for development of oil stockpiling, Development of Joint Studies on Asian Oil Market, Initiatives for the improvement of natural gas development and Initiatives for the improvement of Energy Conservation and Renewable Energy" (Dato Syed Hamzah Syed Othman 2003)<sup>84</sup>.

Though Malaysia puts high priority on oil security and emergency preparedness and had ratified ASEAN Petroleum Security Agreement (APSA)<sup>85</sup> in 1986 (ASEAN Secretariat,

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<sup>83</sup> See Clifford Krauss, "Oil exporters set to turn importers", The Times of India, December, 2007.

<sup>84</sup> For additional information, see, "IEA/ASEAN Oil Security and Emergency Preparedness Workshop", Paris, 1-2 September 2003 URL: <http://www.iea.org/textbase/work/2003/asean/malaypp.pdf>

<sup>85</sup> The ASEAN Petroleum Security Agreement, commonly known as APSA in ASEAN was signed by the ASEAN foreign ministers on 24 June 1986, in Manila on the same occasion as the signing of the Agreement on Energy Cooperation. The APSA was signed by all six ASEAN member economies then,

1990) and has also been forthcoming in cooperation at the regional level. Malaysia hasn't yet subscribed to the idea of national stockpile since production can be increased to meet demand. And stockpiling for crude oil and products is for operational purposes only. Total storage capacity of crude oil is about 14 Mbbl, or at least a 29-day supply, total storage capacity of products is about 11 Mbbl, or a 26-day supply" (Asia Pacific Energy Research Centre 2000: 27). But the internal growth in consumption and demand of energy resources can create problem if the situation is not handled prudently.

### **Environmental Degradation**

The issue of environmental degradation also comes up, cannot be compartmentalized in domestic or regional categories, as it has global implications. The problem is getting worse, as with the increasing use of energy resources, there is an increase in the CO<sub>2</sub> emissions<sup>86</sup>. According to APEC Energy Demand and Supply Outlook (2006), "CO<sub>2</sub> emissions from the energy sector in Malaysia are projected to grow at 4.2 percent per annum, reaching 414 million tonnes of CO<sub>2</sub> in 2030, a three-fold increase over 2002". The electricity sector will be the biggest contributor to the incremental growth in CO<sub>2</sub> emissions at 49 percent, followed by the transport sector at 28 percent and the industry sector at 20 percent. "Extensive and excessive resource use, energy inefficient lifestyles,

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namely, Brunei Darussalam, Indonesia, Malaysia, Philippines, Singapore and Thailand, and was subsequently ratified by Viet Nam, Laos, Myanmar, and Cambodia when these economies joined as new members of ASEAN in later years. Under the Agreement, ASEAN member economies agreed to establish the ASEAN Emergency Petroleum Sharing Scheme for crude oil and/or petroleum products in times of both shortage and over supply. Specifically, when members experience critical shortage, the oil exporting members of ASEAN are committed to supply a necessary quantity of crude oil and/or petroleum products. In the event of indigenously-sourced crude oil or petroleum products over supply, the importing member economies are required to purchase exports of member economies in distress to increase their level of exports to at least 80 percent of the normal exports. In the Seventeenth ASEAN Ministers on Energy Meeting (17th AMEM) which took place in Bangkok on 3 July 1999, the ministers expressed a need to review the provisions of the ASEAN Petroleum Security Agreement in relation to the financial crisis and increasing price of oil (Asia Pacific Energy Research Centre 2000: 28). For Details see, URL: [www.ieej.or.jp/aperc/oilstocks.pdf](http://www.ieej.or.jp/aperc/oilstocks.pdf)

<sup>86</sup> CO<sub>2</sub> emissions have become a huge problem and its effects on the environment are disastrous. It is leading to climatic changes, melting of ice caps and a rise in the sea level leaving many smaller islands submerged. As Gareth Porter explains, "increasing stresses on the earth's life support systems and renewable natural resources have profound implication for human health and welfare that are at least as serious as traditional military threats" (Gareth Porter 1995: 218).

industrialization and the pursuit of economic growth are inextricably linked to environmental degradation” (Lorraine Elliott 2004:159).

Environmental degradation may have “serious repercussions for the security interests of both developed and the developing world” (Thomas F. Homer-Dixon 1994: 36). The environmental security becomes a part of the comprehensive security. It needs to be maintained as “coupled with decline in regional energy self-sufficiency, concerns over maintenance of secure energy supplies have increased the potential for confrontation over resources and other energy infrastructure” and “Environmental decline and resource scarcity therefore clearly complicate the security challenges facing the region in a post-cold war world” (Lorraine Elliott 2004: 170).

A growing economy like Malaysia definitely faces more challenges from within the country. Though there are external challenges too, but most important for a country is to look after its national interests. The domestic issues become most crucial for a country. But the challenges don't end here, with the global competition growing; the need to look for more and more options has become important.

### **Regional Level**

The challenges faced by Malaysia for securing enough energy can be looked at from another level i.e. the Regional level. As this quest for energy, has made the regional arena extremely important. Most of the countries in the Southeast Asian region are growing economies. So there is continues increase in the demand for energy resources<sup>87</sup>. And with the global vulnerabilities existing, the countries are trying to get hold over more and more reserves and greater exploration efforts leading to difficult situations at the regional level. This infrastructural challenge at the domestic level translates to the regional sphere due to the overlapping claims by countries for offshore oil and gas reserves.

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<sup>87</sup> “Surging domestic demand is limiting their ability to alleviate broader Asian regional oil shortages” (Mehmet Ogutcu 2004: 451).



At the regional level, Malaysia faces many challenges to its energy security. It is not just about the countries which are resource deficient and need imported energy to feed their economies like Singapore, Thailand, Philippines; who are in a race for control over resources but also the countries which have energy surplus and are energy exporting nations like Indonesia, Malaysia. As energy exporting countries are also facing the daunting task of managing their internal demand, so this requires greater investments in infrastructure for greater production. These exploration efforts are leading to greater territorial conflicts between countries to secure more resources at the regional level, many examples like the spratly island dispute is known worldwide as been one of the long standing issues in Southeast Asia. And many other conflicts situations also existed between Malaysia and its neighbors over energy resources.

### **Spratly Island Dispute**

The South China Sea problem comes up as the most long standing problem in the region regarding energy reserves. This issue practically involves whole of the region, with their competing claims as the islands are known to be rich in Oil, Gas and various other mineral resources. So, conflicts like this in future may pose a grave threat to regional security.

The dispute is mainly about Spratly islands in the South China Sea<sup>88</sup>. “The region faces great potential for conflict as- the logic of energy security is based on an interrelationship of resources scarcity and territorial dispute that leads to conflicts” (Robert Manning 2000). Almost six governments have made territorial claims in the Spratlys i.e. China, Taiwan, Vietnam, Philippines, Malaysia and Brunei. These islands are considered to be rich in resources and according to estimates it may have reserves ranging from about 1-2 billion barrels to 225 billion barrels. So the countries are vying for the amount of reserves which lie beneath the islands.

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<sup>88</sup> The issue of South China Sea, has seen some ray of hope, as Declaration on the conduct of Parties in South China Sea was signed in 2002 by ASAEN and China (2002 DoC). According to which, the parties agree to resolve disputes by peaceful means (Clive Schofield and Ian Storey 2005).

Till 1970s the islands were “largely ignored” but after sometime the area became a “possible target for exploration by multinational oil companies” and “motivated by the desire to extend control over sea-based resources, neighbouring states in the area have increasingly come into verbal conflict and even sporadic military confrontation over who exercises sovereignty over the Spratlys” (Jin Hyuk Paik and Anthony Bergin 2004: 179). This issue came to the forefront in 1990s as China started asserting its claims in the Spratlys on 25 February, 1992 and as “most states found themselves in a race to bolster their claims to sovereignty by gaining occupation of those islands that can support a physical presence” (Jin Hyuk Paik and Anthony Bergin 2004: 180). Then in 1995, when the Chinese built structures were found on Mischief reef, it led to tension between China and Philippines. “In the wake of Mischief Reef Incident, there was raised suspicion within ASEAN that China’s intention was to realize its claims by gradual expansion but later the ASEAN states attempted to ease tension with China in the South China Sea through the implementation of confidence building measures” (Clive Schofield and Ian Storey 2005).

China’s claims in the South China Sea are of great concern. As Alan Collins (2003) points out, “there are two reasons: first, China’s claim is not entirely clear; at times China appears to consider the South china sea as its own territorial waters- in other words to treat it as Chinese land. Second, China has by far the greatest military capability of all claimants and is strengthening its naval and air capabilities”. The Chinese continued construction at Mischief Reef in 1996. In 1999, Philippines, Vietnam and Thailand argued for a code of conduct discussion in the ASEAN Regional Forum (ARF). Finally in 2002, Declaration on conduct of parties in South China Sea was agreed upon. In 2005 Chinese fishing boats were caught illegally fishing in Philippine waters.

The Philippine Navy responded by sending a patrol craft to arrest the Chinese fishermen but the Chinese sent 2 destroyers. The Philippine ship was told to pull out but instead called for another Patrol Craft and a Corvette and when the Chinese told the Philippine Navy to pull out, a Philippine ship open fired at a Chinese destroyer and damaged it<sup>89</sup>. In

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<sup>89</sup> For more details, see URL: [www.wikipedia.org](http://www.wikipedia.org)

response the Chinese fired back. the Philippine Navy was reinforced by 2 Taiwanese Frigates. The Chinese eventually withdrew from the scene. The issue is still a bone of contention between the competing countries and “remains one of the most dangerous flashpoints in the region” (Jin Hyuk Paik and Anthony Bergin 2004: 180)<sup>90</sup>.

Individually, Malaysia has been one of the claimants in the South China Sea, and claims parts of the island on the basis of proximity and the continental shelf principle. Its claim is based on a continental shelf that projects out from its coast and includes islands and atolls south and east of Spratly Island. This claim, overlaps claims by China, Taiwan, and Vietnam, and overlaps reefs and cays in the Philippine's claim.

Malaysia's claim was announced in 1979 in an official map publication. Malaysia entered the Spratly stakes in August 1983, when it sent about 20 commandos to the island of Terumba Layang. “It established a small military garrison together with a fisheries patrol base on Swallow Reef in 1983 and in 1986 another two reefs were occupied and 1999 two more, bringing the total to five” and “The Malaysian claim overlapped with that of the Philippines and tensions were revealed over 1988-89, when Filipino fishermen were arrested in that area, of overlap” (Leszek Buszynski and Iskandar Sazlan 2007: 147). And not just with Philippines, there have been many overlapping claims because of the problem of maritime claims in the sea. There have been some problems with Brunei too regarding the same issue. “A very recent case of that is the claim over Pedra Branca or Pulau Batu Putih by both Singapore and Malaysia. Though that has been brought to the International Court of Justice and the public portion of the case was heard over November 6-23, 2007, a decision is still expected”<sup>91</sup>.

Though the countries have started exploration in the region but the issue hasn't been solved yet. Malaysia has also involved many foreign companies for exploration agreements in South China Sea. “Malaysia's Petronas Carigali has teamed up with

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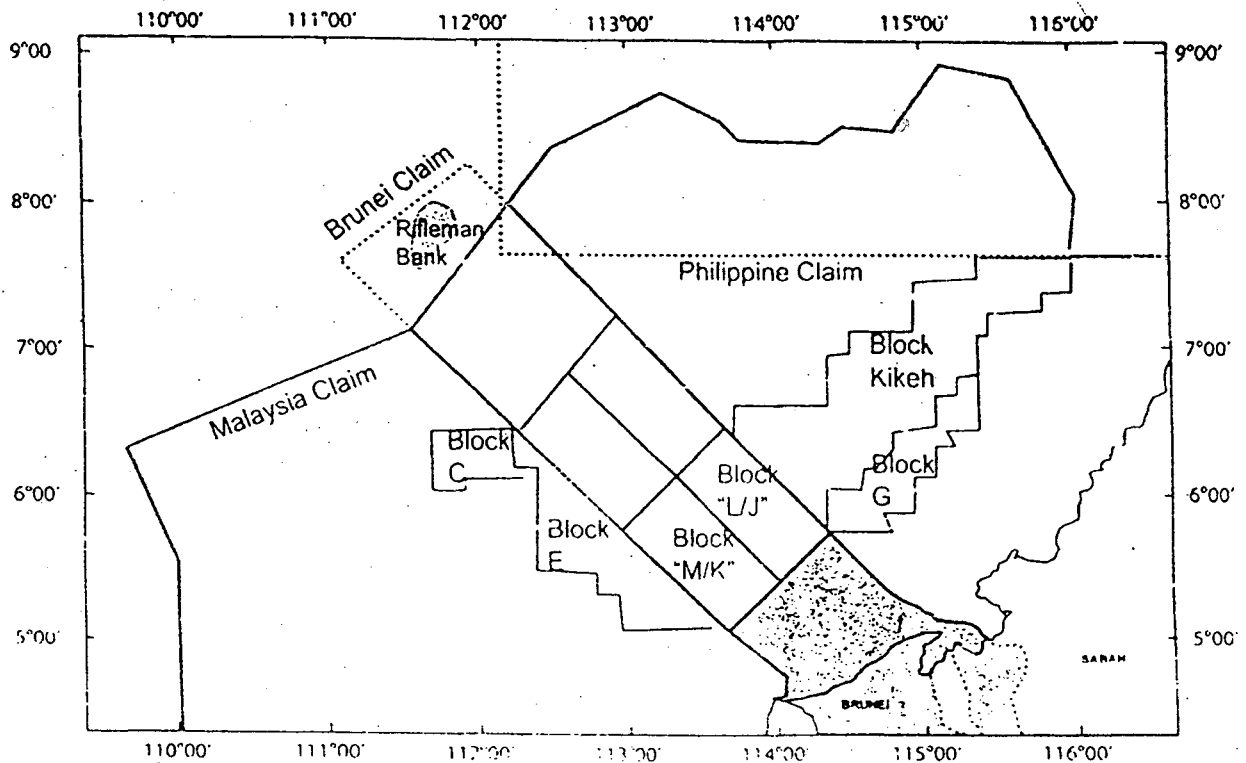
<sup>90</sup> “Although all the claimants have endorsed the use of peaceful means to overcome their differences, it is worrying that all claimants except Brunei, have stationed their troops in the contested areas” And “with time most of these claimants will be in good position to project military power into the South China Sea” (Jin Hyuk Paik and Anthony Bergin 2004: 180).

<sup>91</sup> See, URL: [www.wikipedia.org](http://www.wikipedia.org)

Murphy oil, Conoco Phillips and Shell in exploration Agreements off Sabah. Petronas also awarded exploration rights to Murphy Oil to conduct deep-water exploration in Block K” (Leszek Buszynski and Iskandar Sazlan 2007: 163). But a conflict situation came up between Malaysia and Brunei because of the overlapping blocks i.e. M and L by Malaysia and K and J by Brunei (Figure 3.1). And as both the countries had given rights to foreign companies for drilling and exploration purposes, the situation became tense.

**Figure 3.1**

**Malaysian Blocks G, L, M and Brunei Blocks K, J and the Kikeh Field<sup>92</sup>**



**Source: Maritime Claims and Energy Cooperation in the South China Sea, Contemporary Southeast Asia, 2007 (165)**

<sup>92</sup> The figure shows the overlapping claims by Malaysia and Brunei, in the South China Sea. The maritime claims have led to minor issues between the two countries.

“In March 2003, a Brunei patrol gunboat drove away a Murphy Drilling ship and in April Malaysian patrol boats forced a total exploration vessel to leave the Block J area” (Leszek Buszynski and Iskandar Sazlan 2007: 163). And the companies stopped exploration on both the sides because of the dispute. Though there were negotiations between Malaysia and Brunei in 2003 and 2005, but it didn’t work. And Malaysia even proposed joint exploration like the Malaysia-Thailand joint agreement but Brunei has been suspicious about it.

The South China Sea problem remains unresolved, as most of the claiming countries have been involved in some or other conflict situation. Though over the years there have been many efforts by the countries to solve the issues peacefully but it still remains an issue of concern<sup>93</sup>. Malaysia like many other countries has also been involved in tense situations and it shows that how these regional challenges come in the way of securing more energy or it can be said in the other way also, that countries can even get into regional conflicts for ensuring energy security.

### **Ambalat Issue**

Not just the problem of South China Sea, Malaysia has also been caught in some difficult situations with its neighbors regarding the exploration problem again. “And one of the examples is a recent conflict between Indonesia and Malaysia over Ambalat offshore area, a potentially oil-rich maritime zone off Borneo Island in 2005” (Clive Schofield and Ian Storey 2005). This is also one of the clear examples of issue of energy security in terms of securing more resources. The conflict led to claims and counter-claims regarding violations of national security and also led to a military build-up in the area. “As once there is discovery of major oil deposits, it increases the incentive for claimants to more zealously guard and enforces their respective claims and even increases the willingness of some parties to risk triggering conflict by unilaterally drilling in the disputed area” (Ralph A. Cossa 1998: 7).

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<sup>93</sup> “In march 2005, three oil companies from China, Vietnam and Philippines signed a landmark agreement in Manila on joint exploration of oil and gas resources in the south china sea” (Hongyi Harry Lai 2007: 532).

The dispute basically started in February 2005, over Ambalat offshore area in the Celebes Sea. When Malaysia's National oil company Petronas issued exploration licenses to Petronas Carigali and Shell Group. "The problem was that the Malaysian blocks given to Carigali and Shell overlapped with those of Indonesian Blocks i.e. Ambalat block and East Ambalat block, which were licensed to Italian Oil major ENI and US-based oil multinational Unocal in December 2004" (Clive Schofield and Ian Storey 2005). This actually led to problems in the diplomatic relations between the two countries. "And both the countries went on to deploy military forces in the problem area. Both the sides sent Navy and Marine police vessels and from the Indonesian side it went up to eight vessels and four F-16 fighter jets. And there was even a collision between Indonesian naval vessel KRI Tedung Naga and Malaysian patrol boat KD Rencong" (Clive Schofield and Ian Storey 2005).

Though both the governments refrained from any confrontation but because of the overlapping claims, there was bound to be some friction. But this takes us to the very fact that how energy security concerns go beyond the borders and can even lead to some very serious conflicts with the neighbours. And with increased exploration efforts by Malaysia and other countries, the maritime boundary issues also come in<sup>94</sup>. In the case of Ambalat, the overlapping maritime claims led to this situation. "And Ambalat area is estimated to have hydrocarbon deposits of 100 billion barrels to one billion barrels of oil" (Clive Schofield and Ian Storey 2005). So this area is definitely attractive to the countries who want to expand the exploration efforts to get more resources. These offshore areas have brought the maritime disputes under the ambit of energy security.

Conflicts like this in future may pose a grave threat to Malaysia's national security. And these "disputes counterproductively, have rendered infeasible any resource exploration and development in the contested areas, an outcome which is in no country's interest

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<sup>94</sup> The Maritime political map of Southeast Asia is incomplete. Though the states have adopted the 200 nautical mile (nm) exclusive economic zone (EEZ) concept as codified in the 1982 United Nations Law of the Sea Convention (LOSC), alongside their claims to continental shelf that may extend beyond the 200nm limit. But overlapping claims emerge as states want to secure maximum maritime entitlements for themselves and this even leads to offshore boundary disputes. And as there are no methods of demarcation specified by the LOSC, so conflicts like this will keep on brewing up (Clive Schofield and Ian Storey 2005).

from the point of view of access to new oil and gas supplies” (Mehmet Ogutcu 2004: 474). Though cooperation is also there in some situations but still these conflicts are a big challenge for Malaysia’s energy security. And the conflict situations put a question on its national security too. The above mentioned examples show that Malaysia has been involved in these issues regarding territorial claims or the maritime boundary disputes, mostly because of the increasing need for more resources and definitely for its energy security concerns. As Clive Schofield and Ian Storey (2005) state, “In maritime boundary disputes, the lure of potential access to seabed oil and gas resources often plays a dual role, on the positive side it can be a motivating factor, prompting a desire to resolve the dispute so that exploration can proceed as soon as possible and on the other hand, the possible presence of such resources can serve as an impediment to dispute resolution, since neither side is willing to concede what it regards as its own legitimate right”.

### **Maritime Security**

“This exploration for seabed hydrocarbon resources is also seen as a key way to reduce supply uncertainty, a fact which gives maritime jurisdictional disputes an energy security dimension” (Clive Schofield and Ian Storey 2005)<sup>95</sup>. Energy security challenges at the regional level also involve the issue of security of supply routes of energy resources. And this brings in the issue of maritime security. “As the economies of the region have prospered and extra-regional influences have declined, so governments have turned their attention more closely to the security of their maritime interests” (Jin Hyun Paik and Anthony Bergin 2003: 177). For Southeast Asia and especially for the littoral states of Malaysia, Indonesia and Singapore, maritime security is extremely important. The Straits of Malacca are the vital sea lanes for the transport of vessels as these lanes bridge two oceans, and serve as the shortest route for the maritime trade and shipping in the region<sup>96</sup>

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<sup>95</sup> Countries try to increase their offshore exploration to get hold over more resources and this leads to maritime jurisdictional disputes because of overlapping claims of different countries over one or more offshore sites. This way maritime boundary issue gets linked to energy security.

<sup>96</sup> Straits of Malacca are important not just for the countries around it, but for most of the countries whose vessels pass through this like China, Japan, and Taiwan etc. As 60% of China’s crude oil which is imported from Middle East countries passes through Malacca straits.

and connects the South China Sea to the Indian Ocean, while to the north the Taiwan Strait connects the South China Sea to the Pacific.

The straits serve as the most important route for most of the trade done in the region. Due to this the straits have been a major spot for terrorist attacks. Many operations conducted by maritime terrorism include piracy, suicide attacks on commercial and military vessels, and attacks on offshore energy installations, suicide attack on a ship or a port, use a ship for smuggling weapons and explosives. Piracy and terrorism raise the security threat in the straits, which is one of the busiest shipping lanes in the world. "This waterway carries an annual volume of commercial traffic of more than 50,000 ships, making it the busiest waterway in the world and this translates to more than a third of global trade and two-third of the world's Liquefied Natural Gas trade passing through the Straits"<sup>97</sup>(Shafiah Fifi Muhibat 2007: 242). "A substantial portion of imported South Korean and Japanese oil is transported through these waters" (Alan Collins 2003: 113).

Not just this, the International Maritime Organization has warned that liquefied Natural Gas (LNG) carriers and other ships carrying volatile cargo can be destroyed or could be hijacked and used as weapons of mass destruction. In fact, the Maritime Security Council's annual International Maritime Security Summit (2002) stated that "a large ship loaded with LNG could result in an explosion equivalent to a 7 megaton nuclear detonation". The damage which can be done by these acts can be extremely bad for the countries. And "with the recent report of the second quarter of 2007, there is a sudden increase in number of attacks in the Straits of Malacca" (Shafiah Fifi Muhibat 2007: 244). Any incident regarding tankers and LNG ships can affect its exports. "There is an increasingly sophisticated hi-tech piracy carried out in the South China Sea area, with tankers being boarded and oil products transferred to other ships" (Robert A. Manning 2000: 184).

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<sup>97</sup> At the same time, the volume of traffic has increased dramatically over a short period with over 62,600 ships sailed through in 2005, compared to 44,000 ships in 1999, i.e. a 42 per cent increase within a six year period. In light of the increase in global trade and the rise of East Asian economies the volume is expected to increase to an estimated 1,00,000 within the next decade (Ensuring security of Malacca Straits 2006).



Malaysia's economy is heavily reliant on trade and the Sea Lines of Communications (SLOC) in the Straits of Malacca (SOM) and the South China Sea (SCS) provides the medium for its transportation. From the perspective of internal trade, Malaysia's two geographically separated landmasses require that safe passage through the South China Sea SLOC. According to the Chief of Navy, Admiral Dato Sri Mohd. Anwar (2006), "This is also true from the regional and international perspective where much of its import and export activities are also highly needy of maritime haulage and Malaysia's maritime related industries includes, offshore exploitation of resources, sea-based tourism related industries, together with her manufacturing sector contribute significantly to the well-being of Malaysia's economy". Hence, keeping these two vital SLOCs open and safe is crucial in ensuring the continuation of Malaysia's trade and open access to markets and also for energy security concerns. Being one of the largest exporters of LNG, Malaysia has a lot at stake and maritime security issue is a major concern for its energy security.

There's even a risk of environmental disaster as tankers and LNG carriers are the main targets. Not just the military risks but even the non-military risks are there. "As a study of possible threats to the sea-lanes by the Centre for Naval Analysis identified an array of threats starting with the non-military: oil spills, bad weather or volcanic activity disrupting one of three chokepoints into the Sea (Straits of Malacca, Lombok and Sunda) or terrorists planting mines" (Robert A. Manning 2000: 185). "For Malaysia and Singapore, in particular, one of the greatest fears is the possibility of a massive oil spill in the vicinity of the Malacca straits" (Alan Collins 2003:113). And the report from International Maritime Bureau noted that oil spill in the Malacca straits can have "apart from the pollution consequences, there is every possibility that the seaway would have to be temporarily closed to shipping and the fishing in the area would be ruined for many years if not permanently"<sup>98</sup>. The challenge of security of supply needs to be tackled by Malaysia and also by other Southeast Asian countries in a more co-operative manner. The security of supply and security of demand both are needed to complete the definition

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<sup>98</sup> See Peter Chalk, 'Contemporary maritime piracy in Southeast Asia', *Studies in Conflict and Terrorism* (1998).

of energy security<sup>99</sup>. This problem of security of vessels applies not just to the straits of Malacca but also to other waterways also, where commercial transportation takes place.

### **China factor**

“It would not be an exaggeration to characterize China as an energy ‘superpower’ ....” as “it is the world’s second largest consumer of energy after United States” (Mehmet Ogutcu 2004: 454). This signifies the importance of China in the world energy market. But it also leads to a dichotomy, as Mehmet Ogutcu (2004), states “China’s emerging role in the international energy system- a threat to the western and Asian energy security and the world’s environment or a cooperative, responsible partner, which tries to fit into the established patterns of energy trade and investment”. China’s relationship with Southeast Asia is a complex one. And “in the post-Cold war period, the relationship is influenced by wider range of forces, chief among them the growth of Chinese economic and military power, and the conflicting pulls of economic interdependence and competition” (Amitav Acharya 2004: 238). From the economic point of view, there is competition between China and other Southeast Asian economies.

China can be a threat to Southeast Asian countries, as Amitav Acharya (2004) points out “China’s rise is reshaping the balance of power in the region in ways that creates new security challenges”. And its involvement in the South China Sea dispute has been problematic, producing many territorial disputes, claims and counter-claims. And some analysts have also pointed to the fact, as Micheal Klare (2001: 109 - 137), “overlapping claims over oil and gas resources in the south china sea could trigger armed conflicts between china and other claimants” and this would “implicate the USA since it has committed to defending the Philippines and sea-lanes in that area”. And even in the Straits of Malacca, “China has been building up its naval capacity to cover the 7000 miles of sea lanes that lie between Shanghai and the Strait of Hormuz” (Xu Yi-chong 2006: 280).

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<sup>99</sup> Energy security includes both security of demand and security of supply. Countries need to have a security of supply to avoid uncertainties and countries which are on the other side of the scale i.e. exporting countries need to have continues demand for their exports.

With the security concerns rising in the region, China is seen as an overpowering force. Malaysia, as other Southeast Asian economies is also vulnerable to such issues. The South China Sea problem and the safety of sea lanes figure as some of the most important challenges faced by Malaysia in securing energy security, not just this, the issues at the economic front are equally important. And China is definitely one of the most challenging factors in it. As China's moves are seen as a "result of a changing and uncertain strategic security environment" in the region (Christopher Pultz 2003)<sup>100</sup>.

### **International Level**

Energy security concerns also extend to the International level. The challenges faced by Malaysia at the international level are some very important ones. As the demand for energy resources is rising at a fast pace, Malaysia has to deal with its export potential also. And being a leading exporter of Oil and gas, it exports a good percentage to other countries. But as the challenges within and at the regional level exist, Malaysia faces a critical situation in dealing with the international scene. It has to maintain its competitiveness in the global market to ensure market for its energy exports<sup>101</sup>. So these two are the core challenges that Malaysia has to deal with from the global perspective.

### **Competition in the Global Energy Market**

As Shahid Yusuf (2003) notes, "Competition provides an essential dose of dynamism and helps to build an innovative system equal to the challenge of globalization". To maintain its competitiveness in the world market, Malaysia is definitely making the effort. With its LNG facility in Sarawak, it can boast of being currently the largest LNG production facility at a single location. But with the construction going on in Qatar for the world's largest LNG facility, the competition comes right in face. And not just this, Qatar has

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<sup>100</sup> For more details, see "The PLA and China's changing Security environment" by Christopher Pultz. URL: [www.ccc.nps.navy.mil/si/jan03/eastAsia.asp](http://www.ccc.nps.navy.mil/si/jan03/eastAsia.asp)

<sup>101</sup> With the bursting competition in the world markets, Malaysia or any country needs to work hard on the basics to be stable. And as more and more avenues are coming up for energy resources, countries are queuing up to take the very best.

taken over Indonesia in being the world's largest LNG exporter. As the rising domestic demand in Indonesian market has limited its LNG export potential.

“Competition puts pressure on producers to innovate and improve their technical efficacy (which entails maximizing the output from the given inputs)” (Shahid Yusuf 2003: 160). The increasing competition between the countries enables them to keep up with the changes to maintain their position. Like, in Europe, high gas prices have started to stimulate competition between the different sources of energy. And not just this, LNG drives gas market globalisation. In recent decades, developments in the LNG business have been impressive in many respects. “However, the most spectacular growth undoubtedly occurred from the mid-1990s onwards, as new players entered the industry, which now numbers 13 exporting and 17 importing countries” (World Energy Council 2008). With more players in the LNG market, Malaysia faces a tough challenge. As Shahid Yusuf (2003) points out, “the forces of demand must complement supply: innovation is needed to survive, grow and to make larger profits”.

Looking at this, Malaysia has to compete in the world markets but the challenge comes in when one looks at the rising demand in the country. So the domestic challenges can put pressure on its competitiveness, as the energy will then be directed more towards meeting the internal needs. Maintaining that balance will be a challenge in itself and meeting that level of competition is another tough task.

World over, the competition over use of energy is increasing, leading to search of new energy exporters. With many African countries coming up as a source for energy resources, it increases the competition. For example, “since 2004, China has been strengthening its relations with African countries, as these are energy rich to ensure supplies for itself and Africa now supplies a third of China's crude oil imports”<sup>102</sup> (Hongyi Harry Lai 2007). It shows the growing interest in the region because it is

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<sup>102</sup> China has therefore set its eyes on Africa especially, Angola, Sudan, Congo and Gabon. Unlike in the Middle East, the African oil industry is open to foreign investment. Furthermore, the US and EU have distanced themselves from these African states because of concerns over human rights violations and violence there. In contrast, China's ties with the region are free of ideological or security obstacles, as well as of historical hostilities between west and these countries (Hongyi Harry Lai 2007: 525).

resource rich. Nevertheless, Malaysia has to meet this challenge and keep up its competitiveness. Secondly, the issue of ensuring market for exports also has to factor in. Though there will never be a problem for a market for energy exports, as the reserves are limited. But again the domestic and other factors play a major role, and affect the export capacity leading to a small market for its exports.

And as the energy exports from Malaysia form a substantial part of revenues earned from total exports. It definitely becomes a big challenge to deal with, as Malaysia cannot afford to lose its export position in the market. As the energy exports have been very profitable for its economy. The issue of ensuring market and maintaining its capability and competitiveness in energy exports can be seen from the domestic and regional perspective also. The Commission Energy Policy Green Book (2006) also included competitiveness in its three goals of “sustainable energy development, maintaining competitiveness and ensuring energy security”<sup>103</sup>. As it basically becomes a challenge because of the growing domestic needs. But in a nutshell, it can be said that all these issues are linked and all these combine together to ensure energy security. The issue of energy security brings forward many other issues which have to be set right.

Energy security from all the perspectives is essential for any country in today’s time. From the national perspective, it means catering to the rising needs of people and as a growing nation, this challenge of meeting the demands becomes crucial. Malaysia as an exporter also, faces the challenge of maintaining a balance between the rising needs and its export potential. The rising needs are putting a lot of pressure on the existing resources, and in turn it is affecting the export capacity of Malaysia. Though there’s no way of avoiding the depletion of resources but these resources need to be managed properly. Resource management and efficient use are just two of the efforts from a list of many, which needs to be taken care, to deal with the current situation. And all the issues at different levels have to be in tandem with each other, to achieve energy security.

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<sup>103</sup> See Commission of European Communities, “Green Paper – a European Strategy for Sustainable, Competitive and Secure Energy”, March 8, 2006.

## Chapter – IV

### PROSPECTS AHEAD

The way to energy security is fraught with many difficulties in its way. Especially for the developing countries, as their economies are growing at a fast rate. Energy security challenges make it difficult for the countries to ensure a secure supply. But these challenges can be met with the right strategies towards better and optimum use of energy resources. “High global demand for energy has also raised questions regarding the amount and future availability of global oil and gas reserves” (Vince L. Morelli, CRS Report 2006: 2). The limited reserves need to be used in a planned manner to avoid any problems in the future. And according to the current energy scenario, oil has become a global commodity. And with the fluctuating prices, countries are in a fix. Though the challenges are there per se, there are future prospects too.

The earlier chapter brought out the existing challenges being faced by Malaysia regarding energy security. At different levels, there are different problems which need to be tackled by the country itself. It is not just Malaysia, which is facing all these issues but most of the countries in the world are trying to deal with the situation in their own ways. Many other developing countries are also dealing with growing internal demands for energy<sup>104</sup>. As energy has become a necessity today, without which life cannot be imagined. Energy use has increased in countries today and this has led to greater use of non-renewable sources of energy by most of the countries, as “hydrocarbons account for 65 percent of world energy requirements” (Talmiz Ahmad 2005: 385). Because of this dependence, countries are facing problems. As countries face different challenges, so the way of reacting or dealing with those challenges is also different. As any energy importing country will have different concerns and will look at its future prospects in its own way.

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<sup>104</sup> Most of the countries are facing the problem of managing their resources. Countries like China and India are facing a daunting task of satisfying the growing domestic demands for energy. By 2030, India and China are expected to depend on imports for 40% and 27% of their needs, respectively (Energy Security Insights 2006 1(2):12).

Likewise, for an energy exporting country, some other issues come up which are specific to its setting, and which needs to be handled in a particular way.

Countries are looking at the future prospects by which their energy security is not threatened<sup>105</sup>. As said earlier, the use of renewable sources of energy coupled with optimum use of the existing resources is the new mantra for nations today. Not just this, at the regional levels countries are trying to cooperate with others in energy related areas. “Using renewable resources and technologies and creating distributed generation energy webs that can connect communities all over developing world holds great promise” (Usman Aminuddin 2006: 48). And even those areas are explored which were not there on the energy map. Countries are trying to deal with the situation and are also trying to broaden their perspectives to include many more options.

As for Malaysia, which is an energy exporting country faces many challenges to its energy security which are not confined to its domestic arena. They also spread to the regional and the international level. So it takes in all that a country needs to ensure its energy security. And with these challenges right in the front, Malaysia needs to look at the possible future prospects. To meet the challenges, it needs to focus on the current situation and also to look at the options like most of the countries are trying to do, as in “many countries development programmes of energy industries for next few decades are being worked out” (Mikhail Y Pavlov 2006: 13). Though Malaysia has been managing its resources, the challenges can be dealt with caution and better policies. And Malaysia has been looking at the future prospects through many ways. By dealing with the domestic situation, it can secure resources in a better way. As national interest is of utmost importance, so it has to be taken care of in the first place.

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<sup>105</sup> As “Breaking the cycle of dependency and despair in the developing world, and becoming truly empowered starts with access to and control over energy” (Usman Aminuddin 2006: 48).

## **Malaysia's Energy Security: Prospects Ahead**

Malaysia is one of the most important energy producers in Southeast Asia. And is also one of the rising economies of the region. So that brings one to the most important level i.e. National or domestic level. Being a growing economy, its internal demand for energy is also rising at a fast pace, which has to be tackled to avoid any supply interruptions. So Malaysia needs to look at the prevailing options to meet the growing demand.

Malaysia's natural gas and coal reserves are aplenty and it is still self sufficient in oil for the next two decade or so. But with increasing demand and declining oil reserves, if the "rate of daily consumption of oil remains at 650,000 barrels per day, the oil reserves will be depleted in less than a decade and Malaysia's status of net oil exporter will shift to net importer" (APEC Energy demand and supply outlook 2006)<sup>106</sup>. And as the demand is basically from the transport and industrial sector, so it needs to be taken care of; as these being the lifelines of its economy. So this puts a lot of pressure on the government to find better prospects. The focus needs to be both on the demand side management and supply side management, "Demand side management (DSM) focuses on using existing energy supplies more efficiently. It is primarily achieved through influencing behavioral patterns of energy consumption at the user level and/or the implementation of technical efficiency measures in order to maximize end-use efficiency and reducing energy demand and on the other hand supply side management (SSM) measurers, which refers to the identification and optimal exploitation of all energy renewable energy sources such as hydro and biomass and improvement in plant generation, transmission and distribution system, and fuel substitution" (Choy Yee Keong 2005).

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<sup>106</sup> This change in status from being an energy exporting country to an energy importing country can bring many problems. With the energy exports forming a substantial part of Malaysia's total exports, it will affect the economy in a big way. As the net import dependency of Malaysia will reach 32 percent in 2030 from a net export position of 57 percent in 2002 (APEC Energy demand and Supply outlook 2006).



## **Domestic/National Level**

The prospects need to be looked at in the form of options available for Malaysia to diversify energy use. The wide array of challenges at the domestic level, as discussed in chapter three are: Rising internal demand for fuel, Continues depletion of existing resources, Infrastructure challenges, Emergency preparedness and Environmental degradation. Most of these have become challenges because of the growing internal demand, which exerts pressure on the existing resource pile, leading to other problems. And the way ahead has to be seen from the point of view of growing demand and depleting resources.

## **Reliance on Alternative Sources**

Firstly, the option of other sources of energy can be explored like the renewable sources of energy. These sources can be a good alternative to the existing non-renewable sources, as these are not scarce. And diversifying energy use has many reasons behind it too. As from the security perspective, dependence on renewable sources of energy will enable country to withstand supply shocks and steep rise in demand, as “the growing demand for energy cannot be satisfied by further development of conventional energy” (Mikhail Y Pavlov 2006: 13)<sup>107</sup>. So the need to look for alternative sources of energy has grown. From the economic point of view, the rise in oil prices will make renewable sources more viable and the infrastructure challenges can also be warded off, as demand will not rise for other non-renewable sources. And the environmental concerns can also be taken care of by better and cleaner substitutes, as Tsutomu Toichi (2007) points out, “Renewable energy sources are promising as future sources of energy because they are basically domestic sources and can play an important role in the efforts to curb global warming”.

And regarding this, Malaysia has been very forthcoming as hydro-electricity is already a primary energy source. It is recognized that “hydroelectricity generation represents as one

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<sup>107</sup> The use of “inexhaustible energy sources, such as the energy from the sun and others, which are multiplied directly by natural forces” can lead to better energy management (Mikhail Y Pavlov 2006).

of the benign options in harnessing a long-term supply system” (Choy Yee Keong 2005). Hydroelectric power occupies substantial percentage in the fuel mix. The current hydroelectric reserves are constant at 29,000 megawatts. And it formed 2.8 percent of the total energy supplied in the year 2005 (Ninth Malaysia Plan 2006: 395). Though the percentage is low in comparison to the other non-renewable sources like oil and gas, it still shows greater reliance on other sources of energy. In 1994, the Malaysian Government approved for a large-scale Bakun hydroelectric project, which has been completed. This project included construction of river diversion tunnels, 415 miles of overhead lines and 285 miles of distribution infrastructure in order to provide energy to all parts of Malaysia (Ninth Malaysia Plan 2006). “The dam is the largest in Southeast Asia, is 205 m high with an installed capacity of 2400 mega watt (MW), and a lifespan of 50 years. The impoundment of the dam will inundate 69,640 ha of forest ecosystem—an area larger than the size of Singapore (Choy Yee Keong 2005).

During the 8<sup>th</sup> Malaysia Plan, renewable energy was introduced as the fifth fuel source and the trend is continuing with the 9<sup>th</sup> Malaysia plan too. It has also been promoting Small Renewable Energy Power Programme (SREP). And during the current Ninth Malaysia Plan (2005-2010), “also two basic issues have been put forward by the Malaysian government i.e. reducing the high dependence on petroleum products by increasing the use of alternative fuels and promoting greater use of renewable energy for power generation and by industries”. These two strategies are extremely important, as Malaysia needs to look at other options instead of relying completely on oil and gas. And renewable sources can be of more use in power generation and by industries than in the transportation sector. So sources like hydro, solar, biomass, wind energy etc. are the other options available for electricity generation.

Malaysia’s abundant biomass waste resources coming mainly from its palm oil, wood and agro-industries stand as a potential choice of fuel<sup>108</sup>. A total of about 665 MW

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<sup>108</sup> Palm oil is definitely one of the most important sources of bio-fuel but it can also be obtained from other sources like agricultural crops as cassava and sugarcane, crop residues, rice husks, municipal wastes, wood and wood residues etc. So Malaysia has abundant sources of biomass for using it as an alternative source of energy.

capacities can be expected from the estimated overall potential of about 20.8 million tons of biomass residues from the main sources (The EC-ASEAN COGEN Programme, National Energy Policy Review 2003)<sup>109</sup>. In line with this, Malaysia introduced bio-diesel for the transport sector in 2005, which is a very forthcoming step towards greater use of renewable sources of energy. And currently there are 72 companies involved in the bio-diesel projects.

And as Malaysia is one of the top producers of palm oil, so biomass from the palm oil plantations is definitely a good alternative to depend on. And according to the Ninth Malaysia Plan, bio-fuel using palm oil will be promoted as a source of energy. “Even pump stations, mainly in the Klang valley, have been designated to supply diesel blended with 5.0 percent palm oil and are expected to commence operation soon” (Ninth Malaysia Plan 2006: 408). And the use of bio-fuel can help Malaysia in a big way, as it can assist the economy in reducing diesel import. According to APEC Energy demand and supply Outlook, the utilization of bio-diesel is estimated to reduce diesel imports by 500,000 tonnes a year or 10 percent by blending 5 percent biofuel to diesel at pumps. The potential of bio-fuel cannot be discredited and with further research and development its use can be increased.

Nuclear energy can also be looked at as another possible option. Though, according to Malaysia’s National Energy Policy, nuclear power is not expected to be opted for in the near future. And the MINT general manager was also quoted saying that, it will take nearly 15 years before a nuclear plant with the power generating capacity of 1000 MW can start operation in Malaysia. But still at the level of consideration, the state-owned utility TNB is in favor of nuclear power and according to Malaysian Nuclear Licensing Board, plans for nuclear power after 2020 will be brought forward and two reactors will be built. “Currently, the Malaysian Institute for Nuclear Technology Research (MINT) has been operating a 1 MW Triga research reactor since 1982, in Bangi of the Selangor

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<sup>109</sup> The EC-ASEAN cogeneration (COGEN) programme is a co-operation programme between the European Commission and Asean, co-ordinated by the Asian Institute of Technology (AIT) in Bangkok. It aims to advance the implementation cogeneration technologies within Asean countries’ industrial sector. It already involves implementation of projects in the Asean region, with a combined value of \$100m (Harald Thaler 1999: 64).

district, which uses an outdated 1970s American Technology” (Kusnanto Anggoro 2007). And TNB and Nuclear Malaysia have also been actively involved in the periodic review of the nuclear option in Malaysia<sup>110</sup>. So nuclear power though exists as an option but the process to bring it in use will take a long time.

Other sources of energy can also be explored like solar and wind, which can be very effective. As the solar radiation in Malaysia is high by world standards, solar energy can be used as an option. Generally, the solar thermal market has been slow to take off for commercial and industrial uses due to comparatively low electricity prices in Malaysia compared to other countries. “Solar thermal opportunities do exist for certain industries that require processing of hot water or pre-heating of water ahead of other forms of thermal input” (Renewable Energy in Asia: Malaysia Report 2005: 8). “In the year 2002 there were 10,000 domestic solar water heaters installed in Malaysia, with an annual growth rate of 10–15%. Heaters installed were both locally manufactured and imported, with the majority of imports coming from Australia” (ASEAN 2000). And also the Ministry of Energy, Communications and Multimedia, together with other stakeholders, is planning to commit RM100 million to a Building Integrated Photovoltaic (BIPV) project. “The government will commit 20% to the fund to match the expected contribution from the United Nations Development Program and Global Environmental Facility” (Renewable Energy in Asia: Malaysia Report 2005: 8)<sup>111</sup>.

So the use of solar, wind energy have also found mention in the current energy plan, as efforts will be undertaken to coordinate R&D activities in these areas. So these renewable

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<sup>110</sup> Tenaga Nasional Berhad (TNB) is the largest electricity utility in Malaysia. The company's core activities are in the transmission and distribution of electricity. TNB remains a major player in electricity generation which forms a significant part of the company's diversified range of business activities. Secondly, Recognizing the need for early and considered necessary, Nuclear Malaysia and Tenaga Nasional Berhad, in co-operation with more than a dozen government agencies and industry organizations, had conducted a series of studies to systematically examine the possible role of nuclear power in Malaysia and to evaluate and assess the national state-of-preparedness for a possible implementation of such a programme during the period of 1984-1992. The purpose of these studies was to assemble a better and stronger information base to enable well-founded decisions to be made at the appropriate time, if and when Malaysia decides to opt for nuclear power generation (Ministry of Energy, Communication and Multimedia, Malaysia). For more details: <http://www.ktak.gov.my/images/Organisation.pdf--ministry>

<sup>111</sup> For additional information, see, URL: [http://www.apotokyo.org/biomassboiler/D1\\_downloads/presentations](http://www.apotokyo.org/biomassboiler/D1_downloads/presentations)

sources of energy are a way ahead to secure energy in the future. However, to boost the development of the renewable energy sources, the current energy development mechanisms have to be reviewed like incentives and financing. And with the greater use of renewable sources, Malaysia can reduce its dependence on oil and gas to a large extent. But it will definitely involve a combined effort from the government and the people to increase the use of alternative fuels.

### **Energy Efficiency**

Secondly, energy efficiency is also a way ahead for saving the current fuel sources. This is possible by measures to ensure optimum use of existing resources and by cutting down on wastage of energy. And it is one of the strategies outlined by the government in its Ninth Malaysia Plan i.e. “intensifying energy efficiency initiatives in the industrial, transport and commercial sectors as well as in government buildings” (Ninth Malaysia Plan 2006: 402). So the energy efficiency programmes should focus on energy saving techniques. The energy efficiency (EE) programmes planned by Malaysian government, also plans to establish a comprehensive energy management system to avoid wastage.

Efficient use is very important for the sectors like industrial and commercial sector as these are some of the main consumers of electricity. So a check on the usage of electricity in these sectors can present a clear picture. “Though efforts will also be undertaken to introduce the Efficient Management of Electrical Energy Regulations, by amending the Uniform Building By-laws (UBBL), label electrical appliances and use high efficiency motors” (Ninth Malaysia Plan 2006: 409). The use of high efficiency products can be a very good way of managing the resources. “Like the introduction of cogeneration technology, a method to produce both heat and electricity from a single fuel source, has been successfully applied in Thailand, Indonesia and Malaysia and cogeneration plants can use almost anything as fuel, including coal, gas, petroleum, and agricultural by-products, such as rice husks, oil palm or even animal waste” (ASEAN Energy Business Forum 2005). Many other countries have also been trying other techniques like Japan,

who have made appliances which are efficient and use less energy. So one can also draw examples or take ideas from other countries which are already using such techniques.

Moreover, good energy practices like switching off lights when not in use and optimal use of appliances etc. can be adopted by creating awareness among the people. The country needs to raise public awareness for efficient use and conservation of energy. "Energy efficiency was a central feature of the 2003 White Paper since it can contribute to major objectives of reducing amount of energy used, reducing demand for gas, energy poverty objectives<sup>112</sup>" (Nick Hartley 2006: 119). Energy efficient techniques can save a lot if efforts are made in a proper way. Even the government can ensure a more safe supply of electricity domestically, as wastage on the supply side can be reduced by this way. And with better fiscal incentives, the situation can be improved. Like many countries are putting in place tax incentives for companies that invest in energy efficient technologies and upgrading existing equipment to become more energy efficient. So the challenge of shortage of resources and the rising demand at the domestic level can be handled by depending more on renewable sources and by using the existing sources efficiently.

### **Suitable Energy Pricing**

Thirdly, the issue of fuel subsidies or energy pricing needs attention. Malaysia provides subsidized fuel to its people. Though it leads to a large amount of losses, "achieving the right balance between the benefits of market pricing for energy and social or other natural goals is one of the critical issues faced by developing countries, particularly in the light of rising prices of oil and gas" (Usman Aminuddin 2006: 44). Fuel subsidies are justified, when government intervention is necessary to regulate prices. And due to rising oil prices, Malaysia is planning to cut fuel subsidies, and according to The Star Daily (2008), "Malaysia's rich will have to pay more for heavily subsidized items including fuel as part of a new two-tier scheme to reduce government spending" and "We need to have a good system for those who deserve the subsidy, such as the lower and middle-income groups,"

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<sup>112</sup> "Despite successes, the rise in oil prices and so energy prices in general has increased domestic fuel bills, pushing some people back in the category of energy poverty" (Nick Hartley 2006: 119).

the second finance minister, Nor Mohamed Yakcop was quoted saying<sup>113</sup>. And Mikail V Pavlov (2006), states that countries can “transform these subsidies into subsidy programmes for energy savings and reduction in energy consumption, tax credits for the development of new, less energy-intensive technologies”. And not just this, “energy pricing in developing countries should be based on the principles of full recovery and for providing commercial energy for everyone” (Usman Aminuddin 2006: 46). Malaysia has been making efforts to deal with the energy pricing situation.

Being an energy exporting country, Malaysia also has to face challenge of maintaining its export position or can say for maintaining energy supply security. And this can be met by the two ways discussed above and also by efforts of the government to increase production.

### **Greater Exploration efforts**

Fourthly, the way ahead for this problem is definitely, intensifying the exploration of deepwater and extra-deep water areas to boost oil and gas reserves coupled with the other two strategies of alternative fuels and efficient use. With intensive exploration activities Malaysia can keep up with its current export potential as it leads to availability of more resources at hand. Like in 2005, exploration activity resulted in the discovery of 1,084.7 million barrels (mmboe) of oil and natural gas reserves of which 70 percent are located in deepwater areas (APEC Energy demand and supply outlook 2006).

Earlier also Malaysia has been involved in many exploration activities in the South China Sea. And according to Ninth Malaysia Plan also, to ensure a sustainable supply of oil and gas, appraisal wells are continued to be drilled in small oil fields offshore as well as deep-water areas especially in Sabah and Sarawak and continued efforts are also being taken to attract international oil companies to invest in exploration activities to increase domestic petroleum reserves. So, several projects are already implemented and some of the largest projects include Murphy Oil’s deepwater Kikeh field in offshore Sabah, which is scheduled to start-up production this year at the rate of 120 million cubic feet per day

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<sup>113</sup> For details, see. URL: [www.thestardaily.org/23may/fuelsubsidies.htm](http://www.thestardaily.org/23may/fuelsubsidies.htm)

(MMcf/d) and other new developments are Petronas Carigali's Blocks SK-309 and SK-311 in offshore Sarawak, scheduled to begin producing a combined 130 MMcf/d in early 2009 (Country Analysis Briefs, Energy Information Administration 2007).

And in February 2007, Petronas also started construction of the new Sabah Oil and Gas Terminal (SOGT), which will have a capacity to handle 300,000 bbl/d of oil and 1 Bcf/d of natural gas. The construction of the SOGT terminal has led many analysts to believe that new deepwater oil and natural gas production slated to come on-stream over the next several years in Sabah will be destined for export markets (Country Analysis Briefs, Energy Information Administration 2007). The efforts by Petronas have been commendable and these moves towards expansion are beneficial for Malaysia. And to add to it, Malaysia needs to work towards better reserves recovery to ensure long-term supply of energy. It has been trying to engage itself in more and more exploration activities, which will enable it to ensure increased reserves for its domestic needs. And this will also help Malaysia in maintaining its export position as it will have reserves in hand for export purposes like the one recently being constructed by Petronas in 2007.

### **Investments Abroad**

Fifthly, investments abroad can also help Malaysia to secure more resources for its use. Petronas has been involved in many energy related industries and services abroad, to continue reviewing its international upstream and downstream operations to meet the challenge of global oil market along with the satisfying the internal demand<sup>114</sup> (Malaysian Business 2007). As Petronas has the responsibility of developing and adding value to the nation's oil and gas resources, as entrusted by the Petroleum Development Act 1974 that saw the birth of the corporation. The company is a huge cash cow for the

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<sup>114</sup> With a start-up capital of just RM10 million, PETRONAS has had enormous success, recording net profit of RM43.6 billion and revenue of RM166.9 billion in the financial year ended 31 March 2006. PETRONAS has managed to attract the world's biggest petrochemical players to Malaysia's shores by offering world-class facilities in its integrated petrochemical complexes (IPC). Besides attracting foreign investment, PETRONAS has also strengthened its capabilities in the petrochemical industry through partnerships with these established giants (Malaysian Business 2007). For more details: [http://findarticles.com/p/articles/mi\\_qn6207/is\\_20070101/ai\\_n24910860](http://findarticles.com/p/articles/mi_qn6207/is_20070101/ai_n24910860)



Malaysian state, last year paying \$14 billion in taxes and dividends -- equivalent to 35.4% of government revenue (Energy Intelligence group 2007).

So it has invested RM 29 billion in 35 countries in energy related industries (Ninth Malaysia Plan 2006). The Group's LNG business is also expanding from its traditional Far East customer base to the Atlantic Basin with investments in the Egyptian LNG project and the Dragon LNG regasification terminal in the United Kingdom (Malaysian Business 2007). Its ventures abroad also expand from successful upstream developments in countries such as Sudan and Myanmar to strategic investments, notably July 2006, \$1.1 billion purchase of Rosneft shares during the Russian state company's flotation and November's \$700 million acquisition of a 10% interest in UK spin-off Cairn India (Energy Intelligence group 2007). And TNB has also invested in the development of a power plant in Pakistan and extraction of coal in Kalimantan, Indonesia (Ninth Malaysia Plan 2006).

As Malaysia needs more resources and by investing in other countries it can make sure that it has its hands in some of the major energy industries abroad. Petronas has been very active and this way it can develop new sources of growth in the energy sector which is required at this time. With greater investment and exploration abroad, the infrastructural problems can also be solved, as this will lead to greater energy supplies to fulfill the growing demand.

### **Infrastructure Development**

Sixthly, with continues infrastructure development there can be sustainable development. According to Oil and Gas Insights (2007), "Plans to expand and develop Malaysia's energy infrastructure have taken a step forward with the groundbreaking ceremony for a new oil and gas terminal in Sabah state. Construction of the Sabah Oil and Gas Terminal (SOGT) at Kimanis will begin in July 2007 and is scheduled for completion in January 2010. The facility will have a capacity of 300,000 barrels per day (b/d) of crude and

10.3bn cubic metres (bcm) of gas and will be the keystone of an integrated infrastructure project designed to maximise Malaysia's productive and export capacity”<sup>115</sup>.

Malaysia can channel a large portion of its investment into expanding electricity generating capacity, transmission and distribution networks. Some countries have set ambitious targets for expanding energy access in rural areas using renewable energy. According to ESCAP (2007), “The traditional approach to electrifying rural areas has been to extend the electricity grid system or to have local grids connected to diesel power plants, but these options often prove to be inefficient and expensive. Fortunately, as the technology of some new renewable energy sources matures, its cost comes down, and energy distribution using locally available resources is rapidly becoming a good alternative option for rural energy supplies”.

According to APEC meeting<sup>116</sup>, “Ministers stressed the importance of the availability of funds and investments towards the development of such infrastructure in the developing economies. In this regard, Ministers stressed the importance of promoting private sector participation in infrastructure development in those areas permitted by their respective legal frameworks, and re-emphasized the need for a predictable, transparent institutional and regulatory framework to enhance the investment climate”.

The demand for natural gas is expected to grow significantly over the next 20 years. Meeting this demand will require increased natural gas production and significant new infrastructure development. “Recognizing the necessity to minimize the adverse environmental impact of new energy infrastructure development, Ministers endorsed the Recommended Work Program on Environmentally Sound Energy Infrastructure in APEC Member Economies” (APEC meeting). The use of renewable sources of energy, and more efficient appliances, will require infrastructural changes.

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<sup>115</sup> For details, see, URL: <http://www.oilandgasinsight.com/file/43068/infrastructure-expansion-to-boost-output-and-exports.html>

<sup>116</sup> For details, see, Third Meeting of APEC Energy Ministers "Energy: Driving Force for Economic Recovery and Development" Ginowan, Okinawa, Japan, October 9-10, 1998.

URL: [www.apec.org/1998APECEnergyMinisterialMeeting/Asia-PacificEconomicCooperation.htm](http://www.apec.org/1998APECEnergyMinisterialMeeting/Asia-PacificEconomicCooperation.htm)

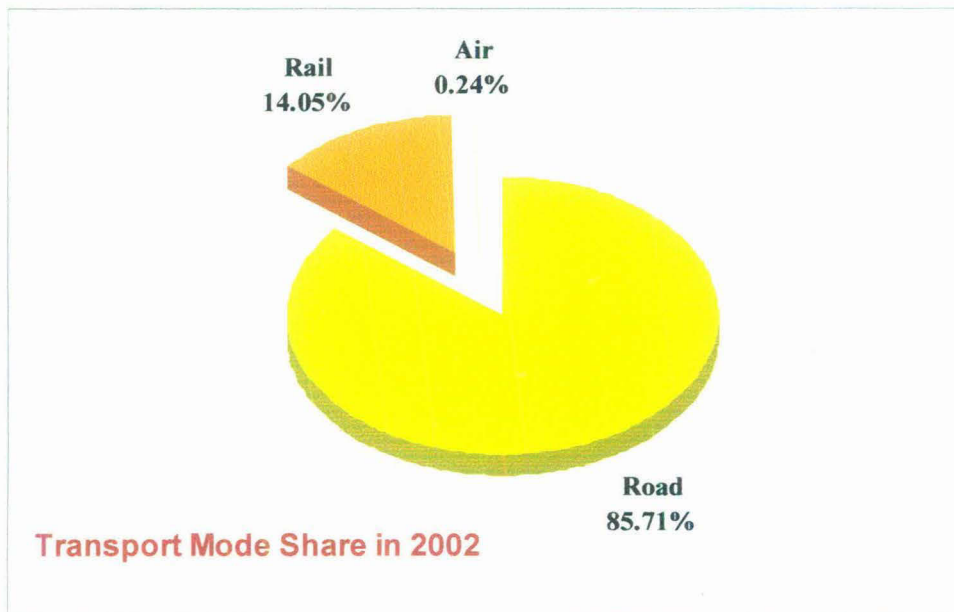
And through ASEAN at the regional level, the distribution pipelines can be extended further. Malaysia is in full support of the ASEAN Power Grid (APG) project to enhance regional cooperation and increase electricity supply security. Currently it is interconnected with Thailand and Singapore through new HVDC link with Thailand completed and submarine link with Sumatra (ASEAN secretariat 2007). The cooperation in Trans-ASEAN Gas Pipeline and ASEAN Power Grid Projects will enhance cooperation in the region regarding infrastructural developments.

### **Better Transport System**

Malaysia's work towards creating a better transport system with less reliance on oil and gas has been going on. As Malaysia's transportation sector is basically about road transport and there's heavy reliance on passenger vehicles as the rail infrastructure is not fully developed. And its small railway system is confined primarily to the peninsula and is of much less significance than its roads. Not just this, passenger vehicle ownership is also promoted in the country as an index of economic growth<sup>117</sup>. And this leads to greater dependence on fuels to run the transportation sector. As higher private car ownership means higher fossil fuel consumption as well as emissions that pollute the air and contribute to global warming. According to APEC Energy demand and supply outlook (2006), energy demand in road transport is projected to grow at an annual rate of 3.5 percent. And by fuel type, the trend of growth will show significant differences with gasoline growing at 2.9 percent per year, diesel at 4.2 percent per year and natural gas at 9.2 percent per year.

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<sup>117</sup> The passenger vehicle ownership is promoted as Malaysia considers the auto manufacturing industry as an important driver for economic development. As a result, Malaysia has a relatively high level of passenger vehicle ownership of about 180 per 1000 population in 2002 (APEC Energy demand and supply outlook 2006).



**Figure 4.1: Transport mode share in Malaysia, Economic Planning Unit, May 2005, pg no. 93.**

And in terms of number of passenger carried, road transport is still leading amongst the transportation modes in Malaysia. In year 2002, more than 85% of passengers were carried by road transport and about 14% by rail services. The air transport mode only serves about 0.24% of the total daily passengers (Economic Planning Unit 2005, 3:92). The heavy reliance on passenger vehicles due to insufficient public transport infrastructure will result in strong demand for oil in the transport sector. Even, Dr Jamilah Mohamad of the Centre for Transportation Research at University Malaya urged for measures to curb the rise in private car ownership, such as by having policies that favor public transport development (Hillary Chiew 2005)<sup>118</sup>. As Malaysia will greatly rely on oil imports, with a net import dependency of 32 percent in 2030, there is an urgent need for the economy to improve its public transport system subsequently reducing oil consumption in the transport sector (APEC Energy demand and supply outlook 2006).

<sup>118</sup> Research in Britain and the United States showed that building highways to reduce traffic congestion only encouraged higher private car usage. So the minister urged to reduce private car usage in Malaysia. For more details: [http://www.ecologyasia.com/news-archives/2005/jun-05/star\\_050621\\_1.htm](http://www.ecologyasia.com/news-archives/2005/jun-05/star_050621_1.htm)

A well planned railway strategy to lessen the burden on road transport and to lessen fuel use. Some changes in the public transport system will definitely benefit the current situation. And with greater reliance on other energy resources like natural gas and bio-fuel, Malaysia has been trying to lessen the burden on petroleum products. Not just this, CO<sub>2</sub> emissions from the transportation sector is also a major problem. As transportation sector is the biggest contributor to emissions, contributing about 32.5% of the total, leading to environmental degradation (APEC Energy demand and supply Outlook 2006). There needs to be a restructuring of the transport sector with reliance on public transportation. And less use of non-renewable resources can ensure energy security in the long run.

Malaysia has been looking at all these future prospects. And with better domestic policies, its energy security can be ensured. All these issues at the domestic front play the most crucial role and policies regarding it can take care of the rising demand of energy within the country. Energy security thus, can be ensured by putting in place the right strategies which can lessen the burden on energy reserves. By using alternative sources of energy, energy efficiency, better management of resources, better infrastructural development and better transport system at the domestic front can solve the problem<sup>119</sup>.

And Malaysia can also be prepared for emergency, in case of oil scarcity; it will have alternative sources to depend upon. Not just by alternative sources, as a member of APEC, Malaysia has been trying to reduce the effects of oil shock through the 'Energy Security Initiative' which provides with "further options to consider in addressing the economic impacts of oil market volatility, more fundamental energy security concerns. It provides exchanges of information and experience on policy, analytical and technical issues stock holding and costs and integration with other energy security measures"<sup>120</sup> (APEREC 2002: 35).

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<sup>119</sup> "Energy infrastructure needs to be upgraded to ensure delivery of energy in a reliable and safe manner" (S. K. Chopra 2002: 17).

<sup>120</sup> Energy Security Initiative was proposed at the 20<sup>th</sup> meeting of Energy Working Group (EWG), Peru, October 2000.

And with these efforts, Malaysia is trying to face the challenges posed to its energy security. The prospects can also be looked at other levels i.e. regional and the international level. As S. K. Chopra (2002: 21), points out that “linkages of external and internal energy security is a part of comprehensive energy policy”.

### **Regional Level**

At the regional level, cooperation holds prospects of ensuring energy security. Energy cooperation can lead to greater benefits for the countries involved.

### **Regional Cooperation**

Regional cooperation in energy diversification can be done by “sharing of information, technology and know-how on the use of both fossil and non-fossil fuels, exploring viable alternatives, particularly renewable sources of energy, removing impediments to cross-border investments for energy diversification projects” (NEAT Working group report on energy cooperation 2007: 4). Cooperation is also beneficial as good relations with other regional players; Malaysia can mitigate the challenges posed by regional conflicts. As discussed in the earlier chapter, conflicts between countries to get hold over more and more resources have increased. And these regional conflicts pose a grave threat to a country’s national security too.

Regional cooperation is the best way forward to deal with this situation. According to Shahid Yusuf (2003)<sup>121</sup>, “There are three rationales for regional approach. First, negotiations at the regional level, involving a limited number of countries may entail lower transaction costs and fewer large number problems. Second, insofar as the members of a region have common histories, face common problems, adopt common policies and share common understandings of their economic challenges, they should find it relatively easier to reach agreements. Third, regional neighbors have a great incentive

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<sup>121</sup> Though the chapter on regional cooperation in East Asia focuses on cooperation in monetary, policy and finance areas. But the rationales for regional cooperation can be applied to other areas as well (Shahid Yusuf 2003).

to reach agreements that promise to internalize externalities that spill over borders, insofar as those externalities are limited mainly to their geographic neighborhood”.

The first rationale suggests that cooperation with one country or can say bilateral cooperation, leads to fewer costs and lesser problems. Malaysia has been cooperating with its neighbors on the energy front. “A cooperative search for mechanisms to overcome impediments to exploration and development, to accelerate the development of cross-border power and gas projects to enhance national self-reliance” is needed to reduce energy insecurity (Mehmet Ogutcu 2004: 450). Malaysia offers a potentially important precedent in its energy cooperation with Thailand. And one of the areas of most active gas exploration is the Malaysia-Thailand Joint Development Area (JDA), along both countries’ continental shelves in the Gulf of Thailand (Robert Manning 2000: 180). The area is located about 260 km east of Thai city of Songkhla and about 300 km northeast of Kerteh in Malaysia and is divided into three blocks, Block A-18, Block B-17 and Block C-19 administered by MTJA. Both the countries jointly have started production in different blocks and also the construction of pipeline network from the JDA to southern Thailand and Malaysia<sup>122</sup>. This is one of the most important examples of joint action in Southeast Asia (See Figure 4.2). And cooperation has lead to better relations and lesser problems between the two countries.

Even an equitable solution to the dispute over South china sea territorial claims can only come from the claimants themselves, acting in good faith, in a spirit of cooperation and compromise (Ralph A. Cossa 1998: 15). So the long pending issue of spratlys can also be solved by better cooperation within the claimants. And no conflict will serve the purpose of ensuring energy security and can rather lead to greater instability in the region. Though “Developments over the past one year, suggest that political will exists to set aside overlapping claims and pursue joint exploration with a view to conducting joint exploitation of seabed resources further down the line” (Clive Schofield and Ian Storey 2005).

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<sup>122</sup> The first phase of the project i.e. a 352 km pipeline from the offshore JDA to southern Thailand was completed in 2002. And Petronas reports that in 2006, construction was completed on Trans Thailand – Malaysia gas pipeline system (Country Analysis Briefs, Malaysia 2007: 4).

The 2002 Declaration on the Conduct of Parties (DoC) was signed on 4<sup>th</sup> November between ASEAN and China (See Appendix II). The parties “reaffirming their determination to consolidate and develop the friendship and cooperation existing between their people and governments with the view to promising a 21<sup>st</sup> century oriented partnership of good neighborliness and mutual trust” and according to paragraph 4 of the DoC, they also undertook to “resolve their territorial and jurisdictional disputes by peaceful means without resorting to threat or use of force, through friendly consultations and negotiations” (Declaration on the Conduct of Parties in the South China Sea 2002)<sup>123</sup>.

## TRANS-THAILAND-MALAYSIA (TTM) PIPELINE



Figure 4.2: Malaysia Thailand Joint Development Area (MTJDA)<sup>124</sup>.

<sup>123</sup> Declaration on the Conduct of Parties in the South China Sea, 2002. URL: [www.aseansec.org/13165.htm](http://www.aseansec.org/13165.htm)

<sup>124</sup> Malaysia- Thailand joint development area, figure from “Energy scenario in Malaysia” John Thaddeus, Senior manager, TNB Fuel services Sdn. Bhd., Malaysia.



This “commitment was reaffirmed in October 2003, ASEAN-China Joint Declaration on Strategic Partnership for peace and prosperity and then the November 2004 Plan of Action to implement the 2003 declaration” (Clive Schofield and Ian Storey 2005). Cooperation has paved the way for joint action in South China Sea. The third rationale given by Shahid Yusuf can be applied to the South China Sea case, as the regional countries have an incentive to reach agreements to avoid any disputes.

### **Energy Cooperation through ASEAN**

ASEAN can also play a major role in defusing tensions between nations and can help in bringing about greater understanding and co-operation between them on key energy security issue. And it has been working towards better cooperation in the region. ASEAN’s energy cooperation aims to ensure greater security and sustainability of energy supply through diversification, the development and conservation of resources and the efficient use of energy (Harald Thaler 1999: 63). The co-operative efforts by ASEAN started long back.

With the ASEAN Petroleum Security Agreement signed on 24 June, 1986, the work towards energy co-operation started, even when all the countries of Southeast Asia were not its members. The guidelines stated that in times of distress, member countries should commit to supply oil and other petroleum products to the needy in the region. Even an ASEAN- EC Energy management Training and Research Centre (AEEMTRC) was established in 1988 to enhance energy co-operation in the region. Then, the ASEAN Medium-Term Programme of Action (1995-1999) was developed following the review of the Programme of Action for Enhancement of ASEAN Cooperation in Energy endorsed by the Tenth Meeting of the ASEAN Economic Ministers on Energy Cooperation (AEMEC) in 1991 (ASEAN Secretariat 1995)<sup>125</sup>. The aim of this programme of action was to strengthen interconnection development and cooperation in joint development of energy resources.

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<sup>125</sup> See regional integration and energy cooperation, ASEAN. URL: <http://www.aseansec.org/3289.htm>

In the fourteenth ASEAN Ministers on Energy meeting, in 1996 the AEEMTRC was transformed into ASEAN Centre for Energy. So in 1999, ASEAN Centre for Energy came into being to enable co-operation with other dialogue partners. Then, the ASEAN Plan of Action for Energy Co-operation (1999- 2004), was adopted in July 1999 by the seventeenth ASEAN Ministers on Energy Meeting and over the next few years ASEAN aimed to institute the policy framework and implementation modalities for the early realization of the Trans-ASEAN energy networks, covering the ASEAN Power grid and the Trans-ASEAN gas pipeline (Harald Thaler 1999: 63). And through the ASEAN power grid, it offers opportunities for its members to jointly develop a borderless electricity industry leading to the development of an integrated power grid in the region. And according to it, ten interconnections were identified between the regional countries, out of which two were established in 80's itself i.e. the connections between peninsular Malaysia and Singapore and secondly, between Thailand and Malaysia. So through the regional efforts of ASEAN, Malaysia has been co-operating with other countries.

And also the work of Trans-ASEAN Gas pipeline (TAGP) was entrusted with the ASEAN council on Petroleum to implement the project, linking Malaysia, Thailand, Indonesia, Singapore, Myanmar and Philippines. ASEAN is pursuing a sustainable energy development agenda under its ASEAN Plan for Action in Energy Cooperation (APAEC) 2004 -2009. Under APAEC, ASEAN Member Countries are implementing short, medium and long-term policy responses to address the broader challenges facing the region's energy supply security and sustainability. Towards this end, ASEAN is intensifying cooperation activities in the following areas, among others (ASEAN Plan for Action in Energy Cooperation, 2004-2009)<sup>126</sup>:

- Development and exploration of new energy sources and supplies
- Diversification of the energy mix and promotion of alternative fuel sources
- Facilitating energy efficiency and conservation

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<sup>126</sup> APAEC, 2004-2009 has identified many programme areas to be worked upon in the coming years towards energy cooperation. It includes issues like ASEAN power grid, trans-ASEAN pipeline network, energy efficiency and conservation; renewable energy, address energy issues pertaining to the dialogue partners and to evolve a regional energy policy. See Appendix II, for more details:  
[http://www.aseanenergy.org/ace/work\\_programme.htm](http://www.aseanenergy.org/ace/work_programme.htm)

- Promotion of renewable energy
- Enhancing emergency response coordination and preparedness in the event of energy supply disruptions.

With the current plan of action, ASEAN has come way ahead in ensuring energy cooperation in the region. As with regional cooperation, Malaysia and other countries can also ensure security. Malaysia has been involved in all the efforts taken by ASEAN together for greater energy co-operation and joint development. Though the progress has not been spectacular, but the increased public awareness on energy sustainability is an encouraging trend. The cooperation in Trans-ASEAN Gas Pipeline and ASEAN Power Grid Projects as well as with China, Japan and other ASEAN Dialogue Partners represent a clear step forward in ASEAN's search for greater energy security. So, with time countries will be able to work together and ensure stability. Recently, the Cebu Declaration on East Asian Energy Security held on 15<sup>th</sup> January, 2007, aims to increase energy efficiency reduce dependence on fossil fuels and guarantee a stable energy supply<sup>127</sup>. The efforts in this direction are definitely bringing greater cooperation among countries.

"The ASEAN Energy Ministers welcomed the progress made in the Trans-ASEAN Gas Pipeline (TAGP) and the ASEAN Power Grid Projects and looked forward to working collectively for these projects to provide greater stability and security of energy supply in the ASEAN region" (21<sup>st</sup> ASEAN Ministers on Energy meeting 2003)<sup>128</sup>.

Malaysia can also strengthen its ties with other countries through ASEAN, as being a regional grouping, it provides for better avenues for dialogue and joint effort, in almost all the issues relating to diversification, better information exchange, developments in infrastructure etc. And cooperation also reduces the chances of regional conflicts, as countries work together for the benefit of all. So many conflicts which have come up in the past will not become such a big problem, if countries will work jointly. Cooperative

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<sup>127</sup> The Cebu Declaration on East Asian Energy Security is considered the most important tangible result obtained so far from the East Asian Summit process. As for the first time, there are talks in a Pan-Asia forum to deal with matters related to energy. For more details:

<http://www.12thaseansummit.org.ph/innertemplate3.asp?category=docs&docit=31>

<sup>128</sup> For Details, see Appendix I.

efforts with China are also crucial for Malaysia, as it poses economic challenges to the region. as Amitav Acharya (2004) states, “Rather than considering China as a threat, ASEAN could ride on China as an engine of growth” and “trade provides ones such opportunity of mutual gain”. Through ASEAN Regional Forum (ARF), ASEAN has been trying to engage China. As ARF, enables a continues dialogue with China and also “compensates for the risks and uncertainties associated with exclusive reliance on a balance of power approach” (Amitav Acharya 2004: 247). Not just this, the recent development of the ASEAN Plus Three (APT), framework (Comprising 10 ASEAN members and Japan, China and South Korea) suggests the relevance of another type of multilateral approach in shaping China-ASEAN relations” (Ali Alatas 2001: 2-3).

Not just multilateral cooperation but China has been involved in some bilateral links too within the region. Like the joint statements involving China and Singapore; and china and Philippines. And it can be said that “ASEAN countries will likely give China substantial freedom of action so long as it does not lead to a situation of conflict or Chinese interference in the sovereign rights and affairs of member states. Should those lines be crossed, however, it is likely that ASEAN deference towards china would be put aside in favour of a stronger and united stand” (Amitav Acharya 2004: 246). The challenge of regional and territorial claims can be laid off by cooperation to secure energy security. As Mehmet Ogutcu (2004), “the new energy calculus is provoking new thinking about cooperation in energy development, use, delivery infrastructure and emergency response among countries in the region” and “ if cooperation results in expansion of energy supplies and the building of institutional frameworks, regional energy security will run in tandem with globalised world markets”.

### **Securing the Malacca Straits**

Another challenge which is faced by Malaysia is security of energy supplies especially through the Malacca Straits, which is again an infrastructural issue<sup>129</sup>. Even this can be met by joint patrolling by navies of the three littoral states and through efforts by the

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<sup>129</sup> The other components of the energy infrastructure include rail network, truck line and marine transportation.

government to ensure safety of the vessels. Malaysia's economy is heavily reliant on trade through the Straits of Malacca, for most of its import and export activities. As its maritime related industries include offshore exploitation of resources, sea-based tourism; so it becomes a challenge to its energy security. So Malaysia has been keeping these sea lanes safe and secure for trade purposes and also because of the threats which exist for the oil tankers and vessels passing through the lanes like sea robbery and smuggling, piracy.

And Malaysia has been trying to manage the security of SLOC in many ways. Firstly, it has formed Malaysian Maritime Enforcement Agency (MMEA) or coastguard for managing maritime security by surveillance and enforcement functions. And secondly, by enhancing bilateral and trilateral cooperation with countries, within as well as outside the region (Anwar Bin Mohd Nor 2006). Malaysian navy has been making efforts to free the straits from any kind of threat and to help its country in ensuring national security. And the cooperative efforts can also be seen in the latest initiative MALSINDO by the three governments of Malaysia, Indonesia and Singapore to have coordinated patrols in the Straits of Malacca<sup>130</sup>.

With cooperative and joint planning, the threats to the SOM can be managed. Bilateral efforts to combat the crime at sea have also been included. Though there have been agreements among Indonesia, Malaysia and Singapore to conduct joint exercises at sea and to coordinate naval patrols in the straits, but still much needs to be done. And also with periodic reviews and planning accordingly, Malaysia and the other states have been trying to meet the challenge of security of supply through its sea lanes. The Straits of Malacca can be made safe by regularly updating the policies regarding the safety and security of it. With a comprehensive maritime security regime, the three littoral states can ensure better safety of the lanes.

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<sup>130</sup> In 2004, MALSINDO, a trilateral agreement was signed which is a joint special task force to safeguard the Straits and provide effective policing along the waterway. The three littoral states of Malaysia, Singapore and Indonesia are involved with the maritime security of the straits. In 2006, Combined coordinated air patrols over the straits were also introduced named Eye in the Sky (EiS) (Shafiah Fifi Muhibat 2007).

## **International Level**

At the International level, the issue of security of demand comes in. Though the demand for energy can never go down but still Malaysia's exports need a market. And a big share of the country's revenues is made up of energy export earnings. Malaysia has to make sure that there's security of demand for its exports. And this can be done by staying updated with the changes in the world energy markets and by having enough to export, while managing the growing domestic demand. The growing preference for Natural gas in comparison to other petroleum products due to least environmental damage will definitely open new avenues for Malaysian energy exports. In the world energy mix, natural gas is undeniably the fossil energy whose combustion has the lowest environmental impact. Although its contribution to greenhouse gas emissions (CO<sub>2</sub> in particular) cannot be discounted, it definitely plays a minor role in the emission of pollutants: about 30% less than oil products and 50% less than coal (World Energy Council 2008).

Several other factors also underlie a presumption of steady growth in gas demand of the order of 2% p.a. on average between now and 2020. With anticipated consumption of about 3850 bcm by then, natural gas would accordingly account for about a quarter of world primary energy demand (World Energy Council 2008). At the regional level, LNG demand in the Asia-Pacific region is highest in the world with Japan and South Korea being the major importing nations. With the growth of LNG trade in other Asia-Pacific countries, Japan's share in import is declining<sup>131</sup> and in the future, China and India are expected to be major LNG markets (Global LNG Market 2006).

### **Strengthening LNG Production and Facilities**

Malaysia can tap into the growing natural gas market, as its huge natural gas reserves amount to almost 2400 billion cubic meters. Moreover, gas exploration still stands at a significantly lower degree of maturity than oil. Its focus should be more on developing its

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<sup>131</sup> Though Japan's share in global LNG trade continue to decline in 2006 due to emergence of new LNG importing nations. But still, Japan is the largest LNG importer in the world (World LNG Market 2006).

LNG capacity as that has become the new fuel. And with better facilities and also factors like declining Liquefaction costs and reforms, it can increase its potential as an LNG exporter. The issue of security of demand definitely poses many questions but by strengthening its LNG production and facility, Malaysia can ensure energy export security. As the growing LNG market needs exporters with the best of facilities and with the demand for natural gas rising in many countries, it can keep Malaysia in a leading position. And this will also take care of the second challenge lying in front of Malaysia i.e. maintaining its competitiveness in the world market. It can keep up its competitiveness by improving on the present facilities to deal with the growing pressure. The competition has intensified as a result of market deregulation procedures. “Mostly, asset acquisitions and shareholding diversifications along the overall chain have largely restructured the traditional LNG model and inter-regional trade has expanded rapidly, driven by price arbitrage between the Atlantic and Pacific Basins” (World Energy Council 2008).

And the industry has also established new benchmarks, cutting costs significantly at all stages in the chain, to improve project economics and LNG competitiveness. So, as the competition is increasing in the world energy markets, it is becoming tougher for countries to keep pace with the growing changes. And also according to the Global LNG Market (2006), in near-term, tight supply or can say the Demand-Supply imbalance will be the biggest challenge, resulting in high LNG prices due to intense competition. And as the LNG industry is currently going through a sellers' market, stimulated by the discovery of large gas resources in new areas and the growth potential of LNG demand (World Energy Council 2008). Malaysia, which is already one of the leading nations in the LNG trade, as it exports 61% of the gas produced as LNG, can consolidate its position in the future by employing better technology.

There are many gas technologies which can be adopted and Malaysia has gone for the LNG pipeline out of the others<sup>132</sup>. It needs to improve its LNG pipeline distribution

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<sup>132</sup> The main gas technologies are the traditional (LNG, Pipeline), emerging Gas to liquid (GTL), Compressed Natural gas (CNG) and Gas to Wire (GTW). Out of these the pipeline flows dominate the international gas market. Because pipeline technology has been relatively more straightforward, easier and

system to get more leverage in the energy sector. Many intra-regional pipeline transport network already exist, like Malaysia's gas export to Singapore and the pipeline link between Malaysia and Thailand (JDA). And it can be further extended to other neighbouring countries also to increase export. Though the current LNG system has been successful, but to meet the competition it has to increase the existing one. And by including an export pipeline plan, it can achieve the target of increasing its LNG exports. By increasing its LNG capacity, Malaysia can deal with the growing competition in the global market and can also ensure security of demand. As an energy exporting country, it needs to have security of demand.

In all, Malaysia can look at the future prospects and can face the challenges to its energy security in a better way. Though the Malaysian government has been doing efforts from its side to ensure secure supplies of energy for the country, but still much needs to be done. "In the face of ever increasing global competition, East Asian countries need public policy reforms- yielding lower costs, improved governance and better infrastructure and helping firms to pursue the goal of global reach- if they want to retain their existing advantages in the world markets" (Shahid Yusuf 2003: 34).

As a growing economy, it needs to take all the steps to maintain its export position. The Ninth Malaysia Plan (2006-2010), envisages a comprehensive plan to ensure energy security in all ways, but much needs to be taken care of to meet the growing demands of the country. All the issues need to be clubbed together to form a comprehensive security plan for the country. Or can say that these issues need to be incorporated in the current energy plan to ensure future energy security. The prospect of regional cooperation holds good for Malaysia. More efforts in this direction can resolve the problem of resource crunch, which Malaysia may have to face in the future.

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more economic to develop, both onshore and offshore - even over long distances - pipeline deliveries between countries and nearby continents have largely dominated international gas trade (World Energy Council 2008).



## Chapter – V

### CONCLUSION

The concept of security has become a broad based issue. And with the concept of comprehensive security, it has incorporated a range of issues like food security, energy, economic, cultural, human etc. Security issues include energy security, as a crucial part. Energy has become an important part of our lives today and its security has become crucial. And as energy dependence is increasing, alongside the decreasing energy reserves, so the countries are trying to secure their reserves for future energy security.

Energy security came to focus after the 1973 Arab oil embargo. Since then, the meaning of the term 'Energy Security' has "evolved greatly since confrontation in energy markets" (Mehmet Ogutcu 2004: 450)<sup>133</sup>. Energy security as such can be described as 'availability of secure supplies'. However, energy security holds different meanings for different countries. As Anant Sudarshan (2007) states, "Energy security is one of those oft-used terms that mean very different things to different people". Therefore, it can be defined only according to a particular setting, and according to Hugo Mc Pherson (2005) the basic idea is the same that of "security of demand and security of supply". Energy exporting countries have to ensure a market for their exports and consumer countries need continuous and uninterrupted supply of energy resources. The challenge now is for "energy producing and consuming countries to work to assume orderly transition to a less oil intensive economy in the 21<sup>st</sup> century" (Patrick L. Clawson 1994). However, "energy security is a complex issue, which needs to involve an integrated approach that takes into account the future prospects, and requirements of each of the energy sub-sectors" (TERI, Centre for research on energy security 2005: 18).

Malaysia, since independence has achieved a "remarkable degree of political stability, along with economic and social progress" (John Funston 2001: 160). In terms of oil and

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<sup>133</sup> The strategic importance of oil and gas has not diminished because the world economy is as dependent, or even more so, on energy than in 1970s (Mehmet Ogutcu 2004: 451).

gas production, it comes second in Southeast Asia, making it an important energy producer. Its primary energy mix consists of coal, oil, Natural gas and hydro power. And as it is energy exporting country, energy security is of utmost importance to it. The economy is a net energy exporter with 11 percent of export earnings in 2004 derived from crude oil, LNG and petroleum products (APEC Energy demand and supply outlook 2006). Nevertheless, with an increasing demand from within the country, Malaysia needs a steady supply of energy both for domestic and export purposes. It is indicative of the rising Malaysian economic growth leading to higher energy consumption as the “fundamental link between economic growth and energy consumption remains in place” (Mehmet Ogutcu 2004: 451).

The internal consumption rate grew from 5.6% in 2000 to 38.9% in 2006 (APEC Energy demand and supply outlook 2006). Energy demand and supply scenario in Malaysia is currently more tilted towards petroleum products as in the case of other developing countries, as oil and gas are the main sources of energy. The current energy scenario related basically to oil, gas and coal suggests, as according to Peck Yean Gan and ZhiDong Li (2008), “In the ultimate term, Malaysia will remain a net natural gas exporter. And with increasing coal demand, future coal import is expected to increase further as domestic production will remain insignificant. Based on our results, a turn from current oil export position to oil import is expected to take place as soon as in 2013. Therefore, under increasing coal imports and decreasing domestic oil production prospects, overall import dependency, and hence energy supply security, is expected to become more prominent in the near future”<sup>134</sup>. Malaysia has to see that energy is used in a sustainable manner otherwise it may have to depend on external sources.

Many challenges come in the way of securing energy security and Malaysia is at a point currently, where it is stuck between demand security and supply security on both sides. Starting at the national or domestic level, the basic problem of rising demand within the

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<sup>134</sup> For additional details, see URL:  
[http://www.sciencedirect.com/science?\\_ob=ArticleURL&\\_udi=B6V2W-4RJSP1JB&\\_user=912850&\\_rdoc=1&\\_fmt=&\\_orig=search&\\_sort=d&\\_view=c&\\_acct=C000047906&\\_version=1&\\_urlVersion=0&\\_userid=912850&\\_md5=b7a86e2d6dd783ea0f303b8e022fe58c](http://www.sciencedirect.com/science?_ob=ArticleURL&_udi=B6V2W-4RJSP1JB&_user=912850&_rdoc=1&_fmt=&_orig=search&_sort=d&_view=c&_acct=C000047906&_version=1&_urlVersion=0&_userid=912850&_md5=b7a86e2d6dd783ea0f303b8e022fe58c)

country is a big challenge in itself. And the standard of living is growing, so the need for energy is also growing. This problem becomes worse when one looks at the export of energy from Malaysia. As being an exporter of energy, it needs to maintain a balance between internal demand and its exports. As any negative effect on its export capacity can be bad for its economy. Then the problem also becomes severe as the sources of energy are in short supply, so it brings up the challenge of managing resources in a way that they don't get depleted soon. And infrastructural challenges also come up. And environmental degradation is also one of the important challenges faced by Malaysia<sup>135</sup>.

The challenges at the regional level are no less as the issue of Spratlys continues to be a flashpoint with the need for energy increasing. As "the race for occupation of the Spratlys has increased the likelihood of conflict, resulting in at least two major cases of military intimidation in recent years, one of which led to military conflict"<sup>136</sup> (Jin Hyuk Paik and Anthony Bergin 2004: 180). The challenge of maritime security, especially for the littoral states, as piracy and terrorism are a big threat to the oil vessels passing the straits of Malacca. A coordinated effort is being made to secure safety of Straits. With the global energy market becoming more and more competitive, it'll be a challenge for Malaysia to maintain its position in the World LNG market, as it has to cater to its rising internal demand of energy too.

For a country which is on the move economically and has had a steady domestic politics since 1969, ensuring energy security is crucial. A look at the future prospects of facing challenges posed in the way of achieving energy security becomes extremely necessary and relevant. One of the many options available to Malaysia is to reduce its dependence on non-renewable sources of energy is to increase the use of alternative fuel, with many renewable sources of energy like solar, hydro, bio-diesel etc. "The (2002) World Summit on Sustainable Development, held in Johannesburg stressed the need for broadening access to energy, for increasing reliance on renewable energy resources, ....., for

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<sup>135</sup> Environmental threats to security have also made their way onto the Security Council agenda. The 1992 Security Council Heads of State meeting identified "non-military sources of instability in (inter alia)....the ecological fields" as "threats to peace and security" (Lorraine Elliott 2004: 163).

<sup>136</sup> China and Vietnam had a conflict in 1988 and China and Philippines in the early 1995 (Jin Hyuk Paik and Anthony Bergin 2004).

establishing energy-efficiency programs” (World Bank’s energy strategy 2004: 85). Malaysia has been trying to reduce its dependence on oil and gas, as this enables it to have enough to export. Being an energy exporter, it needs to have resources to maintain its export position and also to satisfy the growing internal demand. Then efficient use of energy is also one of the ways to reduce the use of oil and gas. Infrastructural development is also accounted in, to meet the challenge of energy security, as Tsumoto Toichi (2007), states “it is important that the energy infrastructure be improved according to a comprehensive national strategy developed with a long-term vision and perspective into the future”.

Increased exploration activity has been carried out by Malaysia, to increase production of resources, as still a lot of potential of reserves is untapped. Petronas has invested in other countries like LNG projects in Egypt and exploration blocks in Gabon, Cameroon, Niger, Egypt, Yemen, Indonesia, and Vietnam. and recently “it signed an agreement with Santos Limited of Australia to acquire a 40% interest in the latter’s proposed integrated liquefied natural gas (LNG) project in Gladstone, Queensland in May, 2008” (Media Relations Department, Petronas). Another way out is ensuring a better transport system and with use of bio-diesel, Malaysia has been trying to reduce the consumption level of the transport sector to a large extent. The emergency preparedness is also being handled by Malaysia by greater cooperation with APEC.

At the regional level, cooperation holds greater promise. As “Regions of cooperation should include all the possible regions in the world including the disputed areas by following the principles of ‘putting aside differences for common development’ so that resources in those disputed areas could be fully used” (Xia Yishan 2007: 19)<sup>137</sup>. And Malaysia-Thailand Joint development area is one of the most important examples of energy cooperation in the region. As through ASEAN, Malaysia is getting involved in many cooperative and joint efforts to increase its energy stock. Many efforts like the ASEAN Power grid and the Trans-ASEAN gas pipeline are very notable efforts by ASEAN to solve the problem of conflicts in the area of energy. And these efforts by

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<sup>137</sup> For Details, see “Energy Security Insights”, URL: [www.teriin.org/esissue4april.pdf](http://www.teriin.org/esissue4april.pdf)

ASEAN ensure stable energy supplies at reasonable costs and also an environment friendly approach. Cooperation leads the way to better management of energy security. At the conclusion of the US-EU Summit held in Vienna, Austria in June (2006) a joint statement was issued which “recognizes the strategic role of security of supply, competitiveness and sustainability in the energy sector. In this connection, we strongly reaffirm our commitment to energy security... and to cooperate to ensure sufficient, reliable and environmentally responsible supplies of energy...”<sup>138</sup> Malaysia has also been managing the security of Malacca straits by joint patrolling and by taking steps to ensure its security from the maritime threats. At the international level again, Malaysia has been trying to stay in a leading position in the LNG market by maintaining its competitiveness through innovative technology. And with better facilities and regular updates, Malaysia is able to maintain its position in energy market.

To sum up, future prospects at all levels can work for securing energy security in the larger context. With better transport system, more reliance on alternative fuels, and better management of available resources, infrastructural development; security can be assured. Malaysia has all the potential to manage its energy security in optimum and sustainable manner. And cooperation through ASEAN is definitely the way out for ensuring security and stability. And Bretherton also argued, “The intensification of global connectedness associated with economic globalization, ecological interdependence and the threats posed by weapons of mass destruction means that cooperation between states is more than ever necessary” (Bretherton and Ponton 1996: 1-100). Lately ASEAN has been promoting greater cooperation among the countries in the area of energy, an issue which has become crucial.

Maintaining a sustainable energy environment in the region is necessary for the prosperity of the member countries who not long ago suffered during the Financial Crisis of 1997-98. With all the challenges existing, Malaysia has been looking at the future

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<sup>138</sup> 2006 Vienna Summit Declaration, issued by the United States government and the European Union, 21 June 2006. For additional information see the websites of the White House and European Commission. URL: <http://italy.usembassy.gov/pdf/other/RL33636.pdf>

prospects and working towards the achievement of better energy security. Overall it can be said that it is crucial for a developing country like Malaysia to put in place an energy supply-demand system which assures energy security.

“Energy security is not a matter of one country, but a question shared by all the countries. Only when international energy security is ensured can one country have its own security. Therefore, while every country will have to attach importance to its own energy security, it has to take into account other’s needs. Energy security can only be ensured through international cooperation” (Xia Yishan 2006: 19). Malaysia can strengthen its economic growth through a stable energy environment and security of resources. In the end, it can be said that, as an exporter it has to focus on security of demand but due to high demand for energy domestically, it has to move the focus on security of supply keeping in mind the declining oil reserves, though in the case of natural gas, it is still in a better export position.

## **APPENDIX I**

### **CHRONOLOGY OF ASEAN'S EFFORTS TOWARDS ENERGY COOPERATION**

- |      |  |
|------|--|
| 1986 | ASEAN Petroleum Security Agreement, 24 <sup>th</sup> June, Manila.                 |
| 1988 | ASEAN- EC Energy management Training and Research Centre (AEEMTRC) was set up.     |
| 1991 | ASEAN Economic Ministers on Energy Cooperation (AEMEC)                             |
| 1995 | ASEAN Medium-Term Programme of Action on Energy Cooperation (1995 – 1999).         |
| 1998 | Agreement on the Establishment of the ASEAN Centre for Energy                      |
| 1999 | ASEAN Plan of Action for Energy Cooperation 1999-2004                              |
| 2002 | The ASEAN Memorandum of Understanding (MoU) on the Trans-ASEAN Gas Pipeline (TAGP) |
| 2003 | 21st ASEAN Ministers on Energy Meeting (21st AMEM)                                 |
| 2004 | ASEAN Plan of action for Energy Cooperation (APAEC) (2004 – 2009)                  |
| 2007 | Cebu Declaration on East Asian Energy Security, Philippines.                       |

## APPENDIX II

### Declaration on the Conduct of Parties in the South China Sea, 2002

The Government of the Member States of ASEAN and the Government of the People's Republic of China.

**Reaffirming** their determination to consolidate and develop the friendship and cooperation existing between their people and governments with the view to promoting a 21st century-oriented partnership of good neighborliness and mutual trust;

**Cognizant** of the need to promote a peaceful, friendly and harmonious environment in the South China Sea between ASEAN and China for the enhancement of peace, stability, economic growth and prosperity in the region;

**Committed to** enhancing the principles and objectives of the 1997 Joint Statement of the Meeting of the Heads of State/Government of the Members States of ASEAN and President of the People's Republic of China;

**Desiring** to enhance favorable conditions for a peaceful and durable solution of differences and disputes among countries concerned;

**Hereby declare the following:**

1. The Parties reaffirm their commitment to the purposes and principles of the Charter of the United Nations, the 1982 UN Convention on the Law of the Sea, the Treaty of Amity and Cooperation in the Southeast Asia, the Five Principles of Peaceful Coexistence, and other universally recognized principles of international law which shall serve as the basic norms governing state-to-state relations  
*The 2002 Declaration on the COP in the South China Sea.*

2. The Parties are committed to exploring ways for building trust and confidence in accordance with the above-mentioned principles and on the basis of equality and mutual respect.

3. The Parties reaffirm their respect for and commitment to the freedom of navigation in and overflight above the South China Sea as provided for by the universally recognized principles of international law, including the 1982 UN Convention on the Law of the Sea;

4. The parties concerned undertake to resolve their territorial and jurisdictional disputes by peaceful means, without resorting to the threat or use of force, through friendly consultations and negotiations by sovereign states directly concerned, in accordance with universally recognized principles of international law, including the 1982 UN Convention on the Law of the Sea;

5. The parties undertake to exercise self-restraint in the conduct of activities that would complicate or escalate disputes and affect peace and stability including, among others, refraining from action of inhabiting on the presently uninhabited islands, reefs, shoals, cays, and other features and to handle their differences in a constructive manner.

6. Pending the peaceful settlement of territorial and jurisdictional disputes, the parties concerned undertake to intensify efforts to seek ways, in the spirit of cooperation and understanding, to build trust and confidence between and among them, including:

- a. holding dialogues and exchanges of views as appropriate between their defense and military officials;
- b. ensuring just and humane treatment of all persons who are either in danger or in distress;
- c. notifying, on a voluntary basis, other Parties concerned of any impending joint/combined military exercise; and
- d. exchanging, on a voluntary basis, relevant information.



7. Pending a comprehensive and durable settlement of the disputes, the parties concerned may explore or undertake cooperative activities. These may include the following:

- a. marine environmental protection;
- b. marine scientific research;
- c. safety of navigation and communication at sea;
- d. search and rescue operations; and
- e. combating transnational crime, including, but not limited to trafficking in illicit drugs, piracy and armed robbery at sea, and illegal traffic in arms.

The modalities, scope and locations, in respect of bilateral and multilateral cooperation, their should be agreed upon by the parties concerned prior to their actual implementation.

8. The Parties concerned stand ready to continue their consultations and dialogues concerning relevant issues, through modalities to be agreed by them, including regular consultations on the observance of this Declaration, for the purpose of promoting good neighborliness and transparency, establishing harmony, mutual understanding and co-operation, and facilitating peaceful resolution of disputes among them;

9. The Parties undertake to respect the provisions of this Declaration and take actions consistent therewith;

10. The Parties encourage other countries to respect the principles contained in this Declaration;

11. The Parties concerned reaffirm that the adoption of a code of conduct in the South China Sea would further promote peace and stability in the region and agree to work, on the basis of consensus, towards the eventual attainment of this objective.

Done on the Fourth of November in the Year Two Thousand and Two in Phnom Penh, the Kingdom of Cambodia.

(Source: [www.southchinasea.org/docs/nguyen%20Hong%20Thao-2002%20Declaration.pdf](http://www.southchinasea.org/docs/nguyen%20Hong%20Thao-2002%20Declaration.pdf))

## **APPENDIX III**

### **21st ASEAN Ministers on Energy Meeting (21st AMEM), 3 July 2003, Langkawi Island, Malaysia.**

1. The 21st ASEAN Ministers on Energy Meeting (AMEM) was convened on 3 July 2003, preceded by the Senior Officials Meeting on Energy (SOME) on 30 June - 1 July 2003 and the 4th SOME-METI (Japan) Consultations and the 2nd SOME + 3 Consultations on 2 July 2003.

2. H.E. Datuk Amar Leo Moggie, Minister of Energy, Communications and Multimedia of Malaysia, chaired the 21st AMEM, with H.E. Mr. Vincent S. Perez, Jr., Secretary of Energy of the Philippines, as Vice-Chairman.

#### **Moving Forward the Trans-ASEAN Energy Network**

3. The ASEAN Energy Ministers welcomed the progress made in the Trans-ASEAN Gas Pipeline (TAGP) and the ASEAN Power Grid Projects and looked forward to working collectively for these projects to provide greater stability and security of energy supply in the ASEAN region. The Ministers agreed that an enabling framework is needed to stimulate strong private sector participation in the ASEAN Member Countries to conduct business on the TAGP and ASEAN Power Grid on a commercial basis. The Ministers have also agreed to enhance the ASEAN Energy Business Forum (AEBF) as an important platform for facilitating business interaction, technology exchange and project financing opportunities between ASEAN energy authorities and the private sector.

4. The Ministers also welcomed the establishment of the ASEAN Gas Consultative Council (AGCC) which will serve as the advisory body to the ASEAN Council on Petroleum (ASCOPE) in the facilitation and implementation of the Trans-ASEAN Gas Pipeline (TAGP) Project. The Ministers endorsed the selection of Malaysia as the host country for the ASCOPE Gas Centre (AGC). The AGC will serve as the strategic technical and information resource and capacity building center in the facilitation and implementation of the TAGP and gas development programs in ASEAN.

5. The Ministers agreed that the Final Report of the ASEAN Interconnection Master Plan Study (AIMS) to be the reference document for the implementation of the electricity interconnection projects in the ASEAN region.

6. The Ministers noted the significant progress in the updating/review of the 1986 ASEAN Petroleum Security Agreement (APSA) and they called on their senior officials to expeditiously conclude a new APSA.

#### **Expanding External Relations**

7. Recognizing East Asia's growing demand for energy and the depletion of fossil fuels, the Ministers agreed to strengthen partnership with China, Japan and Republic of Korea to address mutual issues and concerns in energy security, natural gas development, oil market studies, oil stockpiling and renewable energy. The SOME+3 Energy Policy Governing Group has been established to provide overall policy direction and program management for the ASEAN+3 energy cooperation.

8. The Ministers commended the four-year fruitful partnership between ASEAN and Ministry of Economy, Trade and Industry (METI) of Japan in energy cooperation through the "Promotion of Energy Efficiency and Conservation (PROMEEC)" and "Energy Supply Security Planning for ASEAN (ESSPA)" Projects. The Ministers thanked Japan for co-organizing the ASEAN + 3 /International Energy Agency (IEA) Joint Workshop in December 2002 in Tokyo, the Japan-ASEAN Clean Development Mechanism (CDM)

Seminar in January 2003 in Jakarta and the ASEAN + 3 Petroleum Security Workshop in June 2003 in Kuala Lumpur.

9. The Ministers acknowledged the selection of the first set of 17 projects under the EC-ASEAN Energy Facility (EAEF), with total co-financing support of Euro 3.5 million. In 2004, additional 27 projects involving a co-financing support of Euro 5.5 million are expected to be in the pipeline. The facility covers mainly electricity, natural gas, clean coal technology, energy efficiency and conservation and renewable energy.

10. The Ministers appreciated the briefing of the Secretary-General of the Brussels-based Energy Charter Secretariat to SOME on the experience gained by the Energy Charter process and on the useful lessons to promote such important cooperation projects as the Trans-ASEAN Gas Pipeline and the ASEAN Power Grid Projects. To foster more active dialogue and regular exchange of information between the Energy Charter Secretariat, ASEAN will seek for observer status at the Energy Charter Conference with the ASEAN Centre for Energy as the coordinating entity.

### **Progress on the ASEAN Plan of Action for Energy Cooperation**

11. The Ministers lauded the notable achievements and developments in ASEAN cooperation in the electricity, oil and gas, energy efficiency and conservation, new and renewable energy resources, and in coal sectors. A new plan of action for 2004-2009 will be developed to ensure policy and technical continuity and sustainable cooperation in the ASEAN energy sector towards closer regional economic integration.

12. The Ministers commended the ASEAN Centre for Energy as a technical and information hub of international cooperation in energy in ASEAN, through its effective coordination and facilitation of regional energy programs and activities in the region.

13. The Ministers acknowledged with deep appreciation the technical assistance and support provided by various countries and institutions such as from the European Union, Australia, Japan, Switzerland, Germany, Sweden, UN Economic and Social Commission for Asia and the Pacific, International Energy Agency and the Asia Pacific Energy Research Centre in the implementation of the ASEAN Plan of Action for Energy Cooperation 1999-2004.

14. The Ministers congratulated the Winners and Runners-Up of the 2003 ASEAN Best Practices Competition for Energy Efficient Buildings and for Renewable Energy Projects. This annual event is to promote excellence in the energy field by giving recognition to the efforts of both the private and public sectors in adopting good practices in energy efficiency and conservation and renewable energy.

### **22nd AMEM Meeting and Associated Meetings**

15. The ASEAN Ministers on Energy will meet for the 22nd AMEM in the Philippines in May 2004. The Ministers will also meet their counterparts from China, Japan and the Republic of Korea during the 22nd AMEM in the Philippines. The Fifth ASEAN Energy Business Forum (AEBF) will also be held in conjunction with the 22nd AMEM.

### **The following Ministers attended the 21st AMEM in Langkawi:**

H.E. PEHIN DATO ABDUL RAHMAN TAIB  
Minister of Industry and Primary Resources, Brunei Darussalam

H.E. DR. ITH PRAING

Secretary of State, Ministry of Industry, Mines and Energy, Cambodia

H.E. DR. PURNOMO YUSGIANTORO  
Minister of Energy and Mineral Resources, Indonesia

H.E. MR. ONNEUA PHOMMACHANH  
Minister of Industry and Handicrafts, Lao PDR

H.E. DATUK AMAR LEO MOGGIE  
Minister of Energy, Communications and Multimedia, Malaysia

H.E. BRIG. GEN. LUN THI  
Minister of Energy, Myanmar

H.E. MR. VINCENT S. PEREZ, JR.  
Secretary of Energy, Philippines

H.E. MR. RAYMOND LIM SIANG KEAT  
Minister of State for Foreign Affairs and Trade & Industry, Singapore

H.E. MR. PROMMIN LERTSURIDEJ  
Minister of Energy, Thailand

H.E. DR. NGUYEN XUAN CHUAN  
Vice-Minister of Industry, Viet Nam

H.E. MR. ONG KENG YONG  
Secretary-General of ASEAN

(Source: <http://www.aseansec.org/14952.htm> )

## APPENDIX IV

### **MID-TERM REVIEW NINTH MALAYSIA PLAN (2006-2010)**

### **Speech by Y.A.B. Prime Minister in the Dewan Rakyat, 26 JUNE 2008**

**11.30 A.M.**

**(Only parts related to energy are shown)**

Mr. Speaker, Sir,

1. In the name of Allah, the Beneficent, the Merciful. I am honoured to stand in this noble House to table this motion under Meeting Order 27(3) as follows:

“That this House,

realises that Malaysia has registered encouraging economic growth and achieved positive socio-economic objectives during the early implementation of the Ninth Malaysia Plan, despite being faced with various uncertainties, particularly with respect to the surge in global crude oil prices;

endorses the Government’s efforts in implementing the National Mission to achieve the objectives of Vision 2020 in advancing Malaysia towards becoming a developed nation;

approves the Mid-term Review of the Ninth Malaysia Plan to implement strategies and programmes as well as to prepare provisions in order to develop Malaysia into a strong and united nation, as outlined in Order Paper C.M.D. 8 of Year 2008;

That in approving the Mid-term Review of the Ninth Malaysia Plan, this noble House calls on all Malaysians to be united in efforts to develop Malaysia as a prosperous, progressive, just, resilient and competitive nation.”

2. With your permission, Mr. Speaker, Sir, I now table the Mid-term Review of the Ninth Malaysia Plan for the debate of the Honorable Members of this noble House.

Mr. Speaker, Sir,

3. Over two years ago, on 31 March 2006, I tabled the Ninth Malaysia Plan as a national five year development plan covering the period 2006-2010. This Plan charts the future direction of national development for the first five years in the second phase of the journey towards Vision 2020. Alhamdulillah, blessed with the determination and resolve of Malaysians from all walks of life in fulfilling their collective responsibilities, we have not only been able to maintain encouraging economic growth and stability, but also continue to enhance national competitiveness in an effective manner.

25. The development of a sustainable energy sector is critical to ensure energy sufficiency for the economy in the long term. Energy efficiency initiatives will be intensified to effect more productive and prudent use of energy resources. The Government will also step up R & D activities in clean and cost-effective renewable energy towards enhancing energy security. Given that the nation’s hydro-carbon energy supplies are depleting, and to ensure long-term energy security, the Government will draft a comprehensive National Energy Policy.

70. The Government has consistently stressed that national economic growth has to be accompanied by better quality of life for all Malaysians. To achieve this, the Government will focus on six main strategies:

First: Increasing healthcare services;

Second: Meeting housing needs and improving urban services;

Third: Building basic infrastructure;

Fourth: Improving transportation facilities;

Fifth: Ensuring conservation of the environment and sustainable management of resources; and

Sixth: Generating positive community development.

80. At the same time, the phenomenon of climate change will be given due attention. Focus will be given towards promoting energy efficiency and renewable energy, as well as in improving the public transportation system.

## CONCLUSION

Mr. Speaker, Sir,

95. Various efforts have been implemented and harnessed towards ensuring that the fundamentals of the national economy remain strong and competitive. I believe that we are on the right track towards achieving Vision 2020.

96. Nevertheless, as we come to the second half of the Ninth Malaysia Plan, we are faced with various challenges which will test our ability to maintain the course of the nation's development agenda.

97. The greatest challenge confronting our economy is the rise in global oil prices – a global phenomenon which is affecting all nations, and is caused by various factors.

98. One of the key factors which has led to the extreme rise in oil prices at this moment in time is geopolitical uncertainty. The invasion of Iraq by the United States of America in 2003 has crippled one of the world's key oil producing nations, and has resulted in a state of unrest in the Middle East which remains unresolved. The earlier military action in Afghanistan and most recently, Israel's threat to attack Iran further exacerbated geopolitical tensions.

99. High demand from countries such as China and India, along with the refusal of OPEC countries to substantially increase their production of oil, have also contributed to higher oil prices.

100. The situation is made worse by the actions of speculators in the oil markets of international financial centres such as New York and London.

101. Apart from the extreme rise in oil prices, our economy is also affected by the state of global financial markets, which have yet to recover from the sub-prime crisis. In fact, many economic experts expect that this crisis may lead to a global recession, which would surely adversely impact on our own economic prospects.

102. The reality is that our nation faces difficult challenges, caused by external factors which are outside of our control. In the face of these difficulties, the Government must have the courage to make decisions and initiate changes that will preserve public prosperity and national interest in the long term.

103. This includes the recent decision to restructure oil and gas subsidies, which the Government realises will increase the cost of living. Nevertheless, the Government was compelled to act decisively, since the rise in global oil prices has put strained the nation's finances. At the same time, the move was necessary to ensure that subsidies would go directly to those who need them most. In addition, by restructuring subsidies, we will have greater flexibility to navigate the risks of a global recession, should one occur in the near future.

104. Rising oil prices and uncertainty caused by external factors makes it difficult for any nation to fully shield its citizens from hardship. Nevertheless, the Government remains committed towards doing everything within its power to lighten the burden of the people and preserve their quality of life.

105. Therefore, in order to continue our path towards development while addressing the challenges of the present, let us give our undivided commitment towards ensuring the success of our National Mission.

(Source: [http://www.pmo.gov.my/webnotesapp/abdullah.nsf/fa1f7b5391f5e9f9482570dd000db71d/b57f90fbfc099f0848257474002f7d91/\\$FILE/Speech%209MP%20Mid%20Term%20Review.pdf](http://www.pmo.gov.my/webnotesapp/abdullah.nsf/fa1f7b5391f5e9f9482570dd000db71d/b57f90fbfc099f0848257474002f7d91/$FILE/Speech%209MP%20Mid%20Term%20Review.pdf) )

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